Stormwater Management Report

Benet Academy – Stadium Improvements 2200 Maple Avenue Lisle IL 60532

January 31, 2025

Revised: June 16, 2025

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PROJECT NARRATIVE

The project for Benet Academy includes the stadium improvements on the existing property at 2200 Maple Avenue in Lisle, IL. The Phase 1 improvements include the new artificial turf stadium, south stadium storage building, stormwater management features, and utility improvements. Phase 2 will include the north stadium building, and synthetic turf soccer/lacrosse field (located east of the central drive). The underground detention facility in phase 1 will be sized to account for all project phases, except for the phase 2 synthetic turf soccer/lacrosse field, which will have a separate detention facility and associated Stormwater Report. Stormwater management improvements shall be provided and designed in accordance with DuPage County Stormwater & Floodplain Ordinance (DCSFPO).

EXISTING CONDITIONS

The school property includes approximately 41.66 Acres bounded by Maple Avenue to the South, Yackley Avenue to the East, and residential development to the North and West. The existing site contains multiple drainage areas. A portion of the site drains to the north to the Yackley Avenue right-of-way and a portion drains to the Maple Avenue right-of-way. The proposed stadium improvements area is within the Maple Avenue tributary.

An existing surface detention basin approximating 1.92 Acre-Ft per topographic survey is to be removed for the stadium improvements and placed in an underground concrete vault detention system. The approximate assumed detained area for the existing basin is shown on exhibit CX-1. Per historic aerial imagery – a west building addition and associated parking lot improvements were constructed at the same time as the surface detention basin.

FLOOD PROTECTION AREAS

FEMA FIRM map, panel number 17043C0161J, effective 8/01/2019, has been included in Appendix I to identify any potential flood zones located within the project vicinity. The FIRM Map does not identify any flood zones with the boundaries of the hydrologic disturbance.

Areas denoted as "Zone X" flood areas have been identified on the eastern portion of the property. A "Zone X" is defined as an area of 0.2% (500-year) annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% chance flood. No proposed improvements are to occur within the "Zone X" delineation. "Zone X" areas are not identified as Special Flood Hazard Areas; therefore, no special accommodation is required for the area shown on the FEMA FIRM.

WETLAND PROTECTION AREAS

No wetland areas have been identified within the project limits per the U.S. Fish and Wildlife Service National Wetlands Inventory map included in Appendix I.

Illinois	Wisconsin	Indiana
minois	**ISCOUSIU	manana

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PROPOSED CONDITIONS

The proposed site will consist of a new athletic stadium and south stadium storage building in Phase 1, and the north stadium building and synthetic turf soccer/lacrosse field (located east of the central drive) in Phase 2. Please note that there will also be a concrete pad for a storage building at the northeast corner of the property in Phase 1. This is located within a different watershed than the rest of the project and therefore stormwater requirements will be addressed separately. The net new imperious area for the pad will be approximately 1,335 SF. Therefore we are under the threshold for both PCBMP and storage requirements per sections 15-63.A.1 and 15-72.A.1 in the DuPage County Stormwater Ordinance.

STORMWATER MANAGEMENT

Stormwater management improvements shall be provided and designed in accordance with the DuPage County Stormwater & Floodplain Ordinance (DCSFPO). The development area will be subject to runoff control and detention storage.

EXISTING STORAGE

An existing surface detention basin approximating 1.92 Acre-Ft per topographic survey is to be removed for the stadium improvements and placed in an underground concrete vault detention system. The approximate assumed detained area for the existing basin is shown on exhibit CX-1. Per historic aerial imagery – the building addition and associated parking lot improvements were constructed at the same time as the surface detention basin. The 4.19-acres of area assumed to have detention provided for is shown in a Bulletin 70 nomograph to demonstrate that the required volume for the area would be approximately 1.92-acres. Refer to Appendix 3 for the calculation.

0.74-acres of the existing detention boundary overlaps with the proposed improvements. This area will not incur an increase in impervious area. Therefore, the 1.92-acres of detention storage will be placed in the underground storage tank for the area and the proposed detention requirements will be calculated for the remaining disturbed area for the stadium.

PCBMP REQUIREMENTS

Per DCSFPO, post construction best management practices (PCBMP) shall be provided if the net new impervious area exceeds 2,500 SF. The proposed improvements for the stadium will require PCBMP volume. The PCBMP requirement was determined as 1.25" over the impervious surface. Artificial turf was considered as 60% impervious for this calculation. This was determined per the Impervious Area definition located in Appendix A page 104 of the DCSFPO.

The PCBMP volume is located within the stone voids of the CA-7 stone aggregate below the concrete vault detention system. The detention system will include a concrete bottom slab with 2-foot diameter holes in the slab to allow the water to drain into the stone voids. The volume was calculated utilizing a void space of 36% per section 15-64.C.4 of the DCSFPO. An underdrain will be located at the bottom of the stone to drain the area to the restrictor structure. The BMP restrictor was placed at the underdrain invert elevation. The restrictor was sized to www.eea-Itd.com

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provide a draindown time of 48-96 hours per DCSFPO requirements, refer to the restrictor sizing calculations.

RUNOFF CONTROL/STORAGE REQUIREMENTS

DuPage County has a release rate of 0.10 CFS/Acre of development. This requirement is met through a dual restrictor for the BMP measure and 100-year storm.

For the stadium area - a hydrologic model was completed with Bulletin 75 rainfall data for the area excluding the existing basin area. A mock restrictor was utilized for the area as the actual restrictor will be sized for the additional detained area from the existing detention basin, which is the existing area that the 1.92 acre-ft basin services.

EMERGENCY OVERFLOW

The emergency overflow for the Stadium Improvements is within the outlet control structure as an internal concrete weir wall. The overflow is sized per DCSFPO requirement of 1.0 cfs/acre of tributary area. Weir wall calculations are included in the appendices.

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BENET ACADEMY STADIUM IMPROVEMENTS DATE: JANUARY 31, 2025 REVISED: JUNE 16, 2025



APPENDIX I – EXISTING CONDITIONS INFORMATION

FEMA FIRMette USFWS WETLAND MAP NRCS SOIL DATA

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National Flood Hazard Layer FIRMette

88°6'W 41°47'18"N



Legend

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



Basemap Imagery Source: USGS National Map 2023



U.S. Fish and Wildlife Service National Wetlands Inventory

Benet Wetland Map



February 19, 2024

Wetlands



Estuarine and Marine Deepwater

Estuarine and Marine Wetland

- Wetland
- Freshwater Pond

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Lake Other Riverine This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Natural Resources **Conservation Service**

Web Soil Survey National Cooperative Soil Survey





Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
232A	Ashkum silty clay loam, 0 to 2 percent slopes	C/D	0.7	1.7%
298A	Beecher silt loam, 0 to 2 percent slopes	D	0.4	1.0%
530B	Ozaukee silt loam, 2 to 4 percent slopes	С	7.5	17.3%
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded	С	6.3	14.6%
530D3	Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded	С	0.1	0.2%
531B	Markham silt loam, 2 to 4 percent slopes	С	28.2	65.2%
Totals for Area of Intere	est		43.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher

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APPENDIX II – STORMWATER EXHIBITS

