MOORE PUBLIC SCHOOLS -
HIGHLAND EAST JUNIOR HIGH SCHOOL –
STEM ADDITION
Moore Public Schools - Moore, Oklahoma
AGP - Moore, Oklahoma

CONSTRUCTION BULLETIN NO. 2
March 16, 2022

---

1. DRAINAGE REPORT AND REVISED / ADDITIONAL CIVIL DRAWINGS AS PER ATTACHED SHEETS.
2. REVISE HARDWARE SET NO. 9 (AS NOTED IN RFI-13) AS PER ATTACHED REVISED SHEET A602.
3. REVISE GRILL, REGISTER, AND DIFFUSER SCHEDLULE AS PER ATTACHED DRAWING.

END OF CONSTRUCTION BULLETIN NO. 2

DRAINAGE REPORT

FOR

Highland East Junior High School
Classroom Addition

TABLE OF CONTENTS

APPENDICES

DRAINAGE REPORT
Highland East Junior High School
Classroom Addition

I. INTRODUCTION

This drainage report has been prepared for Highland East Junior High School proposed Classroom Addition. This report provides documentation on the stormwater quantity associated with the existing site and proposed project, and provides design to alleviate the impacts of increased stormwater runoff that may be caused by the proposed project.

II. GENERAL LOCATION AND DESCRIPTION

Location

Highland East Junior High School is part of Moore Public School District and is located at 1200 SE 4th Street, Moore, OK 73160 and is located in NE/4, NW/4, Section 24, T10N, R3W in Cleveland County. A vicinity map is provided in Figure 1.

Figure 1 - Vicinity Map

Highland East Junior High is located on SE 4th street approximately 2,350 ft east of the intersection of SE 4th and S. Eastern Ave. The elementary property is surrounded by developed neighborhoods and the Moore Public Schools Administration building to the East. Behind the school campus, there is a large field where water currently flows southwest. An existing detention pond is in the south west corner of the property that provides detention for existing infrastructure. The proposed drainage improvements will provide detention for the new classroom addition and reroute some existing roof drains from the east portion of the existing school building.

Description of Property

Highland East Junior High lies on an approximately 19.75-acre tract of land. The existing drainage area in question is approximately 1.18 acres. The proposed drainage area is 1.34 acres because the construction of the proposed classroom addition will change the flow of water in some areas to be part of the drainage area. The entire property is in an area of minimal flood hazard which can be seen on the FIRMette included in Appendix A, the nearest flood zone to the east is approximately a half of a mile away from the proposed site and the BFE for this area is 1,178' and the nearest flood zone to the west is approximately a half of a mile away from the proposed site and the BFE for this area is 1,215'

A copy of the Web Soil Survey for the area is included in Appendix B, the soils at the project site consist of Hydrologic Soil Group D. This means that the predeveloped site is in a high runoff class.

III. DRAINAGE BASINS AND SUB

BASINS

The existing drainage basin is approximately 1.18 acres and is mostly a mowed grass field area with a portion of the east section of the existing school building. The high point in the drainage area is at the existing building with an elevation of approximately 1242.50'. The existing drainage basin slopes to the south west to the point of the proposed pond release at an elevation of approximately 1235.50'.

The proposed site will have one detention pond to aid in reducing the peak discharge from the site. The post developed drainage basin is approximately 1.34 acres which includes the field area, the area for the proposed pond and the east portion of the existing school building. The proposed drainage basin is 0.16 acres larger than the existing basin because of the proposed building limits of the new classroom addition and the pond.

The runoff coefficient or c values used for all undeveloped grassy areas shall be 0.6. The c values used for developed or paved areas shall be 0.95. Using these values, a composite c value was determined for the drainage basins. For the existing conditions the c value used shall be 0.7 since it is 25-30% developed area and 70-75% grassy field. For the post developed conditions, the c value used shall be 0.85 since it will change to approximately 70% developed area and approximately 30% will continue to be grassy field. The c value for the post developed condition was modeled in this way because any future development in the area will require its own detention analysis and plan report. This proposed detention pond is only designed to detain water from the proposed construction. It is not designed to detain water from any future developments in the area.

IV. DETENTION DESIGN

CRITERIA

Hydrologic Criteria

Hydraflow Hydrographs Extension for Autodesk was used to aid in the stormwater design of this project. The time of concentrations for each area can be found in Appendix C. Manning's equations were used for determining overland and channel flow which can also be seen in Appendix C.

The rainfall intensities have been calculated with Hydraflow by entering the values provided in the table below. A rainfall IDF graph can be found in Appendix D. The IDF curve coefficients were taken from the ODOT Roadway Drainage Manual, November 2014, for Zone 5.

Intensity = B / (Tc + D)^E			
Return Period	**B**	**D**	**E**
2-YR	53	10	0.82
5-YR	64	12	0.79
10-YR	74	12	0.79
25-YR	93	15	0.79
50-YR	104	15	0.79
100-YR	108	15	0.77

Table 1: Values used for intensity calculations.

Hydrographs for the 2,5,10,25,50 and 100-year storm events for the existing and drainage areas can be found in Appendix E. These hydrographs will show the peak Q in cfs and the time of concentration for each area. For convenience, a table of the existing conditions, proposed conditions, pond release and water surface elevations for each storm event is below:

Flowrates					Pond	
Storm Event	Existing Conditions (cfs)	Post Developed Conditions (cfs)	Allowable Pond Release (cfs)	Actual Pond Release (cfs)	WSEL	Normal Depth (in)
2-Yr	4.09	5.18	4.09	3.68	1236.74	8.88
5-Yr	4.96	6.34	4.96	4.57	1236.87	10.44
10-Yr	5.73	7.33	5.73	5.23	1236.98	11.76
25-Yr	6.45	8.33	6.45	5.60	1237.05	12.60
50-Yr	7.22	9.32	7.22	5.94	1237.12	13.44
100-Yr	7.98	10.32	7.98	6.30	1237.19	14.28

Table 2: Flowrates with corresponding maximum pond elevations.

The detention pond has an allowable maximum release of 7.98 cfs, but the actual maximum release rate for a 100-yr storm event for this pond was defined as 6.30 cfs since that is the maximum that will be released at the 100-year water line elevation in the pond with dual 12" outlet pipes which was calculated using Hydraflow and these WSEL elevations can be seen on a schematic in Appendix H. This will improve current conditions in the area since this is lower than the existing conditions. An evaluation of an extended storm analysis was done to determine the maximum storage volume required for the pond in these conditions. Print outs for maximum storage volumes for extended durations for all storm events can be found in Appendix F. The maximum storage volume for an extended duration storm was more conservative and therefore used to size the pond. The pond can hold a maximum of 5,487 cu-ft with 1 foot of freeboard.

A table of pond storages per elevation contour is available in Appendix G. The pond dike shall be 6' wide with an elevation of 1239.00 feet. The pond will have 4:1 interior and exterior side slopes. The outlet structure will be dual 12" ADS drainage pipes separated one foot horizontally and grouted in concrete end sections. The outlet is designed to not discharge at a greater rate than the existing conditions as can be seen in the schematic in Appendix H. The outlet lies on the South West end of the pond and discharges where water would naturally flow in existing conditions. This water will flow towards another existing detention pond on the south west end of the school property, so this detention is only meant to serve the proposed classroom addition and rerouted roof drains.

An overflow flume that is 2 feet wide will flow over the top of the outlet pipe which could release approximately 1 cfs.

V. SUMMARY AND CONCLUSIONS

The purpose of the design is to provide a measure by which the natural hydrology of the existing site can be maintained post-construction. The method selected to accomplish this goal is detention ponds. The information provided compares the existing conditions with the proposed conditions to offer the most efficient method by which to obtain the goal. With the information gathered a detention pond and outlet structure have been designed to detain storm water runoff and allow it to drain at a rate that is less than the pre-construction rate so as to not disturb the downstream flow.

APPENDIX A
FEMA FIRMETTE

National Flood Hazard Layer FIRMette

FEMA

97°28'30"W 35°20'13"N

97°27'53"W 35°19'44"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/10/2022 at 12:19 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B
SOIL SURVEY

Please see following pages:

Map Scale: 1:2,270 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

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: Cleveland County, Oklahoma
Survey Area Data: Version 19, Aug 27, 2021

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

Date(s) aerial images were photographed: Nov 20, 2018—Nov 27, 2018

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
9	Kingfisher-Ironmound complex, 1 to 5 percent slopes	3.8	17.7%
65	Renfrow-Huska complex, 3 to 5 percent slopes, eroded	13.3	62.1%
84	Grant-Huska complex, 1 to 5 percent slopes	4.3	20.2%
Totals for Area of Interest		**21.3**	**100.0%**

APPENDIX C
TIME OF CONCENTRATIONS

See Drainage Area Map for correlation of values.

Proposed Drainage Basin: 1.34 AC

Overland: $Tc = 0.372\frac{65^{0.375}}{0.006^{0.20}} = 4.95\,min$

Channel (drainage pipes): $Tc = 0.002\frac{190^{0.77}}{0.003^{0.385}} = 1.06\,min$

Channel (grass): $Tc = 0.008\frac{195^{0.77}}{0.005^{0.385}} = 3.57\,min$

Tc Total = 4.95 + 1.06 + 3.57 = 9.58 = 10 minutes

Existing Drainage Basin: 1.18 AC

Overland: $Tc = 0.372\frac{65^{0.375}}{0.006^{0.20}} = 4.95\,min$

Channel (drainage pipes): $Tc = 0.002\frac{190^{0.77}}{0.003^{0.385}} = 1.06\,min$

Channel (grass): $Tc = 0.008\frac{200^{0.77}}{0.017^{0.385}} = 2.27\,min$

Tc Total = 4.95 + 1.06 + 2.27 = 8.28 = 8 minutes

CHANNEL: 200 L.F.
SLOPE: 0.017 FT/FT

BLUE: EXISTING DRAINAGE
AREA = 1.18 ACRES

E=1238.59' (12" CMP)

E=1238.64' (12" CMP)

E=1240.83' (10" CMP)

E=1241.01' (10" CMP)

CHANNEL: 190 L.F.
SLOPE: 0.003 FT/FT

CHANNEL: 190 L.F.
SLOPE: 0.003 FT/FT

OVERLAND: 65 L.F.
SLOPE: 0.006 FT/FT

RED: PROPOSED DRAINAGE
AREA = 1.34 ACRES

20 10 0 20 40

S.E. 4TH STREET

WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

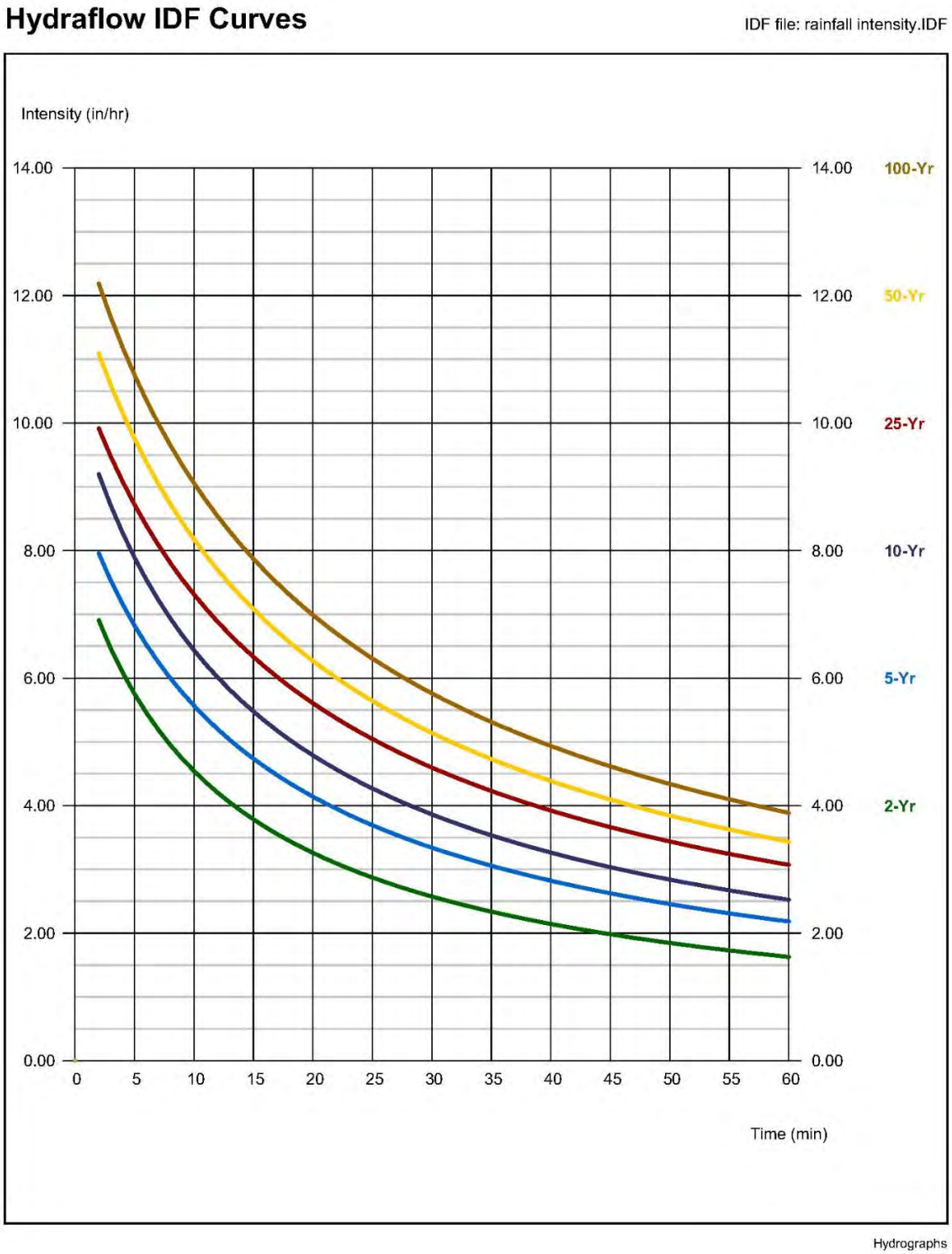
DATE: 10-25-2021	APPROVED BY	DRAWN BY MW

DRAINAGE MAP

WDB ENGINEERING P.L.L.C.