CX-1 STORMWATER EXHIBIT – EXISTING CONDITIONS CX-2 STORMWATER EXHIBIT – PROPOSED CONDITIONS CX-3 STORMWATER EXHIBIT – EXISTING BASIN CX-4 STORMWATER EXHIBIT – CATCHMENT AREAS

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APPENDIX III – STORMWATER CALCULATIONS

DRAINAGE SUMMARY EXISTING STORAGE EXISTING BULLETIN 70 NOMOGRAPH MOCK RESTIRCTOR SIZING CALCULATIONS MOCK BASIN VOLUME CALCULATIONS RESTIRCTOR SIZING CALCULATIONS BASIN VOLUME CALCULATIONS STORM SEWER CAPACITY CALCULATIONS GRATE CAPACITY CALCULATIONS EMERGENCY OVERLOW SPILLWAY CALCULATIONS HYDROLOGIC MODEL (TR-20)

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DRAINAGE SUMMARY

Benet Stadium



Proposed Conditions

To Tot	tal Tributary Area =	10.35	acres	0.01617	sq mi	*For Emerg	gency Overflow	v
Appro De	etention Basin	4.19	acres	0.00655	sq mi	*1.92 Acre- Storage To	Ft Existing De Be Maintaine	etention d
Existin	g Detained Within sed Disturbance =	0.74	acres	0.00116	sq mi			
Total E Over	Disturbance Minus lapping Existing	6.16	acres	0.00963	sq mi	*For Hydro Volume	logic Model Aı	nd PCBMP
Total	Area Detained =	10.35	acres	0.01617	sq mi	*For Restire	ctor Sizing	
is b	Impervious Area =	3.37	acres		CN _{impervious} =	98	C _{impervious} =	0.90
Ba: stur	Gravel Area =	-	acres		CN _{gravel} =	98	C _{impervious} =	0.75
Ξ	Pervious Area =	0.82	acres		CN _{pervious} =	74	C _{pervious} =	0.45
					CN =	93.3	c =	0.81
sed cre	Impervious Area =	2.48	acres		CN _{impervious} =	98	C _{impervious} =	0.90
6 A	Artificial Turf	2.37	acres		CN _{turf} =	91	C _{impervious} =	0.75
6.1 6.1	Pervious Area =	1.31	acres		CN _{pervious} =	74	C _{pervious} =	0.45
					CN =	90.2	c =	0.75
		BMP	100-Year					
Allowa	ble Release Rate =	48.00	0.10	cfs/acre				
		Hours	0.62	cts cfc	*For Mock Mo	odel d Condition		
			1.04	015	FOI FIODOSE			
					BMP	100-YEAR		
	MAXI			IAMETER =	2.625	3.55	in in	
	ACT	UAL REOIP			2.020	2.30	111	
		ALLOWABI	_E RELEA	SE RATE =	48 Hours	1.04	cfs	
		ACTUA	L RELEA	SE RATE =	52.09	0.92	cfs	
	DF			=QUIRED =	0.406	5.00	Acre*ft	
	DE	TENTION V	OLUME PI	ROVIDED =	0.408	5.15	Acre*ft	

Restrictor Invert=	719.50	720.67
Basin High Water Elevation=	720.67	727.06
Basin Spill Elevation=		727.08 +/-

EXISTING BASIN VOLUME CALCULATIONS

Benet Stadium



EXISTING POND

Elev	Total Volume (ac-ft)	Area (sq. ft.)	Increm. Volume (cu ft.)	Increm. Volume (ac-ft)	
726	1.92	42962	39664.00	0.91	
725	1.01	36455	33311.52	0.76	
724	0.25	30264	10782.14	0.25	
723	0.00	126.42	3.79	0.00	
722.91	0.00	0	0.00	0.00	

Detention High Water Line =	726.00
Detention Storage Volume =	1.92 acre-f

<Based on review of topographic survey

NOMOGRAPH: BULLETIN 70 RAINFALL DATA



MOCK RESTRICTOR SIZING CALCULATIONS

Benet Stadium

BMP Restrictor



100-Year Restrictor

BMP high water elevation =	720.67	
C _D =	0.61	(constant)
G =	32.20	ft/sec ²
Inv. restrictor =	719.50	
Q _{allowable} =	48.00	hours (min)
Dh = hwe - Inv 1/2 Di	a.	
=	1.06	ft.
VCMBP Volume =	0.41	Ac-Ft
-	17756.11	CF
Q _{average} =	0.095	c.f.s.
Draindown Time =	187525	Seconds
=	52.09	hours
=	2.17	Days

=> Restrictor diameter = 2.625 inches

Release Rate Based on restrictor diameter

D _{restrictor} =	2.63	in.
A _{restrictor} =	5.41	in ²

 $Q = C_D A (2gh)^{1/2}$

Q_{release} = 0.189 c.f.s.

100-year high water elevation = C_D = G = Inv. restrictor = $Q_{allowable}$ =	724.60 0.61 32.20 720.67 0.847	(constant) ft/sec ² cfs
Dh = hwe - Inv 1/2 =	Dia. 3.85	ft.
$Q = C_D A (2gh)^{1/2}$		
A _{restrictor} = (Q _{allowable}) / A _{restrictor} = D _{restrictor} =	′ (C _D (2gh) 12.70 4.021	^{1/2}) in ² in

=> Restrictor diameter = 2.000 inches

Release Rate Based on restrictor diameter

 $D_{restrictor} = 2.00 \text{ in.}$ $A_{restrictor} = 3.14 \text{ in}^2$ $Q = C_D A (2gh)^{1/2}$

Q_{release} = 0.209 c.f.s.

MOCK BASIN VOLUME CALCULATIONS

Benet Stadium

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Retention Restrictor		Detention Restrictor	
Dia= 2.625	in	Dia= 2.000	in
$C_{d} = 0.61$		$C_{d} = 0.61$	
Inv. rest. = 719.50		Inv. rest. = 720.67	
g = 32.20	ft/sec ²	g = 32.20	ft/sec ²
$A_{rest} = 5.41$	in ²	A _{rest} = 3.14	in ²

		-							
	Elev	Q(Total) (cfs)	Total Volume (ac-ft)	Area (sq. ft.)	Increm. Volume (cu ft.)	Increm. Volume (ac-ft)	Q(BMP) (cfs)	Q(100-Yr) (cfs)	Q(Total) (cfs)
T/Trap Storage *	727.08	0.77	5.15	36275	2902.00	0.067	0.50	0.27	0.77
*	727	0.77	5.08	36275	36275.00	0.833	0.50	0.27	0.77
*	726	0.71	4.25	36275	36275.00	0.833	0.47	0.24	0.71
*	725	0.65	3.42	36275	9068.75	0.208	0.43	0.22	0.65
Existing Storage	724.75	0.63	3.21	36275	27206.25	0.625	0.42	0.21	0.63
Proposed Storage	724.6	0.62	3.08	36254.99	21759.00	0.500	0.41	0.21	0.62
	724	0.58	2.58	36275	36275.00	0.833	0.39	0.19	0.58
	723	0.50	1.75	36275	36275.00	0.833	0.34	0.16	0.50
	722	0.40	0.92	36275	21039.50	0.483	0.28	0.12	0.40
B/Trap Storage	721.42	0.33	0.44	36275	120.92	0.003	0.25	0.09	0.33
	721.41	0.33	0.43	0	0.00	0.000	0.25	0.09	0.33
	720.75	0.20	0.43	0	50.59	0.001	0.20	0.00	0.20
B/Slab	720.74	0.20	0.43	42156	1062.33	0.024	0.20	0.00	0.20
PCBMP HWL	720.67	0.19	0.408	42156	17756.11	0.408	0.19	0.00	0.19
B/Stone	719.5	0.00	0.00	42156			0.00	0.00	0.00

Volume between 719.5 and 721.42 is within stone voids. Volume calculated by multiplying total volume by 0.36 void ratio.