SHEET NUMBER
DRAINAGE MAP

APPENDIX D
RAINFALL INTENSITY GRAPH



APPENDIX E
HYDROGRAPHS

Please see following pages:

Multi-Hydrograph Plot

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v12

Hyd. No. 1

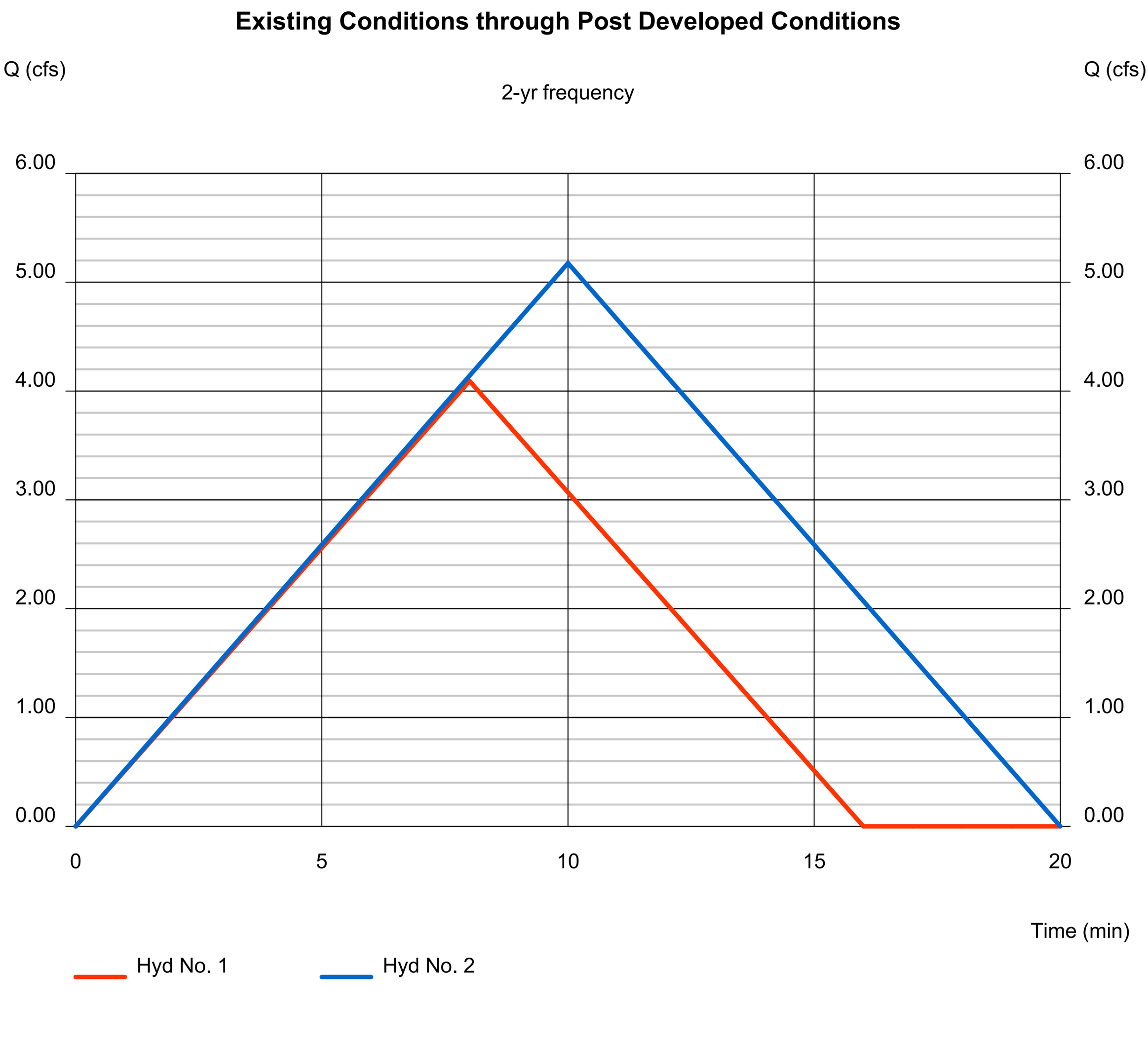
Existing Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	4.092 cfs
Time to peak	=	8 min
Hyd. Volume	=	1,964 cuft

Hyd. No. 2

Post Developed Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	5.18 cfs
Time to peak	=	10 min
Hyd. Volume	=	3,105 cuft



Multi-Hydrograph Plot

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v12

Hyd. No. 1

Existing Conditions

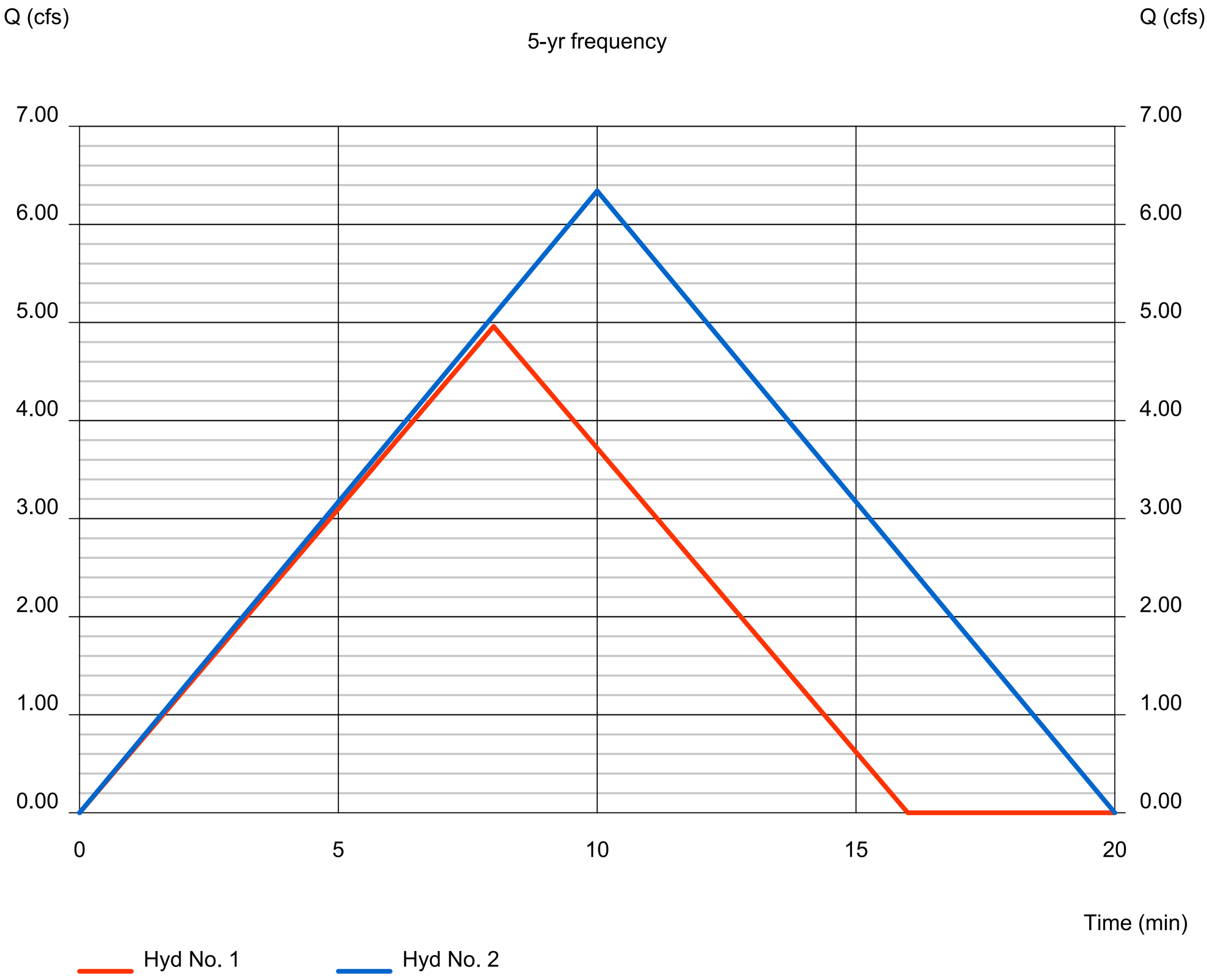
Hydrograph type	=	Mod. Rational
Peak discharge	=	4.958 cfs
Time to peak	=	8 min
Hyd. Volume	=	2,380 cuft

Hyd. No. 2

Post Developed Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	6.34 cfs
Time to peak	=	10 min
Hyd. Volume	=	3,805 cuft

Existing Conditions through Post Developed Conditions



Multi-Hydrograph Plot

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v12

Hyd. No. 1

Existing Conditions

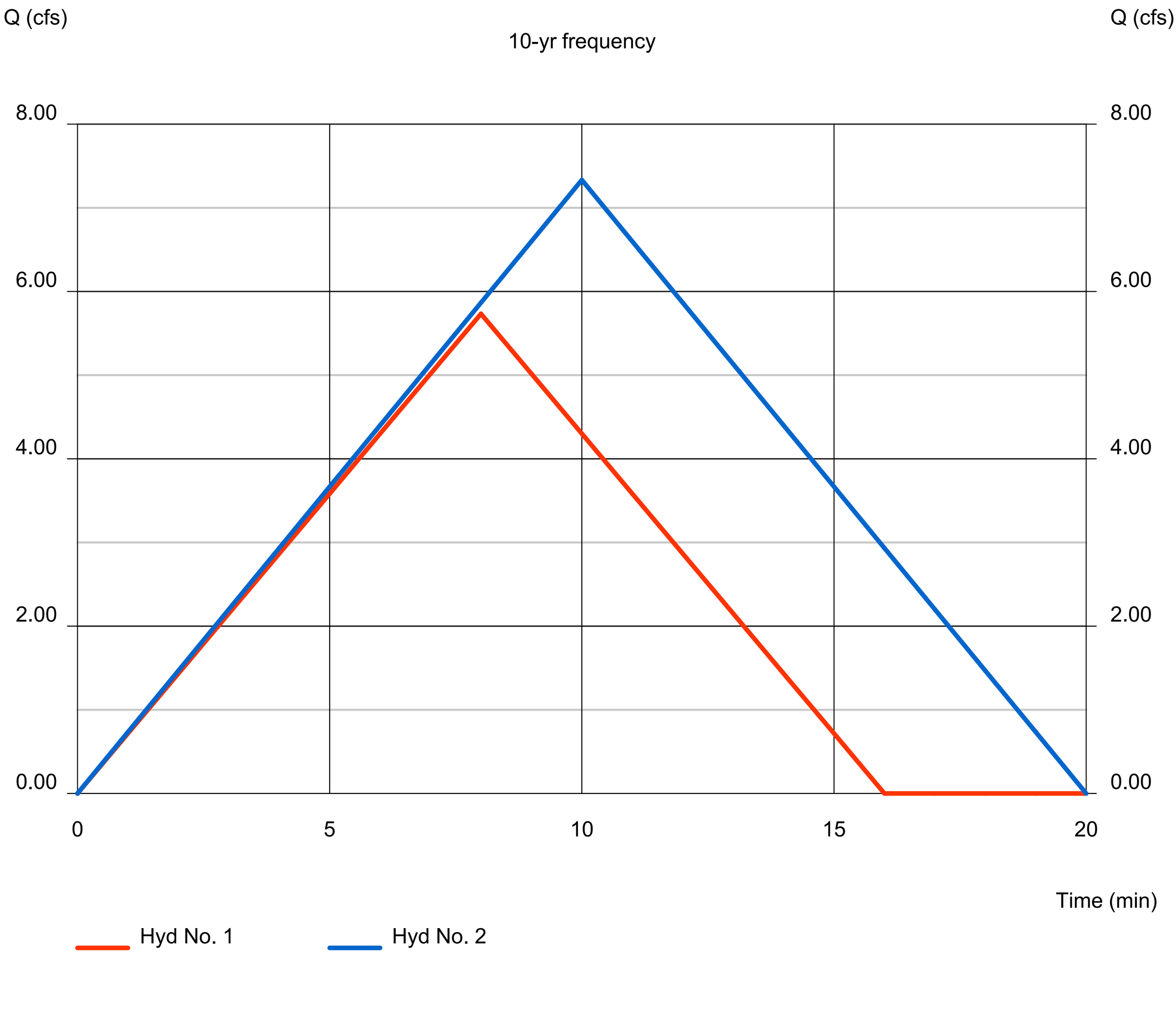
Hydrograph type	=	Mod. Rational
Peak discharge	=	5.733 cfs
Time to peak	=	8 min
Hyd. Volume	=	2,752 cuft

Hyd. No. 2

Post Developed Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	7.33 cfs
Time to peak	=	10 min
Hyd. Volume	=	4,399 cuft

Existing Conditions through Post Developed Conditions



Multi-Hydrograph Plot

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v12

Hyd. No. 1

Existing Conditions

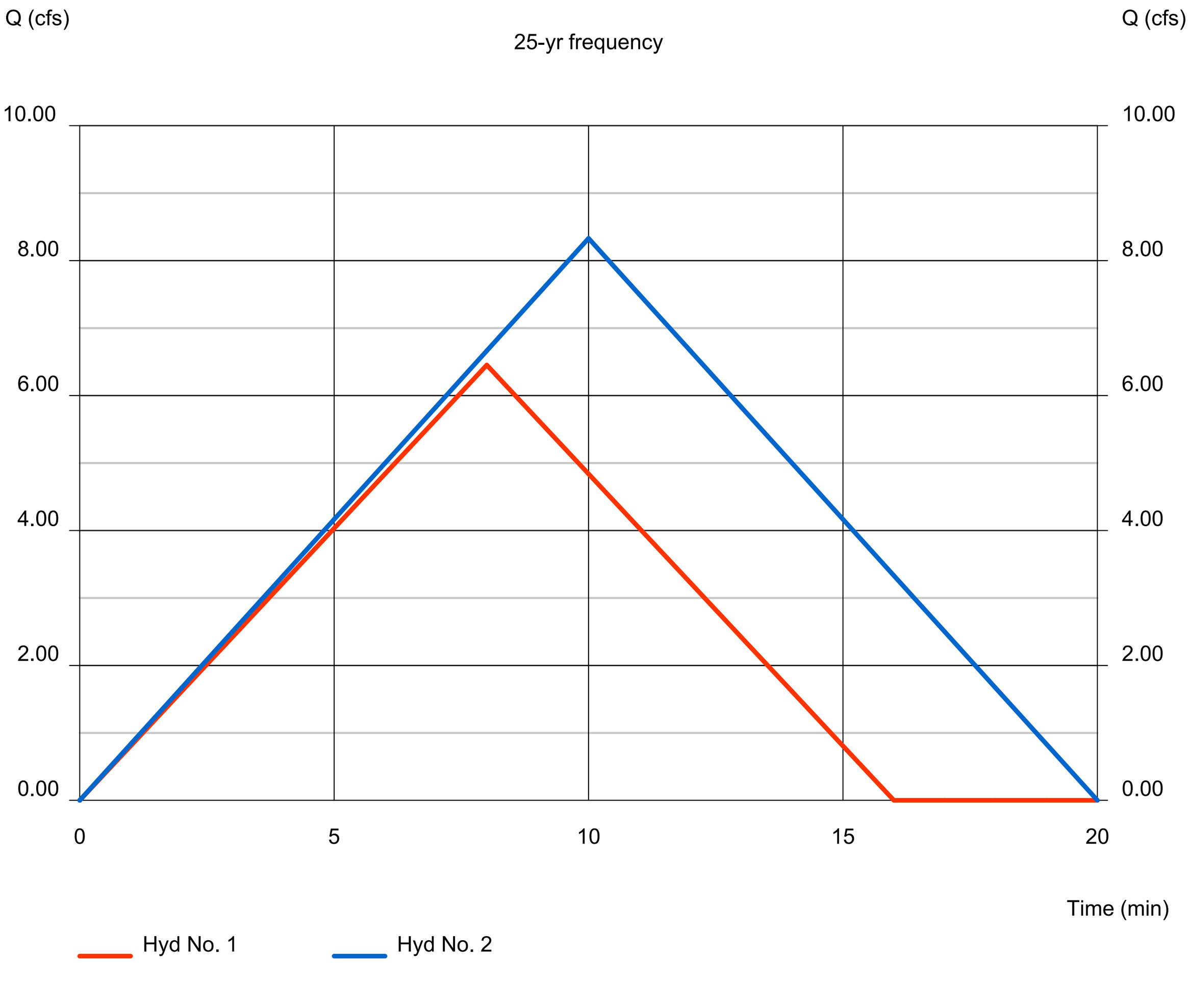
Hydrograph type	=	Mod. Rational
Peak discharge	=	6.452 cfs
Time to peak	=	8 min
Hyd. Volume	=	3,097 cuft

Hyd. No. 2

Post Developed Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	8.33 cfs
Time to peak	=	10 min
Hyd. Volume	=	4,998 cuft

Existing Conditions through Post Developed Conditions



Multi-Hydrograph Plot

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v12

Hyd. No. 1

Existing Conditions

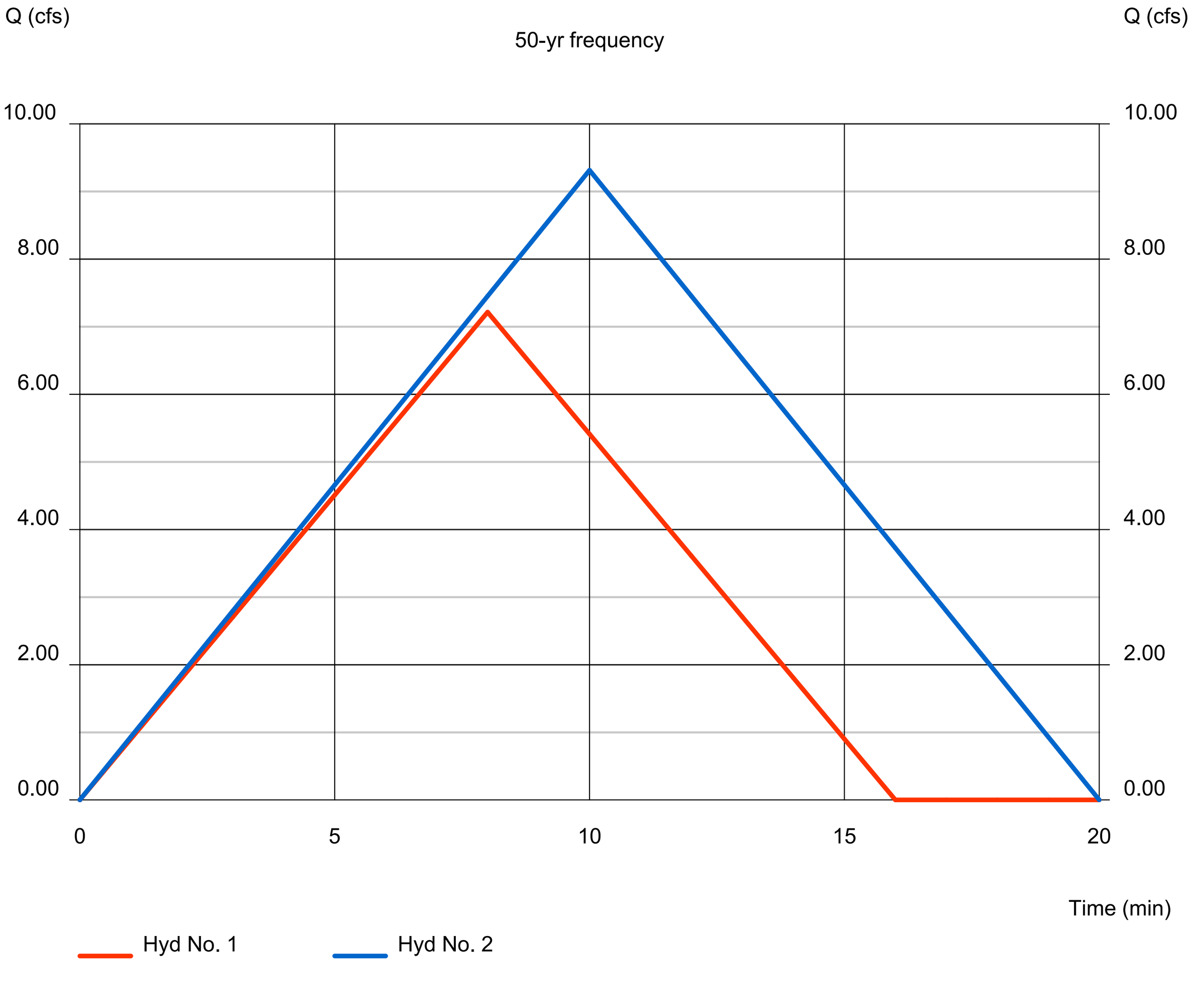
Hydrograph type	=	Mod. Rational
Peak discharge	=	7.215 cfs
Time to peak	=	8 min
Hyd. Volume	=	3,463 cuft

Hyd. No. 2

Post Developed Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	9.32 cfs
Time to peak	=	10 min
Hyd. Volume	=	5,589 cuft

Existing Conditions through Post Developed Conditions



Multi-Hydrograph Plot

Hyd. No. 1

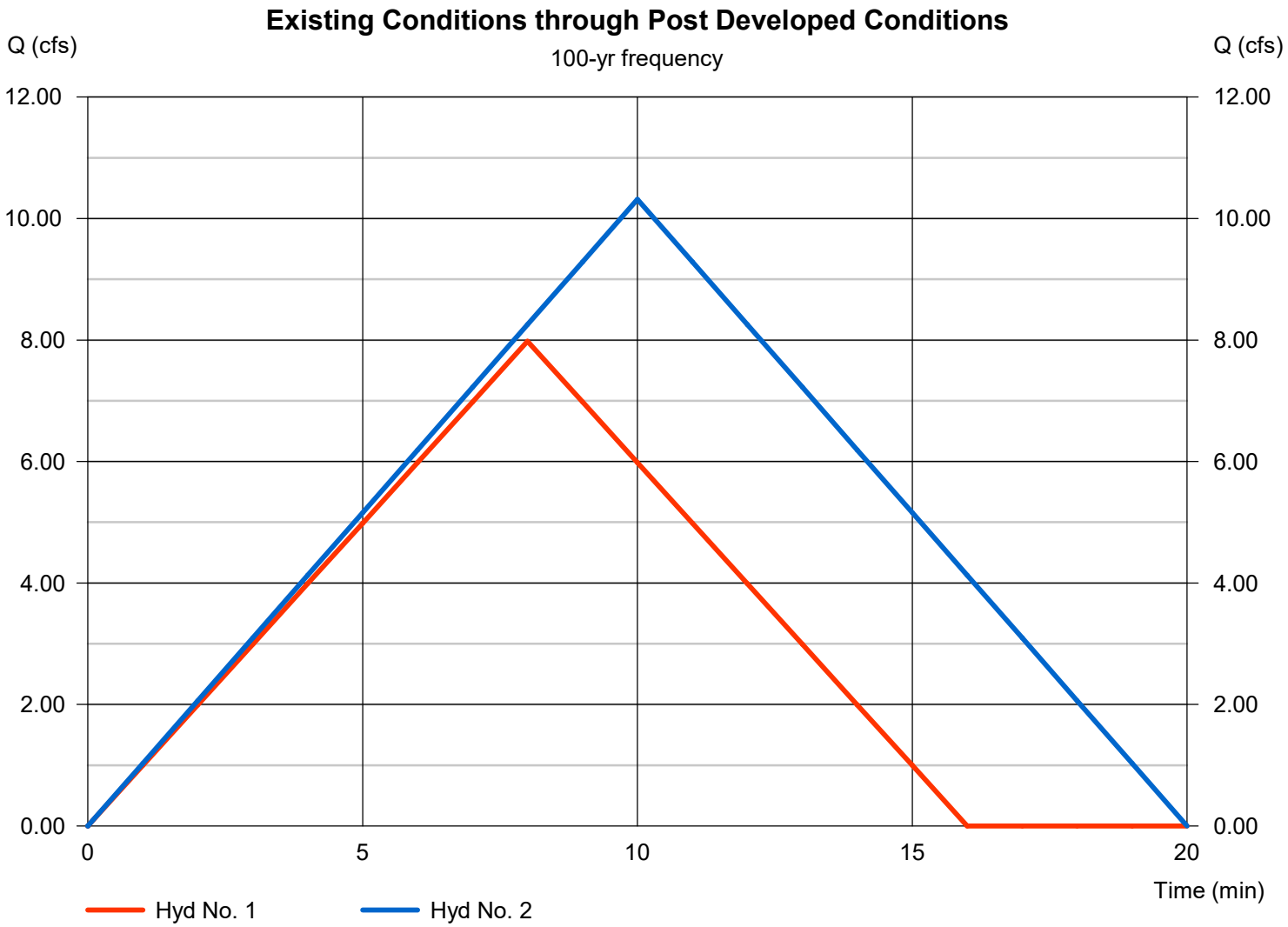
Existing Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	7.978 cfs
Time to peak	=	8 min
Hyd. Volume	=	3,829 cuft

Hyd. No. 2

Post Developed Conditions

Hydrograph type	=	Mod. Rational
Peak discharge	=	10.32 cfs
Time to peak	=	10 min
Hyd. Volume	=	6,190 cuft



APPENDIX F
PEAK DURATION

Please see following pages:

Peak Storage

DETERMINATION OF STORAGE VOLUME

Historic Conditions (undeveloped)

For 2-year storm event =

A	**=**	**1.18**				
"C"	**=**	**0.70**				
Tc	**=**	**8.00**				
i2	**=**	**4.95**				
Q2	**=**	**4.09**	**cfs**	**=**	**CiA**	**Maximum Release Rate**

Proposed Conditions (Developed)

A	**=**	**1.34**				
"C"	**=**	**0.85**	**Composite**			
Tc	**=**	**10.00**				
i2	**=**	**4.54**				
Q2	**=**	**5.17**	**cfs**	**=**	**CiA**	**Developed Flow**

Check various duration storms

5 Min.	**I=**	**5.75**	**Q =**	**6.6 cfs**
10 Min.	**I=**	**4.54**	**Q =**	**5.2 cfs**
15 Min.	**I=**	**3.78**	**Q =**	**4.3 cfs**
20 Min.	**I=**	**3.26**	**Q =**	**3.7 cfs**
25 Min.	**I=**	**2.87**	**Q =**	**3.3 cfs**
30 Min.	**I=**	**2.57**	**Q =**	**2.9 cfs**
35 Min.	**I=**	**2.34**	**Q =**	**2.7 cfs**
40 Min.	**I=**	**2.14**	**Q =**	**2.4 cfs**

Maximum Release Rate
Pond Release Rate = Historic Release Rate - Bypass, if any
Max Release (defined)= 3.68 - 0.00 3.68

Maximum Storage Volume is determined by deducting the volume of runoff releases from the total storm volume for each storm duration.