*Existing 1.92 Acre-Ft Detention Storage For Site

Retention High Water Line =	720.67	Detention High Water Line =	724.60
Retention Storage Volume =	0.408	Detention Storage Volume =	3.08 acre-ft

RESTRICTOR SIZING CALCULATIONS

Benet Stadium

BMP Restrictor



100-Year Restrictor

BMP high water elevation = 720.67 C_D = 0.61 (constant) G = 32.20 ft/sec² Inv. restrictor = 719.50 Q_{allowable} = 48.00 hours (min) Dh = hwe - Inv. - 1/2 Dia.= 1.06 ft. VCMBP Volume = 0.41 Ac-Ft 17756.11 CF 0.095 c.f.s. Q_{average} = Draindown Time = 187524.6 Seconds = 52.09017 hours = 2.17 Days => Restrictor diameter = 2.625 inches

Release Rate Based on restrictor diameter

D _{restrictor} =	2.63	in.
A _{restrictor} =	5.41	in ²

 $Q = C_D A (2gh)^{1/2}$

Q_{release} = 0.189 c.f.s.

100-year high water elevation =	727.06	
C _D =	0.61	(constant)
G =	32.20	ft/sec ²
Inv. restrictor =	720.67	
Q _{allowable} =	0.847	cfs
Dh = hwe - Inv 1/2 =	Dia. 6.29	ft.
$Q = C_{\rm D}A(2{\rm gh})^{-1}$		
$A_{restrictor} = (Q_{allowable}) /$	(C _D (2gh)	^{1/2})
A _{restrictor} =	9.93	in ²
D _{restrictor} =	3.556	in

=> Restrictor diameter = 2.500 inches

Release Rate Based on restrictor diameter

 $D_{\text{restrictor}} = 2.50 \text{ in.}$ $A_{\text{restrictor}} = 4.91 \text{ in}^2$ $Q = C_D A (2gh)^{1/2}$

Q_{release} = 0.418 c.f.s.

BASIN VOLUME CALCULATIONS Benet Stadium

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Retention Restrictor		Detention Restrictor	
Dia= 2.625	in	Dia= 2.500	in
$C_{d} = 0.61$		$C_{d} = 0.61$	
Inv. rest. = 719.50		Inv. rest. = 720.67	
g = 32.20	ft/sec ²	g = 32.20	ft/sec ²
A _{rest} = 5.41	in [∠]	$A_{rest} = 4.91$	in⁴

	Elev	Q(Total) (cfs)	Total Volume (ac-ft)		Area (sq. ft.)	Increm. Volume (cu ft.)	Increm. Volume (ac-ft)		Q(BMP) (cfs)	Q(100-Yr) (cfs)	Q(Total) (cfs)		
T/Trap Storage	727.08	0.92	5.15		36275	725.50	0.017		0.50	0.42	0.92		
100-YR HWL*	727.06	0.92	5.13		36275	2176.50	0.050		0.50	0.42	0.92		
*	727	0.92	5.08		36275	36275.00	0.833		0.50	0.42	0.92		
*	726	0.85	4.25		36275	36275.00	0.833		0.47	0.38	0.85		
*	725	0.77	3.42		36275	9068.75	0.208		0.43	0.34	0.77		
Existing Storage *	724.75	0.75	3.21		36275	27206.25	0.625		0.42	0.33	0.75		
Proposed Storage	724.6	0.74	3.08		36254.99	21759.00	0.500		0.41	0.33	0.74		
	724	0.69	2.58		36275	36275.00	0.833		0.39	0.30	0.69		
	723	0.59	1.75		36275	36275.00	0.833		0.34	0.25	0.59		
	722	0.47	0.92		36275	21039.50	0.483		0.28	0.18	0.47		
B/Trap Storage	721.42	0.38	0.44		36275	120.92	0.003		0.25	0.13	0.38		
	721.41	0.38	0.43		0	0.00	0.000		0.25	0.13	0.38		
B/Slab	720.75	0.20	0.43		0	50.59	0.001		0.20	0.00	0.20		
	720.74	0.20	0.43		42156	1062.33	0.024		0.20	0.00	0.20		
PCBMP HWL	720.67	0.19	0.408		42156	17756.11	0.408		0.19	0.00	0.19		
B/Stone	719.5	0.00	0.00		42156				0.00	0.00	0.00		

Volume between 719.5 and 721.42 is within stone voids. Volume calculated by multiplying total volume by 0.36 void ratio.

*Existing 1.92 Acre-Ft Detention Storage For Site

Retention High Water Line =	720.67	Detention High Water Line =	727.08
Retention Storage Volume =	0.408	Detention Storage Volume =	5.15 acre-ft

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



Project File: North.stm	Number of lines: 3	Date: 6/12/2025

Statio	n	Len	Drna A	rea	Rnoff	Area ¥	c	Тс		Rain	Total	Can	Vel	Pipe	Pipe Invert Elev		nvert Elev HGL Elev			Grnd / Ri	m Elev	Line ID
Line	То		Incr	Total	coeff	Incr	Total	Inlet	Syst	(1)	flow	full		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1 2 3	End 1 2	21.904 111.326 10.762	0.01	0.55 0.54 0.30	0.01 0.53 0.90	0.00 0.13 0.27	0.40 0.40 0.27	10.0 10.0 10.0	10.4 10.1 10.0	10.2 10.4 10.4	4.07 4.11 2.80	2.15 2.39 2.43	5.44 5.24 3.57	12 12 12	0.37 0.45 0.46	721.42 722.25 722.75	721.50 722.75 722.80	722.27 723.25 725.16	722.64 724.73 725.23	727.58 728.75 728.00	728.75 728.00 728.95	
Project File: North.stm Num												Number	of lines: 3	3		Run Da	te: 6/12/20)25				
ΝΟΤΙ	ES:Inte	nsity = 2	277.62 /	(Inlet tin	1e + 20.1	0) ^ 0.97	7; Return	n period	=Yrs. 10	00;c=	cire=	ellip b =	box			1						