5 Min. Storm	**Inflow**	**5.00**	**6.55**	**60**	**1965.7 cf**
	Outflow	**15.00**	**3.68**	**30**	**1656.0 cf**
			Storage		**309.7 cf**
10 Min. Storm	**Inflow**	**10.00**	**5.18**	**60**	**3105.3 cf**

Peak Storage

	Outflow	20.00	3.68	30	2208.0	cf
	Storage				897.3	cf
15 Min. Storm	Inflow	15.00	4.31	60	3879.1	cf
	Outflow	25.00	3.68	30	2760.0	cf
	Storage				1119.1	cf
20 Min. Storm	Inflow	20.00	3.71	60	4453.9	cf
	Outflow	30.00	3.68	30	3312.0	cf
	Storage				1141.9	cf
25 Min. Storm	Inflow	25.00	3.27	60	4906.3	cf
	Outflow	35.00	3.68	30	3864.0	cf
	Storage				1042.3	cf
30 Min. Storm	Inflow	30.00	2.93	60	5276.9	cf
	Outflow	40.00	3.68	30	4416.0	cf
	Storage				860.9	cf
35 Min. Storm	Inflow	35.00	2.66	60	5589.7	cf
	Outflow	45.00	3.68	30	4968.0	cf
	Storage				621.7	cf
40 Min. Storm	Inflow	40.00	2.44	60	5859.4	cf
	Outflow	50.00	3.68	30	5520.0	cf
	Storage				339.4	cf

Peak Storage	1141.9 cf
Peak Duration	20.0 min

Peak Storage

DETERMINATION OF STORAGE VOLUME

Historic Conditions (undeveloped)

For 5-year storm event =

A	**=**	**1.18**				
"C"	**=**	**0.70**				
Tc	**=**	**8.00**				
i5	**=**	**6.00**				
Q5	**=**	**4.96**	**cfs**	**=**	**CiA**	**Maximum Release Rate**

Proposed Conditions (Developed)

A	**=**	**1.34**				
"C"	**=**	**0.85**	**Composite**			
Tc	**=**	**10.00**				
i5	**=**	**5.57**				
Q5	**=**	**6.34**	**cfs**	**=**	**CiA**	**Developed Flow**

Check various duration storms

10 Min.	**I=**	**5.57**	**Q =**	**6.3 cfs**
15 Min.	**I=**	**4.74**	**Q =**	**5.4 cfs**
20 Min.	**I=**	**4.14**	**Q =**	**4.7 cfs**
25 Min.	**I=**	**3.69**	**Q =**	**4.2 cfs**
30 Min.	**I=**	**3.34**	**Q =**	**3.8 cfs**
35 Min.	**I=**	**3.06**	**Q =**	**3.5 cfs**
40 Min.	**I=**	**2.82**	**Q =**	**3.2 cfs**
45 Min.	**I=**	**2.62**	**Q =**	**3.0 cfs**

Maximum Release Rate
Pond Release Rate = Historic Release Rate - Bypass, if any
Max Release (defined)= 4.57 - 0.00 4.57

Maximum Storage Volume is determined by deducting the volume of runoff releases from the total storm volume for each storm duration.

10 Min. Storm	**Inflow**	**10.00**	**6.34**	**60**	**3804.9**	**cf**
	Outflow	**20.00**	**4.57**	**30**	**2742.0**	**cf**
			Storage		**1062.9**	**cf**
15 Min. Storm	**Inflow**	**15.00**	**5.39**	**60**	**4854.8**	**cf**

Peak Storage

	Outflow	25.00	4.57	30	3427.5	cf
	Storage				1427.3	cf
20 Min. Storm	Inflow	20.00	4.72	60	5660.0	cf
	Outflow	30.00	4.57	30	4113.0	cf
	Storage				1547.0	cf
25 Min. Storm	Inflow	25.00	4.21	60	6308.3	cf
	Outflow	35.00	4.57	30	4798.5	cf
	Storage				1509.8	cf
30 Min. Storm	Inflow	30.00	3.80	60	6848.7	cf
	Outflow	40.00	4.57	30	5484.0	cf
	Storage				1364.7	cf
35 Min. Storm	Inflow	35.00	3.48	60	7310.8	cf
	Outflow	45.00	4.57	30	6169.5	cf
	Storage				1141.3	cf
40 Min. Storm	Inflow	40.00	3.21	60	7713.9	cf
	Outflow	50.00	4.57	30	6855.0	cf
	Storage				858.9	cf
45 Min. Storm	Inflow	45.00	2.99	60	8071.0	cf
	Outflow	55.00	4.57	30	7540.5	cf
	Storage				530.5	cf

Peak Storage	1547.0	cf
Peak Duration	20.0	min

Peak Storage

DETERMINATION OF STORAGE VOLUME

Historic Conditions (undeveloped)

For 10-year storm event =

A	**=**	**1.18**				
"C"	**=**	**0.70**				
Tc	**=**	**8.00**				
i10	**=**	**6.94**				
Q10	**=**	**5.73**	**cfs**	**=**	**CiA**	**Maximum Release Rate**

Proposed Conditions (Developed)

A	**=**	**1.34**	
"C"	**=**	**0.85**	**Composite**
Tc	**=**	**10.00**	
i10	**=**	**6.44**	
Q10	**=**	**7.34**	**cfs = CiA Developed Flow**

Check various duration storms

10 Min.	**I=**	**6.44**	**Q =**	**7.3 cfs**
15 Min.	**I=**	**5.48**	**Q =**	**6.2 cfs**
20 Min.	**I=**	**4.79**	**Q =**	**5.5 cfs**
25 Min.	**I=**	**4.27**	**Q =**	**4.9 cfs**
30 Min.	**I=**	**3.86**	**Q =**	**4.4 cfs**
35 Min.	**I=**	**3.53**	**Q =**	**4.0 cfs**
40 Min.	**I=**	**3.26**	**Q =**	**3.7 cfs**
45 Min.	**I=**	**3.03**	**Q =**	**3.5 cfs**

Maximum Release Rate
Pond Release Rate = Historic Release Rate - Bypass, if any
Max Release (defined)= 5.23 - 0.00 5.23

Maximum Storage Volume is determined by deducting the volume of runoff releases from the total storm volume for each storm duration.

10 Min. Storm	**Inflow**	**10.00**	**7.33**	**60**	**4399.4**	**cf**
	Outflow	**20.00**	**5.23**	**30**	**3138.0**	**cf**
		Storage			**1261.4**	**cf**
15 Min. Storm	**Inflow**	**15.00**	**6.24**	**60**	**5613.3**	**cf**

Peak Storage

	Outflow	25.00	5.23	30	3922.5 cf
	Storage				1690.8 cf
20 Min. Storm	Inflow	20.00	5.45	60	6544.4 cf
	Outflow	30.00	5.23	30	4707.0 cf
	Storage				1837.4 cf
25 Min. Storm	Inflow	25.00	4.86	60	7294.0 cf
	Outflow	35.00	5.23	30	5491.5 cf
	Storage				1802.5 cf
30 Min. Storm	Inflow	30.00	4.40	60	7918.8 cf
	Outflow	40.00	5.23	30	6276.0 cf
	Storage				1642.8 cf
35 Min. Storm	Inflow	35.00	4.03	60	8453.1 cf
	Outflow	45.00	5.23	30	7060.5 cf
	Storage				1392.6 cf
40 Min. Storm	Inflow	40.00	3.72	60	8919.2 cf
	Outflow	50.00	5.23	30	7845.0 cf
	Storage				1074.2 cf
45 Min. Storm	Inflow	45.00	3.46	60	9332.1 cf
	Outflow	55.00	5.23	30	8629.5 cf
	Storage				702.6 cf

Peak Storage	1837.4 cf
Peak Duration	20.0 min

Peak Storage

DETERMINATION OF STORAGE VOLUME

Historic Conditions (undeveloped)

For 25-year storm event =

A	**=**	**1.18**				
"C"	**=**	**0.70**				
Tc	**=**	**8.00**				
i25	**=**	**7.81**				
Q25	**=**	**6.45**	**cfs**	**=**	**CiA**	**Maximum Release Rate**

Proposed Conditions (Developed)

A	**=**	**1.34**	
"C"	**=**	**0.85**	**Composite**
Tc	**=**	**10.00**	
i25	**=**	**7.31**	
Q25	**=**	**8.33**	**cfs = CiA Developed Flow**

Check various duration storms

10 Min.	**I=**	**7.31**	**Q =**	**8.3 cfs**
15 Min.	**I=**	**6.33**	**Q =**	**7.2 cfs**
20 Min.	**I=**	**5.61**	**Q =**	**6.4 cfs**
25 Min.	**I=**	**5.04**	**Q =**	**5.7 cfs**
30 Min.	**I=**	**4.60**	**Q =**	**5.2 cfs**
35 Min.	**I=**	**4.23**	**Q =**	**4.8 cfs**
40 Min.	**I=**	**3.92**	**Q =**	**4.5 cfs**
45 Min.	**I=**	**3.66**	**Q =**	**4.2 cfs**

Maximum Release Rate
Pond Release Rate = Historic Release Rate - Bypass, if any
Max Release (defined)= 5.60 - 0.00 5.60

Maximum Storage Volume is determined by deducting the volume of runoff releases from the total storm volume for each storm duration.

10 Min. Storm	**Inflow**	**10.00**	**8.33**	**60**	**4997.9**	**cf**
	Outflow	**20.00**	**5.60**	**30**	**3360.0**	**cf**
			Storage		**1637.9**	**cf**
15 Min. Storm	**Inflow**	**15.00**	**7.21**	**60**	**6491.2**	**cf**

Peak Storage

	Outflow	25.00	5.60	30	4200.0	cf
	Storage				2291.2	cf
20 Min. Storm	Inflow	20.00	6.39	60	7662.6	cf
	Outflow	30.00	5.60	30	5040.0	cf
	Storage				2622.6	cf
25 Min. Storm	Inflow	25.00	5.75	60	8619.3	cf
	Outflow	35.00	5.60	30	5880.0	cf
	Storage				2739.3	cf
30 Min. Storm	Inflow	30.00	5.24	60	9424.1	cf
	Outflow	40.00	5.60	30	6720.0	cf
	Storage				2704.1	cf
35 Min. Storm	Inflow	35.00	4.82	60	10116.7	cf
	Outflow	45.00	5.60	30	7560.0	cf
	Storage				2556.7	cf
40 Min. Storm	Inflow	40.00	4.47	60	10723.4	cf
	Outflow	50.00	5.60	30	8400.0	cf
	Storage				2323.4	cf
45 Min. Storm	Inflow	45.00	4.17	60	11262.4	cf
	Outflow	55.00	5.60	30	9240.0	cf
	Storage				2022.4	cf

Peak Storage	2739.3	cf
Peak Duration	25.0	min

Peak Storage

DETERMINATION OF STORAGE VOLUME

Historic Conditions (undeveloped)

For 50-year storm event =

A	**=**	**1.18**				
"C"	**=**	**0.70**				
Tc	**=**	**8.00**				
i50	**=**	**8.74**				
Q50	**=**	**7.22**	**cfs**	**=**	**CiA**	**Maximum Release Rate**

Proposed Conditions (Developed)

A	**=**	**1.34**	
"C"	**=**	**0.85**	**Composite**
Tc	**=**	**10.00**	
i50	**=**	**8.18**	
Q50	**=**	**9.32**	**cfs = CiA Developed Flow**

Check various duration storms

10 Min.	**I=**	**8.18**	**Q =**	**9.3 cfs**
15 Min.	**I=**	**7.08**	**Q =**	**8.1 cfs**
20 Min.	**I=**	**6.27**	**Q =**	**7.1 cfs**
25 Min.	**I=**	**5.64**	**Q =**	**6.4 cfs**
30 Min.	**I=**	**5.14**	**Q =**	**5.9 cfs**
35 Min.	**I=**	**4.73**	**Q =**	**5.4 cfs**
40 Min.	**I=**	**4.39**	**Q =**	**5.0 cfs**
45 Min.	**I=**	**4.10**	**Q =**	**4.7 cfs**

Maximum Release Rate
Pond Release Rate = Historic Release Rate - Bypass, if any
Max Release (defined)= 5.94 - 0.00 5.94

Maximum Storage Volume is determined by deducting the volume of runoff releases from the total storm volume for each storm duration.

10 Min. Storm	**Inflow**	**10.00**	**9.32**	**60**	**5589.0**	**cf**
	Outflow	**20.00**	**5.94**	**30**	**3564.0**	**cf**
			Storage		**2025.0**	**cf**
15 Min. Storm	**Inflow**	**15.00**	**8.07**	**60**	**7258.9**	**cf**

Peak Storage

	Outflow	25.00	5.94	30	4455.0 cf
	Storage				2803.9 cf
20 Min. Storm	Inflow	20.00	7.14	60	8568.9 cf
	Outflow	30.00	5.94	30	5346.0 cf
	Storage				3222.9 cf
25 Min. Storm	Inflow	25.00	6.43	60	9638.8 cf
	Outflow	35.00	5.94	30	6237.0 cf
	Storage				3401.8 cf
30 Min. Storm	Inflow	30.00	5.85	60	10538.8 cf
	Outflow	40.00	5.94	30	7128.0 cf
	Storage				3410.8 cf
35 Min. Storm	Inflow	35.00	5.39	60	11313.3 cf
	Outflow	45.00	5.94	30	8019.0 cf
	Storage				3294.3 cf
40 Min. Storm	Inflow	40.00	5.00	60	11991.7 cf
	Outflow	50.00	5.94	30	8910.0 cf
	Storage				3081.7 cf
45 Min. Storm	Inflow	45.00	4.66	60	12594.5 cf
	Outflow	55.00	5.94	30	9801.0 cf
	Storage				2793.5 cf

Peak Storage	3410.8 cf
Peak Duration	30.0 min

Peak Storage

DETERMINATION OF STORAGE VOLUME

Historic Conditions (undeveloped)

For 100-year storm event =

A	**=**	**1.18**				
"C"	**=**	**0.70**				
Tc	**=**	**8.00**				
i100	**=**	**9.66**				
Q100	**=**	**7.98**	**cfs**	**=**	**CiA**	**Maximum Release Rate**

Proposed Conditions (Developed)

A	**=**	**1.34**				
"C"	**=**	**0.85**	**Composite**			
Tc	**=**	**10.00**				
i100	**=**	**9.06**				
Q100	**=**	**10.32**	**cfs**	**=**	**CiA**	**Developed Flow**

Check various duration storms

10 Min.	**I=**	**9.06**	**Q =**	**10.3 cfs**
15 Min.	**I=**	**7.87**	**Q =**	**9.0 cfs**
20 Min.	**I=**	**6.99**	**Q =**	**8.0 cfs**
25 Min.	**I=**	**6.31**	**Q =**	**7.2 cfs**
30 Min.	**I=**	**5.76**	**Q =**	**6.6 cfs**
35 Min.	**I=**	**5.31**	**Q =**	**6.0 cfs**
40 Min.	**I=**	**4.94**	**Q =**	**5.6 cfs**
45 Min.	**I=**	**4.62**	**Q =**	**5.3 cfs**

Maximum Release Rate
Pond Release Rate = Historic Release Rate - Bypass, if any
Max Release (defined)= 6.30 - 0.00 6.30

Maximum Storage Volume is determined by deducting the volume of runoff releases from the total storm volume for each storm duration.

10 Min. Storm	**Inflow**	**10.00**	**10.32**	**60**	**6189.9**	**cf**
	Outflow	**20.00**	**6.30**	**30**	**3780.0**	**cf**
			Storage		**2409.9**	**cf**
15 Min. Storm	**Inflow**	**15.00**	**8.97**	**60**	**8068.8**	**cf**

Peak Storage

	Outflow	25.00	6.30	30	4725.0	cf
	Storage				3343.8	cf
20 Min. Storm	Inflow	20.00	7.96	60	9554.2	cf
	Outflow	30.00	6.30	30	5670.0	cf
	Storage				3884.2	cf
25 Min. Storm	Inflow	25.00	7.18	60	10775.9	cf
	Outflow	35.00	6.30	30	6615.0	cf
	Storage				4160.9	cf
30 Min. Storm	Inflow	30.00	6.56	60	11809.9	cf
	Outflow	40.00	6.30	30	7560.0	cf
	Storage				4249.9	cf
35 Min. Storm	Inflow	35.00	6.05	60	12704.6	cf
	Outflow	45.00	6.30	30	8505.0	cf
	Storage				4199.6	cf
40 Min. Storm	Inflow	40.00	5.62	60	13492.1	cf
	Outflow	50.00	6.30	30	9450.0	cf
	Storage				4042.1	cf
45 Min. Storm	Inflow	45.00	5.26	60	14195.0	cf
	Outflow	55.00	6.30	30	10395.0	cf
	Storage				3800.0	cf

Peak Storage	4249.9	cf
Peak Duration	30.0	min

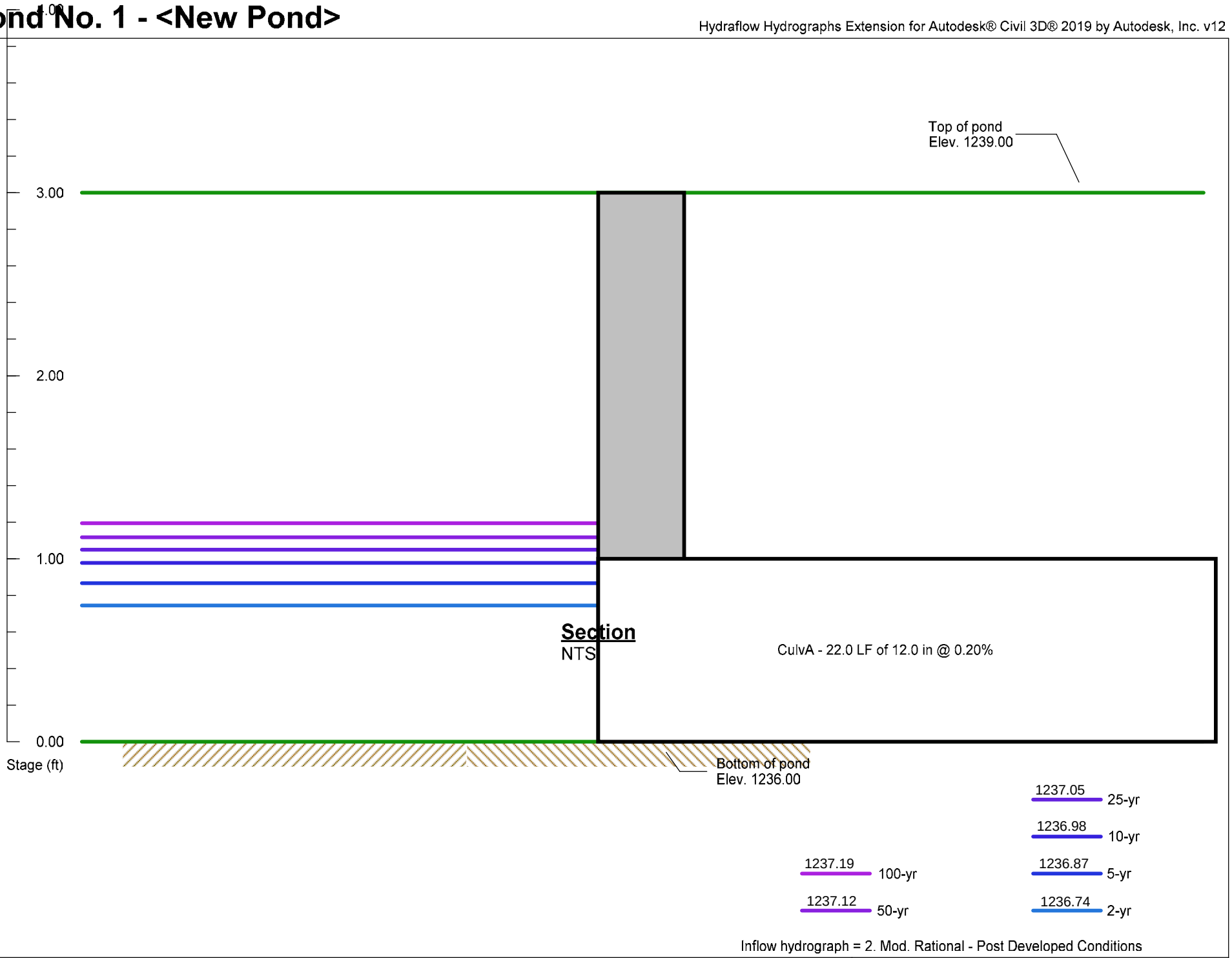
APPENDIX G
POND STORAGE TABLE

Detention Pond Storage				
Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incremental Storage (cuft)	Total Storage (cu-ft)
0.00	1236.00	876	0	0
1.00	1237.00	2,629	1,674	1,674
2.00	1238.00	5,137	3,813	5,478
3.00	1239.00	6,760	5,929	11,417

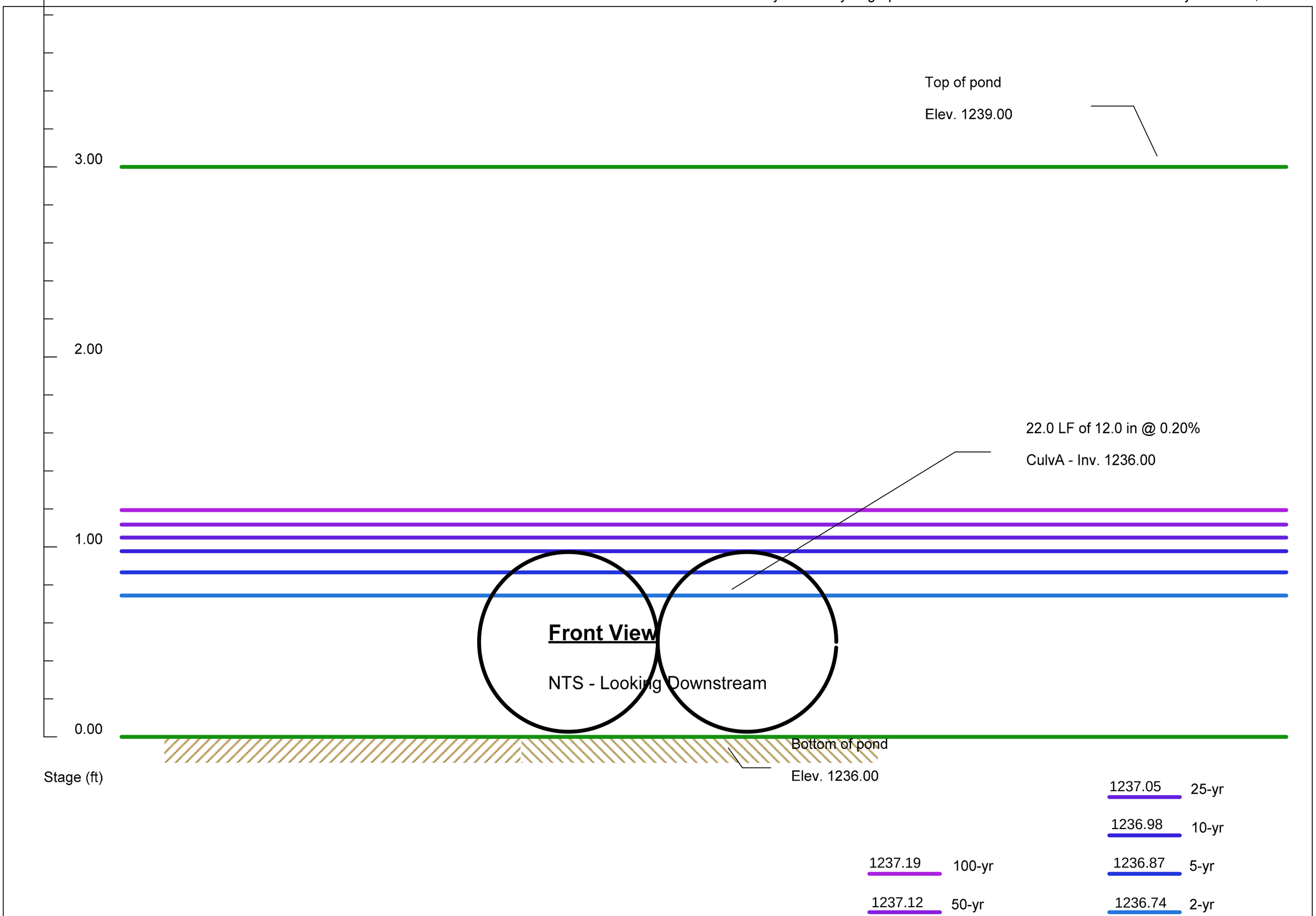
APPENDIX H
HYDRAFLOW SCHEMATICS

Please see following pages:

Pond No. 1 - <New Pond>



Pond No. 1 - <New Pond>



Inflow hydrograph = 2. Mod. Rational - Post Developed Conditions

STANDARD 3' CUT OFF WALL

EMERGENCY 2' WIDE OVERFLOW CONC. FLUME FL=1237.89'

MANHOLE #2
SEE DETAILS SHEET DD2

INSTALL NEW ROOF DRAIN

INSTALL NEW ROOF DRAIN

SANITARY SEWER SERVICE LINE
SEE DETAILS SHEET SS1

MANHOLE #1
SEE DETAILS SHEET DD2

WEST DRAINAGE – 12" ADS PIPE
SEE DETAILS SHEET DD2

TIE INTO EXISTING DRAINAGE
SEE DETAILS SHEET DD2

BENCHMARK #2
N: 728127.7101
E: 2126568.2951
ELEV: 1238.84

6 C.Y. OF RIP RAP
8" SURGE ROCK W/
18" DEPTH

EMERGENCY 2' WIDE OVERFLOW CONC. FLUME FL=1283.00'

DUAL 12" PIPE CONCRETE ENDWALL

OUTLET – DUAL 12" ADS PIPES GROUTED INTO CONC. END WALLS w/ WATER TIGHT CONNECTIONS
SEE DETAILS SHEET DD4

STANDARD 3' CUT OFF WALL

4' WIDE TRICKLE CHANNEL
SEE DETAIL THIS SHEET

PROPOSED BUILDING LOCATION
F.F. = 1242.48'

INSTALL NEW ROOF DRAIN

REMOVE EXIST. DRAINAGE STRUCTURE

REMOVE EXISTING GAS LINE

TIE INTO EXISTING DRAINAGE
SEE DETAILS SHEET DD3

REPAIR 20 S.F.
CONC. SIDEWALK

CAP EXISTING GAS LINE

EAST DRAINAGE – 12" ADS PIPE
SEE DETAILS SHEET DD3

MANHOLE #3
SEE DETAILS SHEET DD3

INSTALL NEW ROOF DRAIN

BENCHMARK #1
N: 728514.0174
E: 2126615.1805
ELEV: 1243.63

1" MIN. SOD

18"

SLOPE TO NATURAL GROUND
REVEGETATE w/GRASS SOD

NOTE:
ANY UTILITIES TO BE ABANDONED MUST BE REMOVED.