Storm Sewer Tabulation



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



Statio	n	Len	Drng A	ng Area Rnoff Area x C Tc Rain Total Cap Vel Pipe Invert Elev HGL Elev Grnd /		Grnd / R	irnd / Rim Elev Line ID															
Line	То	-	Incr	Total	coeff	Incr	Total	Inlet	Syst	(I)	flow	fulİ		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1 2 3 4	End 1 2 3	109.782 8.016 79.114 8.009	2 0.21 0.21 0.31 0.31	1.04 0.83 0.62 0.31	0.90 0.90 0.77 0.77	0.19 0.24 0.24	0.86 0.67 0.48 0.24	10.0 10.0 10.0	10.6 10.6 10.1 10.0	10.2 10.2 10.3 10.4	8.70 6.79 4.94 2.48	20.71 8.29 6.47 8.30	4.30 3.95 2.98 2.66	30 18 18 18	0.26 0.62 0.38 0.62	721.42 721.70 721.75 722.05	721.70 721.75 722.05 722.10	722.40 723.12 723.18 723.33	722.90 723.14 723.31 722.70	728.70 727.95 727.80 726.10	727.95 727.80 726.10 726.10	
Proje	ct File:	North V	Vest.stn	n												Number	of lines: 4	ŀ		Run Da	te: 6/12/20	025
NOT	ES:Inte	ensity = 2	277.62 /	(Inlet tin	ne + 20.1	0) ^ 0.93	7; Retur	n period	=Yrs. 10	10;c=	cire=e	ellip b =	box									

Storm Sewer Tabulation

Storm Sewer Profile



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



Station	L	en	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Elev HGL Elev				Grnd / Ri	m Elev	Line ID
Line To			Incr	Total	coeff	Incr	Total	Inlet	Syst	(1)	flow	full		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
Line	e (f	ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1 En 2 1 2	16 11 8	66.362 10.039 8.009	0.01 0.38 0.38	0.77	0.01 0.62 0.62	0.00 0.24 0.24	0.47 0.47 0.24	10.0 10.0	10.7	10.1 10.4 10.4	4.78 4.88 2.44	5.76 5.92 2.82	2.96 3.05 3.11	18 18 12	0.30 0.32 0.62	720.50 721.00 721.35	721.00 721.35 721.40	721.91 722.36 722.58	722.20 722.55 722.62	726.80 726.15 725.00	726.15 725.00 725.00	
Project Fi	Project File: South West.stm												1	Number	of lines: 3	, B		Run Da	te: 6/12/20)25		
	roject File: South West.stm Number of lines: 3 Run Date: 6/12/2025																					

Storm Sewer Tabulation

Storm Sewer Profile



Grate Capacity Calculations



Benet Academy Stadium Improvements 2200 Maple Ave, Lisle, IL 60532

Cimpervious	=	0.	90	
•				

 $C_{pervious} = 0.45$

Structure	C	rainage Are	a	Runoff	Tc	Rainfall	Total	Grat	te					
														Inflow
	Increment	Impervious	Pervious	Coeff.	To Struc.	Intensity	Runoff (Q)		Neenah	Open Area	Perimeter	Head	Inflow	(50% Clogging Factor)
	(acres)	(acres)	(acres)	С	(min.)	i (100yr)	(cfs)		#	(SF)	(FT)	(FT)	(cfs)	(cfs)
CB 1	0.21	0.21	0.00	0.90	10.0	10.80	2.04	Curb	R-3281-A	1.00	4.30	0.72	4.09	2.04
CB 2	0.21	0.21	0.00	0.90	10.0	10.80	2.04	Curb	R-3281-A	1.00	4.30	0.72	4.09	2.04
CB 4	0.31	0.22	0.09	0.77	10.0	10.80	2.58	Curb	R-3281-A	1.00	4.30	1.15	5.16	2.58
Inlet 5	0.31	0.22	0.09	0.77	10.0	10.80	2.58	Curb	R-3281-A	1.00	4.30	1.15	5.16	2.58
CB 7	0.24	0.04	0.20	0.53	10.0	10.80	1.36	Landscape	R-4340-B	1.10	6.00	0.33	3.04	1.52
CB 8	0.30	0.30	0.00	0.90	10.0	10.80	2.92	Curb	R-3281-A	1.00	4.30	1.47	5.84	2.92
CB 12	0.74	0.06	0.68	0.49	10.0	10.80	3.89	Landscape	R-4340-B	1.10	6.00	2.16	7.78	3.89
CB 15	0.375	0.145	0.23	0.62	10.0	10.80	2.53	Landscape	R-4340-B	1.10	6.00	0.91	5.05	2.53
CB 16	0.375	0.145	0.23	0.62	10.0	10.80	2.53	Landscape	R-4340-B	1.10	6.00	0.91	5.05	2.53

* For curb grates the head calculations are based on the gutter flow line only and do not include the curb head. Therefore, the calculated head is higher than what would actually occur.

Emergency Overflow Spillway Calculations Benet Stadium

100-year Rainfall Event

	Tributary Area =	10.35	acre
Emergency Ov	erflow Runoff Rate =	1.00	cfs/acre
	Total Runoff =	10.35	cfs

Pond Overflow Type = Concrete Wier Wall

Where: L (length) = 6.00 ft. H (head) = 0.70 ft.

Rim	729.20
Frame	728.45
Flat Slab	727.78
T/Weir Wall	727.08

Overflow	Weir Capacity
Q =	10.65 cfs

Weir Equation:	Q = 3.03 L H ^(3/2)	(Broad Crested Weir)
Weir Equation:	$Q = 2.60 L H^{(3/2)}$	(Broad Crested Weir)

Concrete Wier Wall Grass Spillway

WinTR-20: version 3.20 Benet Stadium Proposed		0	0	0.05	0
SUB-AREA: Disturbed Basin	0.00)963	90.2	0.25	Y
STREAM REACH: Basin Outlet	Storm	nTrap			
STORM ANALYSIS: 10 Min 100 15 Min 100 30 Min 100 1 Hr 100 2 Hr 100 3 Hr 100 6 Hr 100 12 Hr 100 18 Hr 100 24 Hr 100 48 Hr 100	1.80 2.32 3.17 4.03 4.97 5.49 6.43 7.46 8.06 8.57 9.28	H H H1 H2 H3 H6 H1 H1 H2 H4	10 Min 15 Min 30 Min Hr 2 Hr 2 Hr 2 2 Hr 2 2 Hr 2 8 Hr 2 8 Hr 2 8 HR	2 2 2 2 2 2 2 2 2 2 2 2	
72 Hr 100	9.85	Η7	2 HR	2	

STRUCTURE RATING:

StormTrap 7	19.5	
719.5	0.	0.
720.67	'.19	.408
720.75	5.2	.43
721.42	2 .33	.44
722.	.4	.92
723.	.5	1.75
724.	.58	2.58
725.	.65	3.42