CUT: 210 Cu.Yd.
FILL: 3,020 Cu.Yd.
NET: 2,810 Cu.Yd. – FILL

20 10 0 20 40

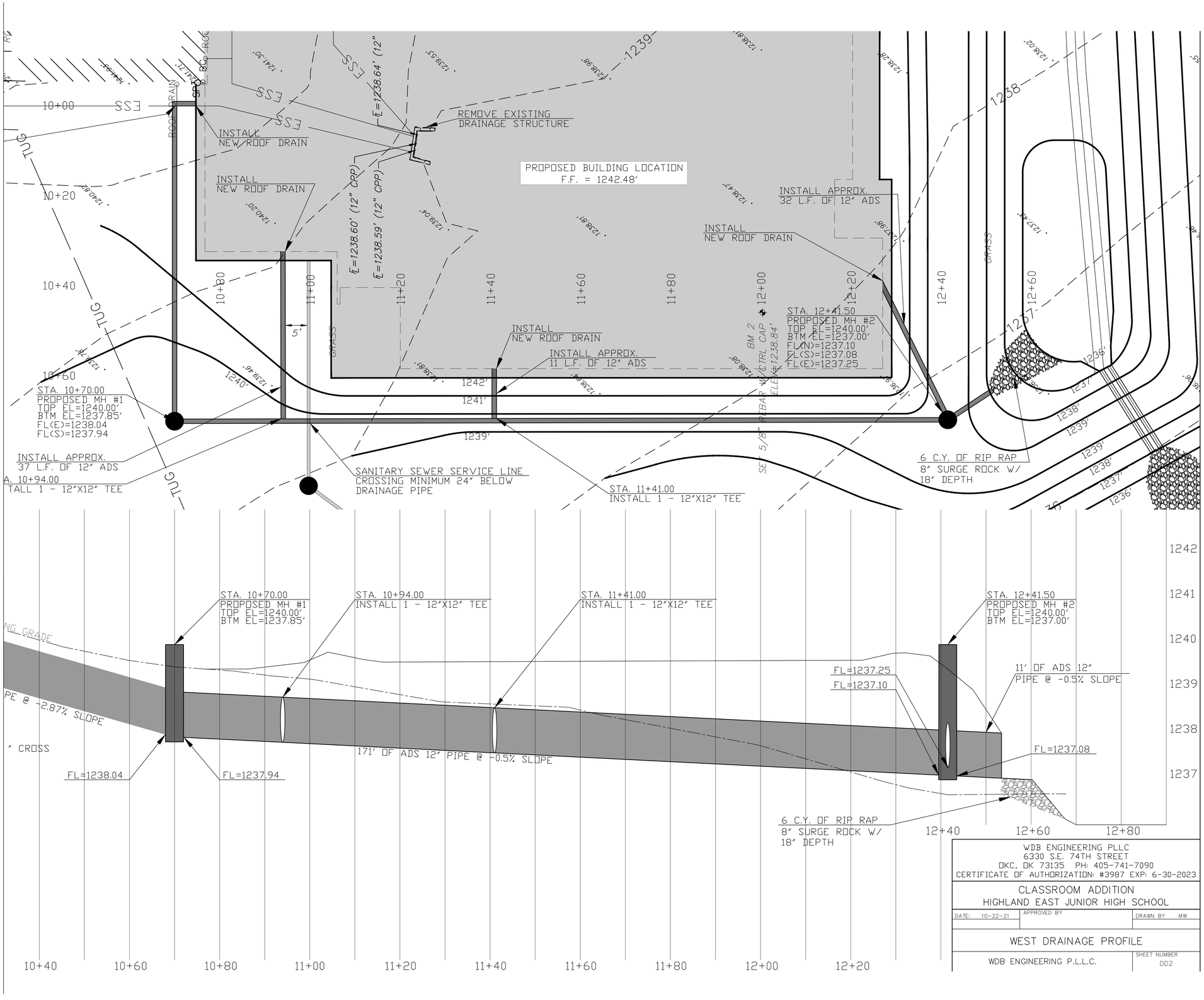
WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 10-25-2021	APPROVED BY	DRAWN BY MW

SITE GRADING AND DETENTION

WDB ENGINEERING P.L.L.C. | SHEET NUMBER DD1



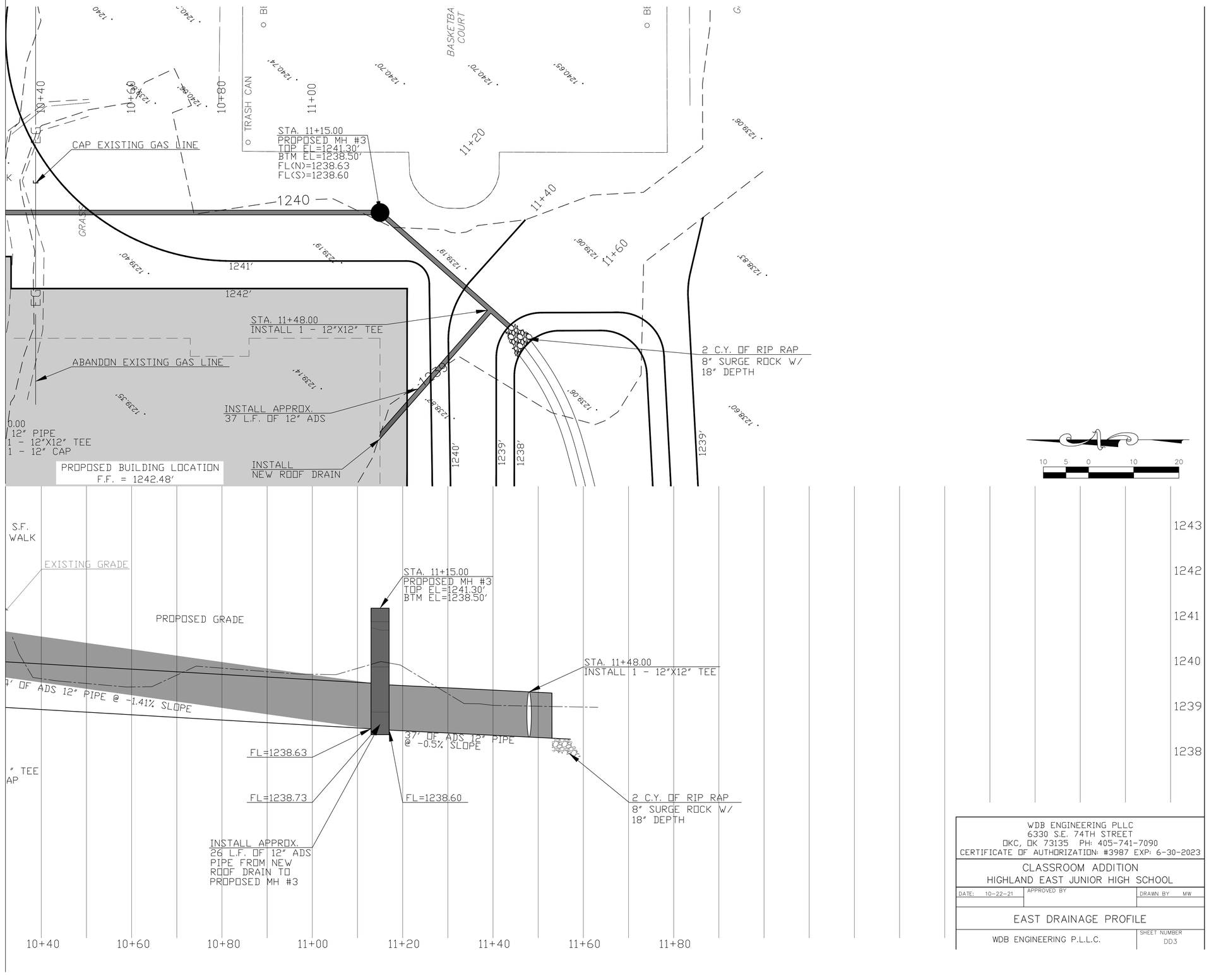
WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 10-22-21	APPROVED BY	DRAWN BY MW

WEST DRAINAGE PROFILE

WDB ENGINEERING P.L.L.C. | SHEET NUMBER DD2



10 5 0 10 20

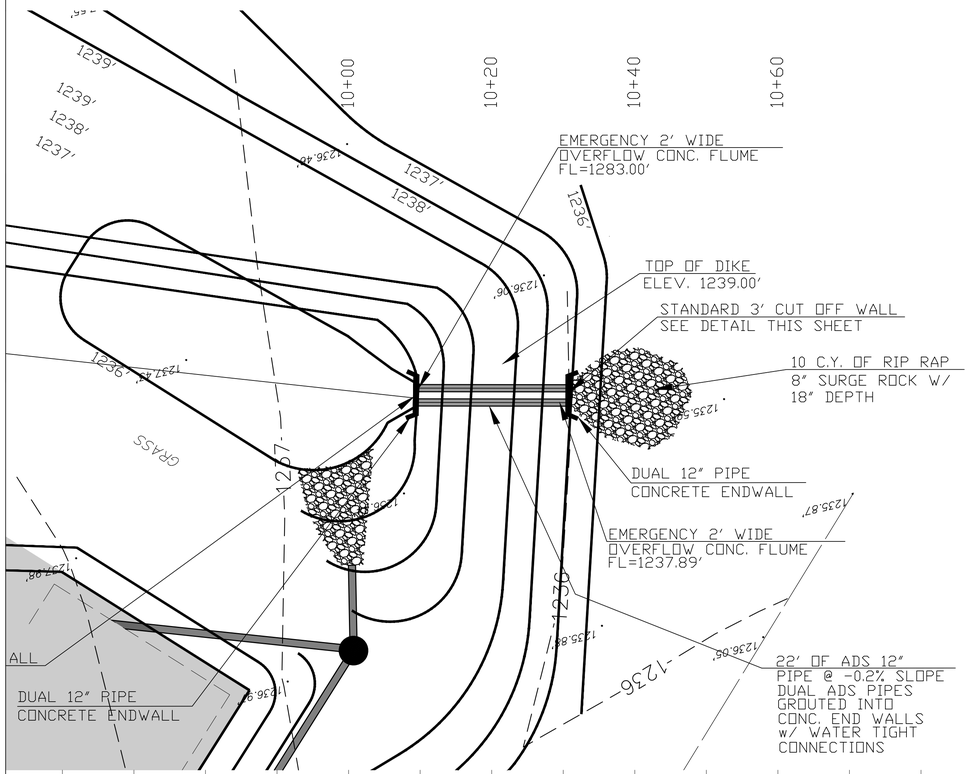
WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

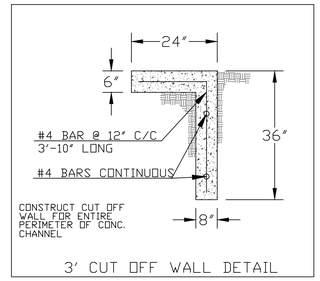
CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 10-22-21	APPROVED BY	DRAWN BY MW

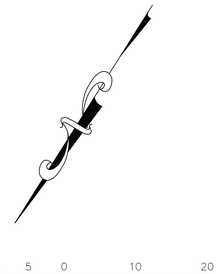
EAST DRAINAGE PROFILE

WDB ENGINEERING P.L.L.C. | SHEET NUMBER DD3

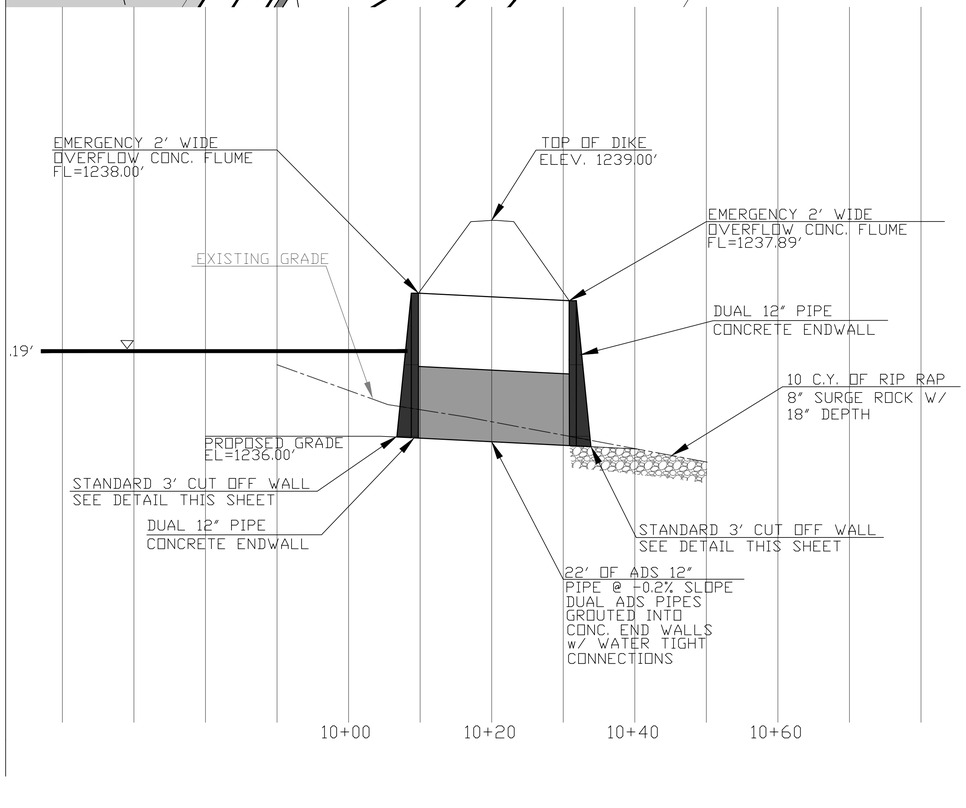




3' CUT OFF WALL DETAIL



10 5 0 10 20



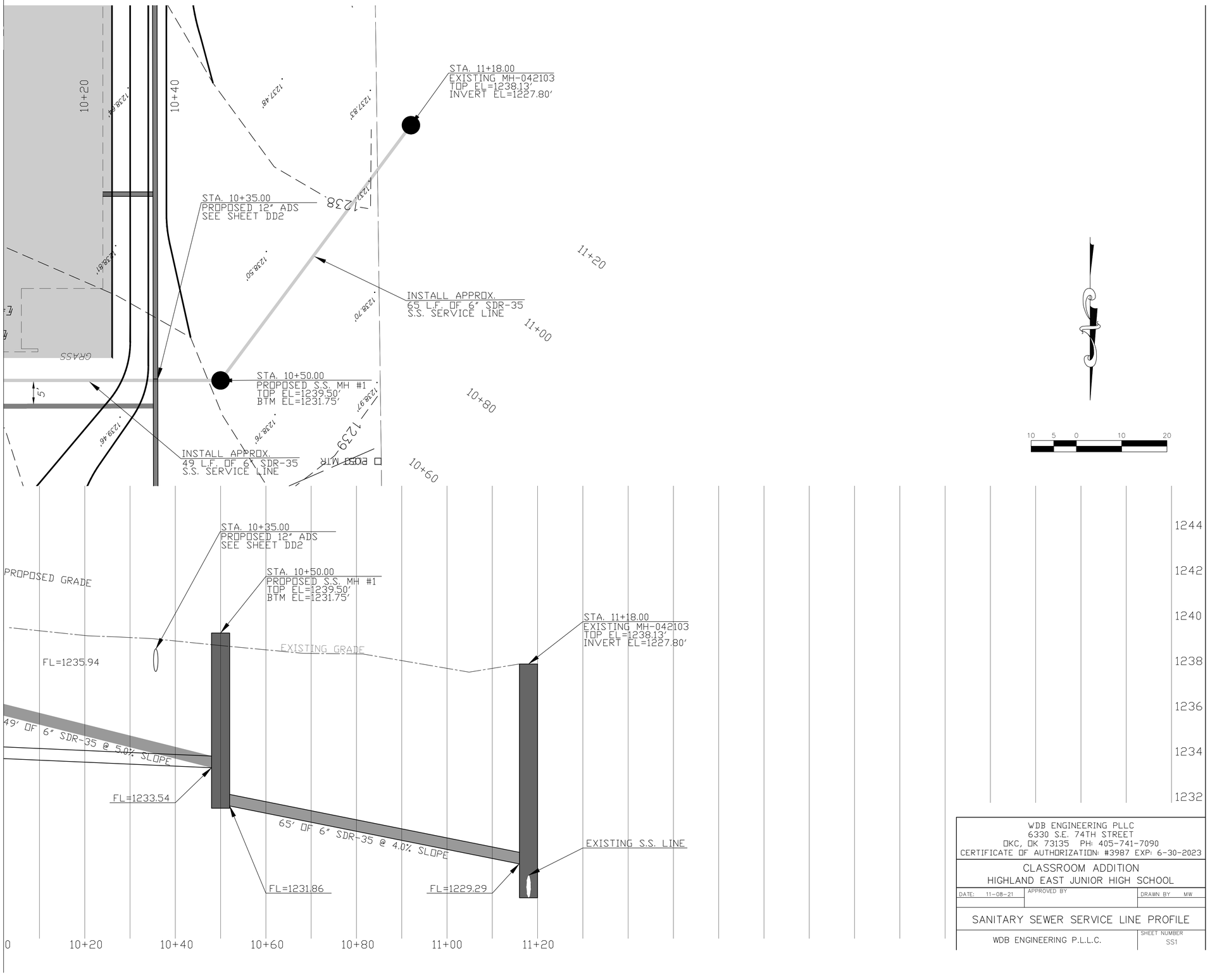
WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 10-22-21	APPROVED BY	DRAWN BY MW

OUTLET PROFILE

WDB ENGINEERING P.L.L.C. | SHEET NUMBER DD4



WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 11-08-21	APPROVED BY	DRAWN BY MW

SANITARY SEWER SERVICE LINE PROFILE

WDB ENGINEERING P.L.L.C.

SHEET NUMBER SS1

STORM WATER MANAGEMENT PLAN

CRIPTION

NW1/4 SECTION 24, T-10-N, R-3-W,
UNTY

-DING, BUILDING CONSTRUCTION AND
E

CONTROL ACTIVITIES:

E: SILT LOAM

: 1.20 ACRES

)

)

: 35°19'58.7504"N, 97°28'11.6473"W

L DISCHARGE TO:

: LITTLE RIVER

: YES [X] NO [ ]

S: YES [ ] NO [X]

ONJUNCTION WITH A DRAINAGE
TTERNS/PATHWAYS AND RECEIVING
HOULD ALSO BE USED WITH THE
& NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- ____ TEMPORARY SEEDING
- X PERMANENT SODDING, SPRIGGING OR SEEDING
- ____ VEGETATIVE MULCHING
- ____ SOIL RETENTION BLANKET
- ____ PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- ____ STABILIZED CONSTRUCTION EXIT
- X TEMPORARY SILT FENCE
- ____ TEMPORARY SILT DIKES
- ____ TEMPORARY FIBER LOG
- ____ DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- ____ DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ____ ROCK FILTER DAMS
- ____ TEMPORARY SLOPE DRAIN
- ____ PAVED DITCH W/ DITCH LINER PROTECTION
- ____ TEMPORARY DIVERSION CHANNELS
- ____ TEMPORARY SEDIMENT BASINS
- ____ TEMPORARY SEDIMENT TRAPS
- ____ TEMPORARY SEDIMENT FILTERS
- X TEMPORARY SEDIMENT REMOVAL
- X RIP RAP
- ____ INLET SEDIMENT FILTER
- ____ TEMPORARY BRUSH SEDIMENT BARRIERS
- ____ SANDBAG BERMS
- ____ TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- X HAUL ROADS DAMPENED FOR DUST CONTROL
- X LOADED HAUL TRUCKS TO BE COVERED W/ TARPAULIN
- X EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:
ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGE WAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIAL:
PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INLCUDE STOCPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:
PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:
PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.
CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.
CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

103.05 BONDING REQUIREMENTS
104.10 FINAL CLEANING UP
104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
104.13 ENVIRONMENTAL PROTECTION
106.08 STORAGE AND HANDLING MATERIAL
107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
107.20 STORM WATER MANGEMENT
220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
221 TEMPORARY SEDIMENT CONTROL

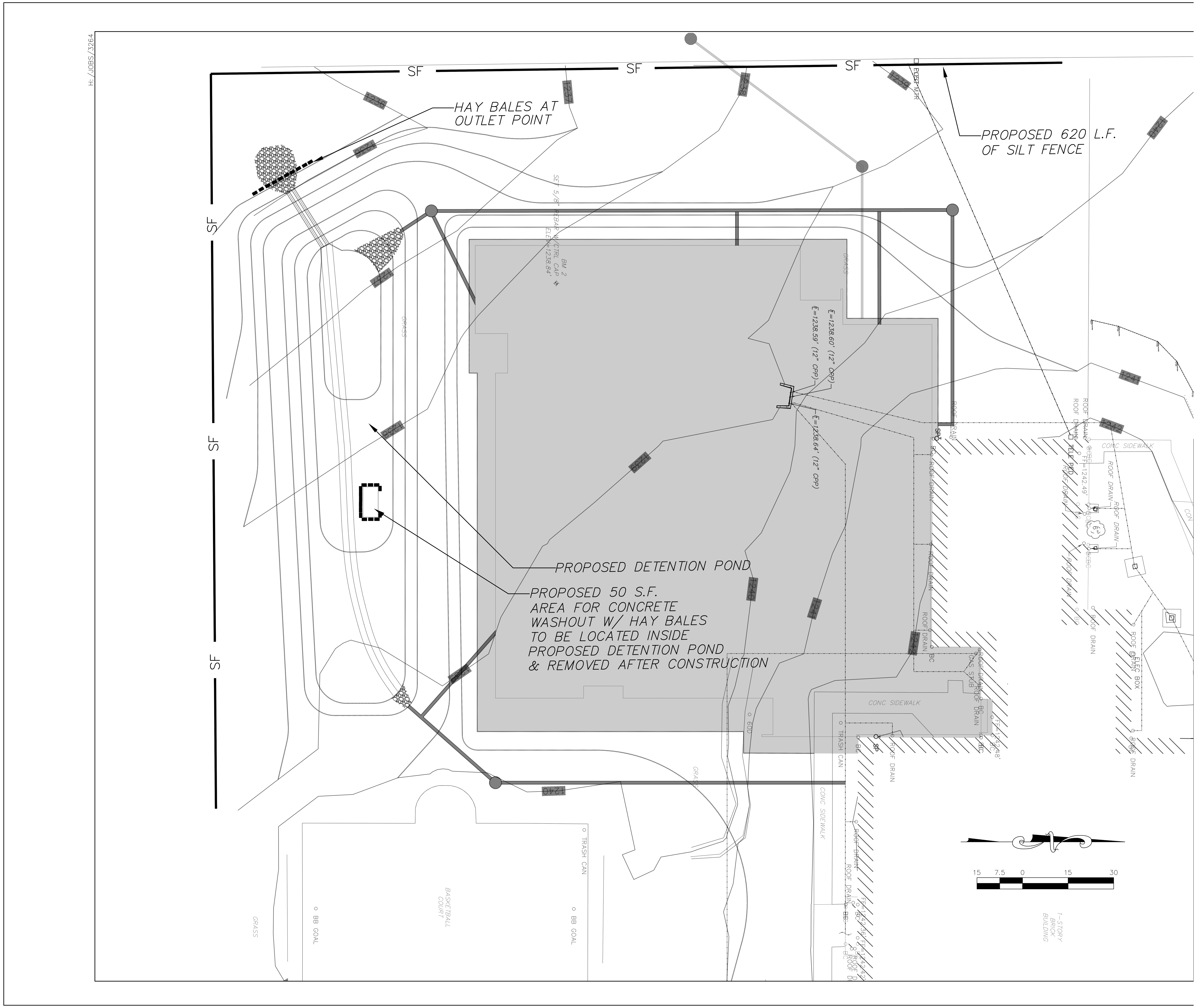
WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405-741-7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 03-14-2022	APPROVED BY	DRAWN BY MW

STORM WATER MANAGEMENT PLAN

WDB ENGINEERING P.L.L.C.	SHEET NUMBER SWPPP1



H:/JOBS/3264
SF
HAY BALES AT OUTLET POINT
PROPOSED 620 L.F. OF SILT FENCE
PROPOSED DETENTION POND
PROPOSED 50 S.F. AREA FOR CONCRETE WASHOUT W/ HAY BALES TO BE LOCATED INSIDE PROPOSED DETENTION POND & REMOVED AFTER CONSTRUCTION
CONC SIDEWALK
ROOF DRAIN
TRASH CAN
BB GOAL
BASKETBALL COURT
GRASS
ELEC BOX
1-STORY BRICK BUILDING
15
7.5
0
15
30

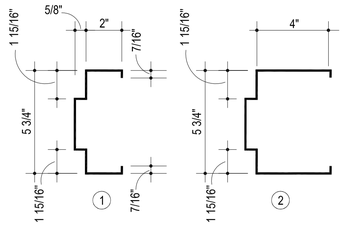
	DOOR NO.	LOCATION FROM	LOCATION TO	DOOR ELEV.	DOOR MAT'L	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR SIZE TH' K	FRAME ELEV.	DOOR DETAILS HEAD	DOOR DETAILS SILL	DOOR DETAILS JAMB	DOOR DETAILS JAMB	REMARKS	HDWR. SET NO.
	1	3	EXT.	A	HM.	PR. 3'-0"	7'-0"	1 3/4"	A	1A501	15A501	8A501	8A501		1
	2	1	3	〃	WD.	PR. 3'-0"	〃	〃	〃	2A501	16A501	9A501	9A501		7
	3	28	EXT.		HM.	PR. 3'-0"				1A501	15A501	8A501	8A501		1
	4	24	28		WD.	PR. 3'-0"				2A501	16A501	9A501	9A501		7
	5	20	EXT.		HM.	PR. 3'-0"				1A501	15A501	8A501	8A501		1
	6	19	20		WD.	PR. 3'-0"				2A501	16A501	9A501	9A501		7
	7	13	EXT.	﹀	HM.	PR. 3'-0"				1A501	15A501	8A501	8A501		1
	8	10	13	A	WD.	PR. 3'-0"				2A501	16A501	9A501	9A501		7
	9	2	1	B	〃	3'-0"				〃	〃	〃	〃	20 MIN. DR & FRAME	5
	10	4	10	A		〃									4
	11	5	10	〃											4
	12	6	10												4
	13	8	10												4
	14	7	10	﹀											4
	15	9	10	A											4
	16	10	14a	B		﹀									5
	17	10	14	B		3'-0"								20 MIN. DR & FRAME	5
1	18	CHS	10	B		2'-0"									6
	19	19	15	B		PR. 3'-0"								90 MIN. DR & FRAME	2
	20	16	19	A		3'-0"									4
	21	17	16	〃		〃									3
	22	17	18												3
	23	18	19												4
	24	21	24												4
	25	22	21												3
	26	22	23												3
	27	23	24												4
	28	25	24												4
	29	26	25												3
	30	26	27	﹀											3
	31	27	24	A		﹀				﹀		﹀	﹀		4
	32	--	--	B		3'-0"				2A501		9A501	9A501	12 LOCATIONS	6
	33	EXIST	1	B		PR. 3'-0"				17A501		24A501	24A501	90 MIN. DR & FRAME	8
	34	CHS	10	B		2'-0"				2A501		9A501	9A501		6
1	35	**	11	D	﹀	3'-0"	﹀	﹀	﹀	2A501	﹀	9A501	9A501	2 LOCATIONS	9
2	36	11	**	D	WD.	2'-0"	7'-0"	1 3/4"	A	2A501	16A501	9A501	9A501	8 LOCATIONS	9

1 DOOR SCHEDULE 1

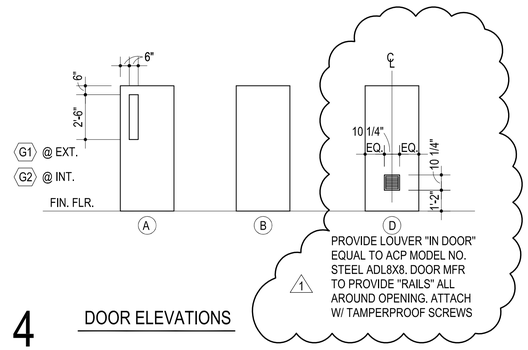
G1 7/8" NOM. TEMPERED INSULATING GLASS

G2 1/4" CLEAR TEMPERED GLASS

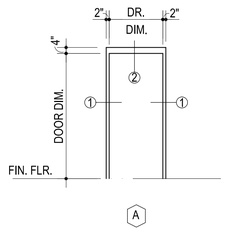
2 GLAZING SCHEDULE



3 FRAME PROFILE



4 DOOR ELEVATIONS



5 DOOR FRAME ELEVATIONS

Hardware Group No. 009: Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr	
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE	2
1	EA	PRIVACY SET	L9444 03N	626	SCH	
1	EA	WALL STOP	WS407CCV OR FS436 AS REQUIRED			3
				628	IVE	
3	EA	SILENCER	SR64	GRY	IVE	

AGP
the Abla Griffin Partnership L.L.C.
201 N. BROADWAY
SUITE 210
MOORE, OK. 73160
405.735.3477
AGP@theAGP.net
www.theAGP.net

WDB ENGINEERING PLLC
CIVIL

KFC ENGINEERING
STRUCTURAL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

STATE OF OKLAHOMA
MICHAEL L ABLA
2639
REGISTERED ARCHITECT
9/30/21

CG
drawn by

MA
checked by

SEPTEMBER 2021
date

revisions
1 CB#1 2-18-22
2 RFI #13
3 CB#2 3-16-22

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

CLASSROOM ADDITION
HIGHLAND EAST
JUNIOR HIGH SCHOOL

sheet no:

A602

SALAS O'BRIEN | expect a difference

2600 Van Buren Street | Suite 2635
Norman, Oklahoma 73072
405.364.9926 | www.salasobrien.com

CONSTRUCTION BULLETIN # 2
Client: Abla Griffin Partnership
Project Name: Highland East JH Classroom Addition
Project Number: 2021-02035-00

March 14, 2022

Requested by: _X_ Owner
___ Contractor:
___ Salas O'Brien: Enter Name Here

To: Mike Abla, Clay Griffin (AGP)

This Construction Bulletin is issued to:
_X_ Offer additional information for clarification or supplemental drawings for layout assistance.
___ Request cost and time impact to initiate a change to the Contract Documents. Owner approval is required, do not commence with revisions unless directed in writing. Avoid Work in areas that may be affected by proposed change until approved or rejected. Once approved, forward Change Order documentation as required by the Contract Documents.
___ Direct a required change in the Contract Documents. Proceed with change(s) as indicated. Forward Change Order documentation as required by the Contract Documents.
___ Response to RFI _____.