RAINFALL	DISTRIE	BUTION:			
H 10	Min	0.007			
	0.	0.0836	0.1773	0.2811	0.3833
	0.4745	0.5550	0.622	5 0.672	0.7082
	0.7417	0.7697	0.798 [°]	1 0.8255	5 0.8518
	0.8740	0.8947	0.9117	7 0.9270	0.9403
	0.9536	0.9656	6 0.977 <i>4</i>	4 0.9885	5 1.0000
H 15	Min	0.010			
	0.	0.0836	0.1773	0.2811	0.3833
	0.4745	0.5550	0.622	5 0.6722	2 0.7082
	0.7417	0.7697	2 0.798 ⁻	1 0.8255	5 0.8518
	0.8740	0.8947	0.9117	7 0.9270	0.9403
	0.9536	0.9656	6 0.977 <i>4</i>	4 0.9885	5 1.0000
H 30	Min	0.021			
	0.	0.0836	0.1773	0.2811	0.3833
	0.4745	0.5550	0.622	5 0.6722	2 0.7082
	0.7417	0.7697	0.798	1 0.8255	5 0.8518
	0.8740	0.8947	0.9117	7 0.9270	0.9403
	0.9536	0.9656	6 0.977 <i>4</i>	4 0.9885	5 1.0000
H 1 F	łr	0.042			
	0.	0.0836	0.1773	0.2811	0.3833
	0.4745	0.5550	0.622	5 0.672	0.7082
	0.7417	0.7697	0.798	1 0.8255	5 0.8518
	0.8740	0.8947	0.9117	7 0.9270	0.9403
	0.9536	0.9656	6 0.977 <i>4</i>	4 0.9885	5 1.0000

```
H 2 Hr
             0.083
           0.0836
                   0.1773 0.2811
                                    0.3833
     0.
     0.4745 0.5550
                     0.6225
                              0.6722
                                      0.7082
     0.7417
                              0.8255
                                      0.8518
             0.7697
                      0.7981
     0.8740
             0.8947
                      0.9117
                              0.9270
                                      0.9403
     0.9536
            0.9656
                     0.9774
                              0.9885
                                      1.0000
H 3 Hr
             0.125
           0.0836
                   0.1773
                           0.2811
                                    0.3833
     0.
     0.4745
            0.5550
                     0.6225
                              0.6722
                                      0.7082
     0.7417
                      0.7981
             0.7697
                              0.8255
                                      0.8518
     0.8740
            0.8947
                      0.9117
                              0.9270
                                      0.9403
     0.9536
            0.9656
                     0.9774
                              0.9885
                                      1.0000
H 6 Hr
             0.250
           0.0836
                   0.1773
                           0.2811
     0.
                                    0.3833
     0.4745
             0.5550
                     0.6225
                              0.6722
                                      0.7082
     0.7417
             0.7697
                      0.7981
                              0.8255
                                      0.8518
     0.8740
             0.8947
                      0.9117
                              0.9270
                                      0.9403
     0.9536
            0.9656
                     0.9774
                              0.9885
                                      1.0000
H 12 Hr
              0.500
           0.0229 0.0482 0.0778
                                    0.1133
     0
     0.1579 0.2139
                     0.2841
                              0.3644
                                      0.4529
     0.5435 0.6238
                     0.6976
                              0.7548
                                      0.8038
     0.8470
             0.8781
                     0.9022
                              0.9217
                                      0.9381
     0.9529 0.9657
                     0.9774
                              0.9884
                                      1.0000
H 18 Hr
              0.750
                           0.0667
                                    0.0912
     0.
           0.0205 0.0431
             0.1436
                     0.1691
                              0.1964
                                      0.2278
     0.1171
     0.2633 0.3093
                     0.3635
                              0.4392
                                      0.5211
     0.6102 0.6989
                     0.7819
                              0.8492
                                      0.8974
     0.9311
                     0.9706
                             0.9856
             0.9534
                                      1.0000
H 24 HR
              1.0
           0.0231
                   0.0479 0.0712 0.0978
     0.
     0.1253
             0.1523
                      0.1791
                              0.2033
                                      0.2283
     0.2541
             0.2835
                      0.3125
                              0.3390
                                      0.3633
     0.3861
             0.4124
                      0.4508
                              0.5129
                                      0.5931
     0.6919
             0.8005
                     0.8971
                              0.9604
                                      1.0000
              2.0
H 48 HR
           0.0231
                   0.0479
                           0.0712
     0.
                                    0.0978
     0.1253
            0.1523
                     0.1791
                              0.2033
                                      0.2283
     0.2541
             0.2835
                     0.3125
                              0.3390
                                      0.3633
     0.3861
             0.4124
                      0.4508
                              0.5129
                                      0.5931
     0.6919 0.8005
                     0.8971
                              0.9604
                                      1.0000
H 72 HR
              3.0
           0.0231
                   0.0479 0.0712
     0.
                                    0.0978
     0.1253
             0.1523
                     0.1791
                              0.2033
                                      0.2283
     0.2541
             0.2835
                      0.3125
                              0.3390
                                      0.3633
     0.3861
             0.4124
                      0.4508
                              0.5129
                                      0.5931
     0.6919 0.8005
                     0.8971
                              0.9604
                                      1.0000
```

GLOBAL OUTPUT:

2 .05 0.1 YN N YN N

WinTR-20 Printed Page File End of Input Data List

Benet Stadium Proposed

Name of printed page file: C:\Users\nhart\Desktop\TR-20\Benet Stadium\Benet Stadium 100 YR.out

STORM 10 Min 100

Area or	Drainage	e Rain Ga	ige Rur	noff		Peak	Flow	
Reach	Area	ID or	Amount	Ele	vation	Time	Rate	Rate
Identifier	(sq mi)	Location	(in)	(ft)	(hr)	(cfs)	(csm)	
.								_
Disturbed	0.010)	0.938		0.22	24.31	2524.56	5
Basin	0.010	Upstream	0.938		0.2	22 24.	31 2524	4.56
Basin	0.010 [Downstrea	m 0.72	9	721.46	0.69	0.33	34.71
OUTLET	0.01	0	0.729		0.69	0.33	34.71	

STORM 15 Min 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

1.386 0.25 32.24 3347.47 Disturbed 0.010 0.25 32.24 3347.47 Basin 0.010 Upstream 1.386 0.75 Basin 0.010 Downstream 1.177 721.73 0.37 38.13 0.75 0.37 OUTLET 0.010 1.177 38.13

STORM 30 Min 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

0.29 0.010 2.158 36.62 3802.30 Disturbed 0.29 36.62 3802.30 Basin 0.010 Upstream 2.158 0.010 Downstream 1.949 722.20 0.93 0.42 43.59 Basin OUTLET 0.010 1.949 0.93 0.42 43.59

STORM 1 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

35.07 3642.04 2.967 Disturbed 0.010 0.37 Basin 0.010 Upstream 2.967 0.37 35.07 3642.04 0.010 Downstream 2.758 722.68 1.37 0.47 48.58 Basin OUTLET 0.010 2.758 0.47 48.58 1.37

STORM 2 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed0.0103.8680.5327.732879.08Basin0.010Upstream3.8680.5327.732879.08

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Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Basin0.010 Downstream3.658723.192.300.5253.53OUTLET0.0103.6582.300.5253.53

STORM 3 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

0.010 21.99 2283.34 Disturbed 4.371 0.67 0.010 Upstream 4.371 0.67 21.99 2283.34 Basin 0.010 Downstream 4.162 723.46 Basin 3.28 0.54 55.74 OUTLET 0.010 4.162 3.28 0.54 55.74

STORM 6 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow -----Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 5.287 1.08 14.04 1458.43 0.010 Upstream 5.287 1.08 14.04 1458.43 Basin 0.010 Downstream 5.077 723.88 6.23 Basin 0.57 59.25 0.010 6.23 OUTLET 5.077 0.57 59.25

STORM 12 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 6.297 5.01 7.94 824.65 5.01 7.94 824.65 Basin 0.010 Upstream 6.297 Basin 0.010 Downstream 6.085 724.30 12.17 0.60 62.37 6.085 OUTLET 0.010 12.17 0.60 62.37