Item No.	Description	Attachment
1	Updated GRD schedule for exhaust grilles.	M601

END OF CB-02

CONDENSING UNIT SCHEDULE

CU #	CONDENSING UNIT							EVAPORATOR UNIT						NOTES
	NOMINAL TONNAGE	ELEC. CHAR	MCA	MOCP	S.E.E.R	WEIGHT (LBS)	MANUFACTURER& MODEL NO.	CFM	MAX S.P.	BLOWER MOTOR	ELEC. CHAR	MCA	MANUFACTURER & MODEL NO.	
1	4	208/1	28.2	45	17	295	YORK YFK48B21S	1500	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
2	4	208/1	28.2	45	17	295	YORK YFK48B21S	1500	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
3	4	208/1	28.2	45	17	295	YORK YFK48B21S	1500	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
4	4	208/1	28.2	45	17	295	YORK YFK48B21S	1500	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
5	4	208/1	28.2	45	17	295	YORK YFK48B21S	1400	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
6	4	208/1	28.2	45	17	295	YORK YFK48B21S	1400	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
7	4	208/1	28.2	45	17	295	YORK YFK48B21S	1400	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
8	5	208/1	31.4	50	17	295	YORK YFK60B21S	1850	0.3	– SEE FURNACE SCHEDULE –			YORK CM60CXA2	1–7
9	5	208/1	31.4	50	17	295	YORK YFK60B21S	1800	0.3	– SEE FURNACE SCHEDULE –			YORK CM60CXA2	1–7
10	4	208/1	28.2	45	17	295	YORK YFK48B21S	1550	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
11	4	208/1	28.2	45	17	295	YORK YFK48B21S	1500	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7
12	4	208/1	28.2	45	17	295	YORK YFK48B21S	1500	0.3	– SEE FURNACE SCHEDULE –			YORK CM48CBCA1	1–7

NOTES:
M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSIONAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.
1. E.C. TO PROVIDE AND INSTALL POWER DISCONNECT FOR UNIT. COORDINATE WITH M.C.
2. M.C. TO INCLUDE PRE–CHARGED LINE KIT. INSULATE SUCTION LINE.
3. TWO STAGE COOLING.
4. FOR LINE LENGTH EXCEEDING 50', M.C. MUST PROVIDE FACTORY DESIGNED AND FACTORY OR FIELD FABRICATED REFRIGERANT PIPING.
5. MOUNT UNITS ON CONDENSING UNIT SUPPORTS RE: 10/M501 FOR MORE INFORMATION.
6. INSULATE SUCTION LINE WITH 5/8" AP ARMAFLEX INSULATION OR EQUAL. SEAL ALL JOINTS WATER TIGHT TO PREVENT CONDENSATE IN THE CEILING.
7. PROVIDE UNIT WITH HAIL GUARD.

GAS FURNACE SCHEDULE

F #	TYPE	INPUT MBH	OUTPUT MBH	CFM	MIN F.A.	EXT. S.P.	HEAT EXCH. MTL	BLOWER SIZE	BLOWER DRIVE	BLOWER H.P.	BLOWER ELEC. CHAR	PILOT	VENT	FILTER MERV 8 MIN.	MANUFACTURER & MODEL NO.	NOTES
1	VERT	80	77	1500	390	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
2	VERT	80	77	1500	495	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
3	VERT	80	77	1500	435	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
4	VERT	80	77	1500	450	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
5	VERT	80	77	1400	390	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
6	VERT	80	77	1400	390	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
7	VERT	80	77	1400	395	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
8	VERT	100	96	1850	515	0.6	ALUMINIZED STL	11X11	DIRECT	1	120/1	HOT S	3"	2" TA	YORK TM9V100C20MP12C	1,2
9	VERT	100	96	1800	520	0.6	ALUMINIZED STL	11X11	DIRECT	1	120/1	HOT S	3"	2" TA	YORK TM9V100C20MP12C	1,2
10	VERT	80	77	1550	445	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
11	VERT	80	77	1500	450	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2
12	VERT	80	77	1500	450	0.6	ALUMINIZED STL	11X10	DIRECT	3/4	120/1	HOT S	3"	2" TA	YORK TM9V080C16MP12C	1,2

NOTES:
M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSION, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.
1. PROVIDE CONCENTRIC VENT. INSTALL PER MANUFACTURER INSTRUCTIONS. MAINTAIN MINIMUM CLEARANCES: 36" BETWEEN VENTS, 10'–0" FROM ANY FRESH AIR INTAKE.
2. PROVIDE CO_2 SENSOR, INSTALLATION BY CONTROLS CONTRACTOR. INTERLOCK CO_2 SENSOR WITH MOTORIZED DAMPER IN OUTSIDE AIR DUCT.
3. PROVIDE FURNACE WITH 2 STAGE HEATING.

ELECTRIC FAN FORCED HEATER SCHEDULE

EFH #	ROOM NO.	CFM	WALL OR CEILING	KW	MOUNTING	ELECTRICAL CHAR	AMPS	SPEEDS	CONTROL	RPM	MANUFACTURER & MODEL NUMBER	NOTES
1	CHASE	100	WALL	1.5	RECESSED	208/1	7.2	1	INT STAT	–	BERKO FRC–4024	1–4
2	CHASE	100	WALL	1.5	RECESSED	208/1	7.2	1	INT STAT	–	BERKO FRC–4024	1–4

NOTES:
M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSIONAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.
1. PROVIDE INTERNAL THERMOSTAT.
2. RECESSED MOUNTED UNIT. PROVIDE RECESSED MOUNTING KIT.
3. PROVIDE BUILT–IN DISCONNECT.
4. WALL MOUNTING HEIGHT AFF AT A MINIMUM OF 18" OR PER MANUFACTURER'S RECOMMENDATION.

LOUVER SCHEDULE

L #	CONNECTED TO	SIZE (IN) (WXH)	MNIMUM FREE AREA	FLANGE	CONSTRUCTION	INCLUDE MOD	MANUFACTURER AND MODEL NUMBER	COMMENTS	NOTES
1	WC DOOR	8.5X8.5	0.28	YES	STEEL	NO	AIR CONDITIONING PRODUCTS SDL	–	1

NOTES:
M.C. IS RESPONSIBLE FOR PROVIDING ALL NECESSARY DIMENSION, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.
1. PROVIDE PAINTED KYNAR FINISH. COLOR BY ARCHITECT.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

PLAN SYMBOL	DESCRIPTION	MANUFACTURER & MODEL NO.	MATERIAL	FINISH	NOISE CRITERIA
CDR–1 8Ø	ROUND NECK, 4–WAY DEFLECTION CEILING DIFFUSER, ADJUSTABLE CORE, FOR LAY–IN CEILING INSTALLATION.	PRICE SCD (4C)	STEEL	WHITE	–
CDR–1 10Ø	ROUND NECK, 4–WAY DEFLECTION CEILING DIFFUSER, ADJUSTABLE CORE, FOR LAY–IN CEILING INSTALLATION.	PRICE SCD (4C)	STEEL	WHITE	–
CDR–2 8Ø	ROUND NECK, 4–WAY DEFLECTION CEILING DIFFUSER, ADJUSTABLE CORE, FOR CEILING INSTALLATION.	PRICE SCD (4C)	STEEL	WHITE	–
RG–1 24X24	FIXED CORE OF 1/2"X1/2"X1/2" FABRICATED ALUMINUM SQUARES, FLAT FRAME WITH 1 1/4" MARGIN, FOR LAY–IN CEILING INSTALLATION.	PRICE 80	ALUMINUM	WHITE	–
[illegible]	FIXED CORE OF 1/2"X1/2"X1/2" FABRICATED ALUMINUM SQUARES, FLAT FRAME WITH 1 1/4" MARGIN, FOR LAY–IN CEILING INSTALLATION.	PRICE 80	ALUMINUM	WHITE	–
2 EG–1 12X12	FIXED CORE OF 1/2"X1/2"X1/2" FABRICATED ALUMINUM SQUARES, FLAT FRAME WITH 1 1/4" MARGIN, FOR CEILING INSTALLATION.	PRICE 80	ALUMINUM	WHITE	–
[illegible]	FIXED CORE OF 1/2"X1/2"X1/2" FABRICATED ALUMINUM SQUARES, FLAT FRAME WITH 1 1/4" MARGIN, FOR CEILING INSTALLATION.	PRICE 80	ALUMINUM	WHITE	–

NOTES:
SEE PLANS FOR QUANTITY AND SIZES.
M.C. TO FIELD VERIFY CEILING TYPE FOR ALL GRD BEFORE PURCHASING EQUIPMENT. PROVIDE REQUIRED MOUNTING.

DUCTWORK/INSULATION SCHEDULE

SYSTEM	LOW PRESSURE MAX. PRES.	SEAL A	SEAL B	SEAL C	MED. PRESS MAX PRES.	MED. PRESS SEAL A	HIGH PRESS. MAX PRES.	HIGH PRESS. SEAL A	INSULATION INTERNAL	INSULATION THICKNESS	INSULATION EXTERNAL	INSULATION THICKNESS	NOTES
SUPPLY AIR WITHIN 10' OF UNIT	2"	X	–	–	–	–	–	–	YES	1"	NO	–	–
SUPPLY AIR BEYOND 10' OF UNIT	2"	X	–	–	–	–	–	–	NO	–	YES	2" FSK	–
RETURN AIR WITHIN 10' OF UNIT	2"	–	X	–	–	–	–	–	YES	1"	NO	–	–
RETURN AIR BEYOND 10' OF UNIT	2"	–	X	–	–	–	–	–	NO	–	YES	2" FSK	–
OUTSIDE AIR/MIXED AIR	2"	–	X	–	–	–	–	–	NO	–	YES	3" FSK	–

NOTES:

ROOF HOOD SCHEDULE

RH #	THROAT SIZE DIMENSION (IN)	CFM	THROAT AREA (FT^2)	DAMPER BDD OR MOD	CONSTRUCTION	MANUFACTURER & MODEL NO.	COMMENTS	NOTES
1	18X24	1,320	3.00	MOD	ALUMINUM	GREENHECK FGI	COLOR BY ARCHITECT	ALL
2	20X20	1,175	3.00	MOD	ALUMINUM	GREENHECK FGI	COLOR BY ARCHITECT	ALL
3	16X18	900	2.00	MOD	ALUMINUM	GREENHECK FGI	COLOR BY ARCHITECT	ALL
4	18X18	1,035	2.00	MOD	ALUMINUM	GREENHECK FGI	COLOR BY ARCHITECT	ALL
5	16X18	895	2.00	MOD	ALUMINUM	GREENHECK FGI	COLOR BY ARCHITECT	ALL

NOTES:
M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSIONAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.
1. M.C. TO PROVIDE ROOF HOOD WITH ALUMINUM BIRDSCREEN.
2. M.C. SHALL PROVIDE ROOF CURB. CURB INSTALLATION BY C.C.
3. M.C. SHALL PROVIDE LOW VOLTAGE MOTORIZED DAMPER.

EXHAUST FAN SCHEDULE

EF #	LOCATION	SYSTEM	CFM	SP	FAN RPM	MOTOR H.P.	ELEC CHAR	AMPS	DAMPER BDD OR MOD	DRIVE	FAN TYPE	INTERLOCK/ CONTROL	WEIGHT	MANUFACTURER & MODEL NUMBER	NOTES
1	ROOF	EXHAUST	750	0.5	1,040	FRAC.	120/1	3.8	MOD	DIRECT	CENT	F–1	43	GREENHECK G–120–VG	ALL
2	ROOF	EXHAUST	75	0.35	944	FRAC.	120/1	3.8	MOD	DIRECT	CENT	LIGHTS	38	GREENHECK G–097–VG	ALL

NOTES:
M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSIONAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.
1. PROVIDE ELECTRONIC SPEED CONTROL MOUNTED ABOVE ACCESSIBLE CEILING.
2. M.C. SHALL PROVIDE LOW VOLTAGE MOTORIZED DAMPER.
3. OPERATION OF DEVICE ON OCCUPIED MODE OF RTU OR SWITCH WITH LIGHTS. SEE INTERLOCK/CONTROL COLUMN FOR TYPE.

AGP
the Abla Griffin Partnership L.L.C.
201 N. BROADWAY
SUITE 210
MOORE, OK. 73160
405.735.3477
AGP@theAGP.net
www.theAGP.net

KFC ENGINEERING
STRUCTURAL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

BA
drawn by

DMG
checked by

SEPTEMBER 2021
date

1 03/11/22 CB01
revisions
2 03/14/22 CB02

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

CLASSROOM ADDITION
HIGHLAND EAST
JUNIOR HIGH SCHOOL

sheet no:

M601

SALASOBRIEN
| expect a difference |
2600 Van Buren St., Suite 2635
Norman, Oklahoma 73072
P: 405.364.9926 | CA#:7058 Expiration Date: 6/30/2023

Salas O'Brien Project No.: 2021-02035-00