STORM 18 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 6.887 12.00 5.75 596.93 0.010 Upstream 6.887 12.00 5.75 596.93 Basin Basin 0.010 Downstream 6.671 724.52 18.14 0.62 64.01 OUTLET 0.010 6.671 18.14 0.62 64.01

STORM 24 Hr 100

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Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed	0.010	7.390	21.00	5.66	588.15	
Basin	0.010 Upstream	n 7.390	21.0	00 5.6	6 588	.15
Basin	0.010 Downstre	am 7.173	724.69	24.22	0.63	65.22
OUTLET	0.010	7.173	24.22	0.63	65.22	

STORM 48 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 8.090 41.99 3.08 319.47 0.010 Upstream 8.090 41.99 3.08 319.47 Basin 0.010 Downstream 7.866 724.40 48.16 0.61 63.12 Basin 48.16 0.61 63.12 OUTLET 0.010 7.866

STORM 72 Hr 100

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed	0.010	8.6	653	62.99	2.18	226.50	
Basin	0.010 Upstre	eam	8.653	62.9	9 2.1	8 226.	50
Basin	0.010 Downs	stream	8.421	724.08	72.13	0.59	60.81
OUTLET	0.010	8.	.421	72.13	0.59	60.81	

Area or Drainage	Peak Flow by Storm
Reach Area	10 Min 10015 Min 10030 Min 100 1 Hr 100 2 Hr 100
Identifier (sq mi)	(cfs) (cfs) (cfs) (cfs) (cfs)
Disturbed 0.010 Basin 0.010 DOWNSTREAM OUTLET 0.010	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$
Area or Drainage	Peak Flow by Storm
Reach Area	3 Hr 100 6 Hr 100 12 Hr 100 18 Hr 100 24 Hr 100
Identifier (sq mi)	(cfs) (cfs) (cfs) (cfs) (cfs)
Disturbed 0.010 Basin 0.010 DOWNSTREAM OUTLET 0.010	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$
Area or Drainage	Peak Flow by Storm
Reach Area	48 Hr 100 72 Hr 100
Identifier (sq mi)	(cfs) (cfs) (cfs) (cfs) (cfs)
Disturbed 0.010	3.08 2.18
Basin 0.010	3.08 2.18
DOWNSTREAM	0.61 0.59
OUTLET 0.010	0.61 0.59

WinTR-20: version 3.20 Benet Stadium Proposed		0	0	0.05	0
SUB-AREA: Disturbed Basin	0.0	00963	90.2	0.25	Y
STREAM REACH: Basin Outlet	Stor	mTrap			
STORM ANALYSIS: 10 Min 2 15 Min 2 30 Min 2 1 Hr 2 2 Hr 2 3 Hr 2 3 Hr 2	.7 .9 1.24 1.57 1.94 2.14	H 10 H 15 H 30 H 1 F H 2 F H 3 F	Min 2 Min 2 0 Min IR 2 IR 2 IR 2	2	

0 11 2	2.01	
12 Hr 2	2.91	H 12 HR 2
18 Hr 2	3.14	H 18 HR 2
24 Hr 2	3.34	H 24 HR 2
48 Hr 2	3.66	H 48 HR 2
72 Hr 2	3.97	H 72 HR 2

STRUCTURE RATING:

StormTrap 71	9.5	
719.5	0.	0.
720.67	.19	.408
720.75	.2	.43
721.42	.33	.44
722.	.4	.92
723.	.5	1.75
724.	.58	2.58
725.	.65	3.42

RAINFALL DISTRIBUTION:

H 10 Min	0.007			
0. 0	.0836 0	.1773 0	.2811 0	.3833
0.4745	0.5550	0.6225	0.672	0.7082
0.7417	0.7697	0.7981	0.8255	0.8518
0.8740	0.8947	0.9117	0.9270	0.9403
0.9536	0.9656	0.9774	0.9885	1.0000
H 15 Min	0.010			
0. 0	.0836 0	.1773 0	.2811 0	.3833
0.4745	0.5550	0.6225	0.6722	0.7082
0.7417	0.7697	0.7981	0.8255	0.8518
0.8740	0.8947	0.9117	0.9270	0.9403
0.9536	0.9656	0.9774	0.9885	1.0000
H 30 Min	0.021			
0. 0	.0836 0	.1773 0	.2811 0	.3833
0.4745	0.5550	0.6225	0.6722	0.7082
0.7417	0.7697	0.7981	0.8255	0.8518
0.8740	0.8947	0.9117	0.9270	0.9403
0.9536	0.9656	0.9774	0.9885	1.0000
H 1 Hr	0.042			
0. 0	.0836 0	.1773 0	.2811 0	.3833
0.4745	0.5550	0.6225	0.672	0.7082
0.7417	0.7697	0.7981	0.8255	0.8518
0.8740	0.8947	0.9117	0.9270	0.9403
0.9536	0.9656	0.9774	0.9885	1.0000
H 2 Hr	0.083			

```
0.0836
                           0.2811
     0.
                   0.1773
                                   0.3833
     0.4745 0.5550
                     0.6225
                             0.6722
                                     0.7082
     0.7417
                     0.7981
                             0.8255
                                     0.8518
             0.7697
     0.8740 0.8947
                     0.9117
                             0.9270
                                     0.9403
     0.9536 0.9656
                    0.9774
                             0.9885
                                    1.0000
H 3 Hr
            0.125
           0.0836
                  0.1773 0.2811
                                  0.3833
     0.
     0.4745
            0.5550 0.6225
                             0.6722
                                     0.7082
     0.7417
            0.7697
                     0.7981
                             0.8255
                                     0.8518
     0.8740 0.8947
                     0.9117
                             0.9270
                                     0.9403
     0.9536 0.9656
                     0.9774
                             0.9885
                                     1.0000
H 6 Hr
            0.250
           0.0836 0.1773 0.2811
     0
                                  0.3833
                     0.6225
     0.4745 0.5550
                             0.6722
                                     0.7082
     0.7417
             0.7697
                     0.7981
                             0.8255
                                     0.8518
     0.8740
            0.8947
                     0.9117
                             0.9270
                                     0.9403
     0.9536
            0.9656
                     0.9774
                             0.9885
                                     1.0000
H 12 Hr
             0.500
           0.0229 0.0482 0.0778 0.1133
     0
     0.1579 0.2139
                     0.2841
                             0.3644
                                     0.4529
                     0.6976
     0.5435 0.6238
                             0.7548
                                     0.8038
     0.8470 0.8781
                             0.9217
                     0.9022
                                     0.9381
     0.9529 0.9657
                     0.9774
                             0.9884
                                     1.0000
H 18 Hr
             0.750
           0.0205 0.0431 0.0667
     0.
                                   0.0912
     0.1171
            0.1436 0.1691
                             0.1964
                                     0.2278
     0.2633 0.3093
                     0.3635
                             0.4392
                                     0.5211
     0.6102 0.6989
                     0.7819
                             0.8492
                                     0.8974
     0.9311 0.9534
                    0.9706
                            0.9856
                                     1.0000
H 24 HR
              1.0
           0.0231
                   0.0479 0.0712 0.0978
     0.
     0.1253 0.1523 0.1791
                             0.2033
                                     0.2283
     0.2541
            0.2835
                     0.3125
                             0.3390
                                     0.3633
     0.3861
             0.4124
                     0.4508
                             0.5129
                                     0.5931
     0.6919 0.8005
                     0.8971
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                                     1.0000
H 48 HR
              2.0
     0.
           0.0231
                   0.0479 0.0712 0.0978
     0.1253 0.1523 0.1791
                             0.2033
                                     0.2283
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                             0.3390
     0.2541
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     0.3861
             0.4124
                    0.4508
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                                     0.5931
     0.6919 0.8005
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H 72 HR
              3.0
           0.0231
                   0.0479 0.0712 0.0978
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     0.1253 0.1523 0.1791
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                             0.3390
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     0.3861 0.4124
                     0.4508
                             0.5129
                                     0.5931
     0.6919 0.8005 0.8971
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                                     1.0000
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Benet Stadium Proposed

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STORM 10 Min 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

0.24 3.90 405.27 Disturbed 0.010 0.148 0.24 3.90 405.27 0.010 Upstream 0.148 Basin 0.010 Downstream 0.0 719.50 Basin 0.04 0.0 0.0 OUTLET 0.010 0.0 0.04 0.0 0.0

STORM 15 Min 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

6.14 637.92 Disturbed 0.010 0.263 0.26 0.010 Upstream 0.263 0.26 6.14 637.92 Basin 0.010 Downstream 0.053 719.88 Basin 0.78 0.06 6.41 OUTLET 0.010 0.053 0.78 0.06 6.41

STORM 30 Min 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 0.495 0.31 7.89 819.15 0.010 Upstream 0.495 0.31 7.89 819.15 Basin 0.010 Downstream 0.286 720.21 0.94 Basin 0.12 12.03 0.010 0.286 0.94 0.12 OUTLET 12.03

STORM 1 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 0.750 0.40 8.22 853.19 0.010 Upstream 0.750 0.40 8.22 853.19 Basin 0.010 Downstream 0.540 720.57 Basin 1.36 0.17 18.04 0.010 OUTLET 0.540 1.36 0.17 18.04

STORM 2 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed0.0101.0560.617.21748.67Basin0.010Upstream1.0560.617.21748.67

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Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Basin0.010 Downstream0.846721.502.240.3435.29OUTLET0.0100.8462.240.3435.29

STORM 3 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

0.010 Disturbed 1.228 0.80 5.89 612.09 0.010 Upstream 1.228 5.89 612.09 0.80 Basin 0.010 Downstream 1.018 721.58 Basin 3.21 0.35 36.28 OUTLET 0.010 1.018 3.21 0.35 36.28

STORM 6 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow -----Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 1.555 1.33 3.91 406.49 0.010 Upstream 1.555 1.33 3.91 406.49 Basin 0.010 Downstream 1.344 721.70 6.16 Basin 0.36 37.73 0.010 1.344 6.16 OUTLET 0.36 37.73

STORM 12 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 1.917 5.05 2.58 267.99 5.05 2.58 267.99 Basin 0.010 Upstream 1.917 0.010 Downstream 1.704 721.81 Basin 11.16 0.38 39.14 1.704 0.38 OUTLET 0.010 11.16 39.14

STORM 18 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 2.128 12.02 2.00 208.11 0.010 Upstream 2.128 12.02 2.00 208.11 Basin Basin 0.010 Downstream 1.905 721.90 16.66 0.39 40.31 OUTLET 0.010 1.905 16.66 0.39 40.31

STORM 24 Hr 2

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Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed	0.010	2.3	314	21.00	2.03	211.15	
Basin	0.010 Upstr	eam	2.314	21.0	00 2.0)3 211.	15
Basin	0.010 Downs	stream	2.082	722.02	24.18	0.40	41.73
OUTLET	0.010	2.	.082	24.18	0.40	41.73	

STORM 48 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed 0.010 2.607 42.00 1.13 117.54 0.010 Upstream 2.607 42.00 1.13 117.54 Basin 0.010 Downstream 2.355 721.91 48.07 0.39 40.38 Basin 0.39 40.38 OUTLET 0.010 2.355 48.07

STORM 72 Hr 2

Area or Drainage Rain Gage Runoff ------ Peak Flow ------Reach Area ID or Amount Elevation Time Rate Rate Identifier (sq mi) Location (in) (ft) (hr) (cfs) (csm)

Disturbed	0.010	2.8	391	63.00	0.83	85.96	
Basin	0.010 Upstre	eam	2.891	63.0	0.0	83 85.9	96
Basin	0.010 Downs	stream	2.618	721.82	69.20	0.38	39.30
OUTLET	0.010	2.	.618	69.20	0.38	39.30	

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Area or Drainage	Peak Flow by Storm
Reach Area	10 Min 2 15 Min 2 30 Min 2 1 Hr 2 2 Hr 2
Identifier (sq mi)	(cfs) (cfs) (cfs) (cfs) (cfs)
Disturbed 0.010 Basin 0.010 DOWNSTREAM OUTLET 0.010	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$
Area or Drainage	Peak Flow by Storm
Reach Area	3 Hr 2 6 Hr 2 12 Hr 2 18 Hr 2 24 Hr 2
Identifier (sq mi)	(cfs) (cfs) (cfs) (cfs) (cfs)
Disturbed 0.010 Basin 0.010 DOWNSTREAM OUTLET 0.010	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$
Area or Drainage	Peak Flow by Storm
Reach Area	48 Hr 2 72 Hr 2
Identifier (sq mi)	(cfs) (cfs) (cfs) (cfs) (cfs)
Disturbed 0.010	1.13 0.83
Basin 0.010	1.13 0.83
DOWNSTREAM	0.39 0.38
OUTLET 0.010	0.39 0.38

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BENET ACADEMY STADIUM IMPROVEMENTS DATE: JANUARY 31, 2025 REVISED: JUNE 16, 2025



APPENDIX IV – REFRENCED DUPAGE COUNTY STORMWATER & FLOODPLAIN ORDINANCE PAGES

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well, for **Runoff** infiltrated from commercial, industrial and institutional land uses. The **Applicant** shall use their best efforts to identify such zones from available information sources, which include the Illinois State Water Survey, IEPA, USEPA, DuPage County Health Department and the local municipality or water agency.

- **15-63.B.3** Areas where contaminants of concern, as identified by the USEPA or the IEPA prior to **Development**, are present in the soil through which infiltration would occur. For sites with a No Further Remediation (NFR) letter from the USEPA or IEPA, the **Applicant** shall determine whether or not structural barriers are part of the **Mitigation** strategy and account for such measures in the design.
- **15-63.B.4 Development** in soils classified as Hydrologic Soils Group A by the **NRCS**.
- **15-63.B.5 Developments** over soils with the seasonally high groundwater table within 2 feet of the surface.
- **15-64.** Post Construction Best Management Practices Design Criteria.
 - **15-64.A PCBMP**s shall provide volume and pollutant control using one of the following practices:
 - **15-64.A.1** Infiltration of 1.25 inches for all new impervious surfaces; or
 - **15-64.A.2** Native vegetated wetland bottom site runoff storage basin; or
 - **15-64.A.3 PCBMP**s not constructed pursuant to Sections 15-64.A.1 or 15-64.A.2 shall be constructed in accordance with 15-64.C.
 - **15-64.B** Design criteria may be taken from the DuPage Appendix E Water Quality Best Management Practices Technical Guidance Manual or approved equivalent.
 - **15-64.C** If the practices listed under 15.64.A.1 or 15.64.A.2 are not utilized, then volume control and pollutant control shall be provided separately for all new impervious surfaces in accordance with the following criteria:
 - **15-64.C.1** The required volume control shall be calculated as the product of the **New Impervious Area** and a 1.25" rainfall event. No abstractions are taken on the rainfall depth.
 - **15-64.C.2** The volume calculated shall be subtracted from any volume of site runoff storage that is also required.
 - **15-64.C.3** A control structure or underdrain, may be used provided that the draw down time is between 48 and 96 hours.
 - **15-64.C.4** When a trench or other excavation is used, the expected void space (typically no greater than 36%) within the uniformly graded stone, sand or aggregate portion of the fill material may be included in the volume calculation. Silt sized particles (1/16 mm) or smaller may not be used to complete this calculation. The design shall incorporate measures to protect the void space from long term deposition of fine sediments. If testing is completed on samples of the proposed fill material which indicates a higher level of porosity, the **Applicant** may submit

the analysis completed on the material along with the storage calculations.

- **15-64.C.5** The bottom/invert of the trench shall be set above the seasonally high water table.
- **15-64.C.6** Applicants shall identify the pollutants of concern that may be generated by the proposed **Development** from the following list: Total Suspended Soils (TSS): Metals and Oils; and Nutrients consisting of nitrogen and phosphorous. Proposed **PCBMPs** shall only be required to treat those pollutants identified and agreed to by the **Director** or **Administrator**.
- **15-65.** Required **PCBMPs** for a **Development** may be located off-site as part of a regional stormwater device, practice or system, but must be within the same major **Watershed** as the **Development**. The 6 major **Watershed** divisions within the **County** are identified in Section 15-5.B.
- 15-66. RESERVED
- 15-67. RESERVED
- 15-68. RESERVED
- 15-69. RESERVED
- 15-70. RESERVED

ARTICLE IX. SITE RUNOFF CONVEYANCE, STORAGE & FIELD TILES

- **15-71.** Site Runoff Conveyance Requirements
 - **15-71.A Minor Stormwater Systems** shall be sized to convey **Runoff** from the tributary **Watershed** under fully developed conditions consistent with the design requirements of the local jurisdiction.
 - **15-71.B** Major Stormwater Systems shall be sized to carry the Base Flood without causing additional property damage.
 - **15-71.C** Design runoff rates shall be calculated by methodologies in general use for such purposes at the time of application. Stormwater **Facilities** draining more than 5-acres shall use event hydrograph methods. The **Director** in a Non-Waiver **Community** or the **Administrator** in a **Partial Waiver** or **Complete Waiver Community** may specify certain design tools and methodologies to be used within the respective **Community**.
 - **15-71.D** Any design runoff rate method shall use Illinois State Water Survey Bulletin 70 northeast sectional rainfall statistics, as amended from time to time in accordance with state regulations, or for continuous simulations, the National Oceanic and Atmospheric Administration continuous rainfall record from 1949 to present at the Wheaton gage, and shall calculate flow from all tributary area upstream of the point of design. Facilities with a tributary area over 100-acres will be required to perform **Critical Duration** analysis and use the highest peak discharge for conveyance design, testing events up to a 24-hour duration.
 - **15-71.E** Maximum flow depths at the crown of a roadway or the edge of pavement at the high side of a super elevated roadway shall not exceed six inches during the **Base Flood** condition. This requirement does not apply to the at-grade repair, resurfacing or in-kind replacement of a roadway existing prior to the effective date of this Ordinance.
 - **15-71.F** Transfers of waters between the major planning **Watersheds** shall be prohibited except when such transfers will not violate the provisions of Section 15-27.A.
 - **15-71.G** Stormwater Facilities for Runoff upstream of Flood protection facilities shall provide for conveyance or storage of Flood waters without increased potential for damage to real or personal property during Base Flood conditions.
- **15-72.** Site Runoff Storage. Site runoff storage facilities, consisting of site runoff storage and a control structure with an emergency overflow shall be required for all **Developments**.
 - **15-72.A** The following cases or special conditions represent exceptions to providing site runoff storage:
 - **15-72.A.1** When comparing the **Impervious Area** of the predevelopment **Development Site** as it existed as of February 15, 1992 to the with-development **Impervious Area** of the same **Development Site**, excluding any areas of the **Development Site** for which detention has already been provided, and the **Impervious Area** has not increased by a minimum of 25,000 sq. ft cumulatively of permitted **Development**; or

Floodproofing Certificate. A form published by FEMA that is used to certify that a structure is floodproofed to one foot above the base flood elevation.

Flood Protection Elevation (FPE). The base flood elevation plus one foot of freeboard. If an approved FEQ **Watershed Plan Model** produces a higher elevation than the regulatory BFE, the FPE shall be the FEQ flood of record elevation plus one foot of freeboard.

Floodway. The channel and that portion of the floodplain adjacent to a stream or watercourse that is needed to convey the base flood without cumulatively increasing the water surface elevation more than 0.1 feet. The maps that identify the current effective floodways for the incorporated and unincorporated DuPage County are listed in Exhibit 2.

Floodway Conveyance. The measure of the flow carrying capacity of the floodway section and is defined using Manning's equation as, $K = 1.49 \text{ AR}^{2/3}$ where "n" is Manning's roughness factor, n

"A" is the effective area of the cross-section, and "R" is ratio of the wetted area to the wetted perimeter.

Floristic Quality Index (FQI). A quantitative measure to determine the quality of a plant community as calculated by the methodology contained in *Plants of the Chicago Region* (Swink, F. and G. Wilhelm. The Morton Arboretum, Lisle, Illinois).

Hydrology. The science of the behavior of water, including its dynamics, composition, and distribution in the atmosphere, on the surface of the earth, and underground.

Indirect Wetland Impact. A change in hydraulics or hydrology that causes a change in plant community that reduces or eliminates wetland function without directly filling or excavating wetland.

Impervious Area. Land cover that is including but not limited to non-porous asphalt or asphalt sealants, non-porous concrete, roofing materials except planted rooftops designed to reduce runoff, and gravel surfaces used as roadways or parking lots. Graveled surfaces used for storage of materials may be counted only 60% impervious provided aggregate gradation has a high porosity. Ponded water shall be considered impervious area (at its normal water elevation), but vegetated wetlands or constructed wetland basins shall not be considered impervious area. The impervious area of a development site pre-development is the maximum extent of the impervious surfaces that existed on the development site at the same time in any of the 3 -years pre-dating the date of the application.

Interim Watershed Plan. A portion of a watershed plan adopted by the County Board that does not yet contain all of the elements in Chapter 3 of the Plan.

Lake. A natural or artificial body of water encompassing an area of two or more acres that retains water throughout the year.

Land Surveyor. A person licensed under the laws of the State of Illinois to practice land surveying.