

DATE: 11/15/2024
 TIME: 10:00 AM
 PROJECT: TSNAMI EXPRESS CAR WASH, LLC.
 999 50TH AVE NE, COLUMBIA HEIGHTS, MN 55421

OWNER: TSNAMI EXPRESS CAR WASH, LLC.
 PROJECT: TSNAMI EXPRESS CAR WASH
 999 50TH AVE NE, COLUMBIA HEIGHTS, MN 55421

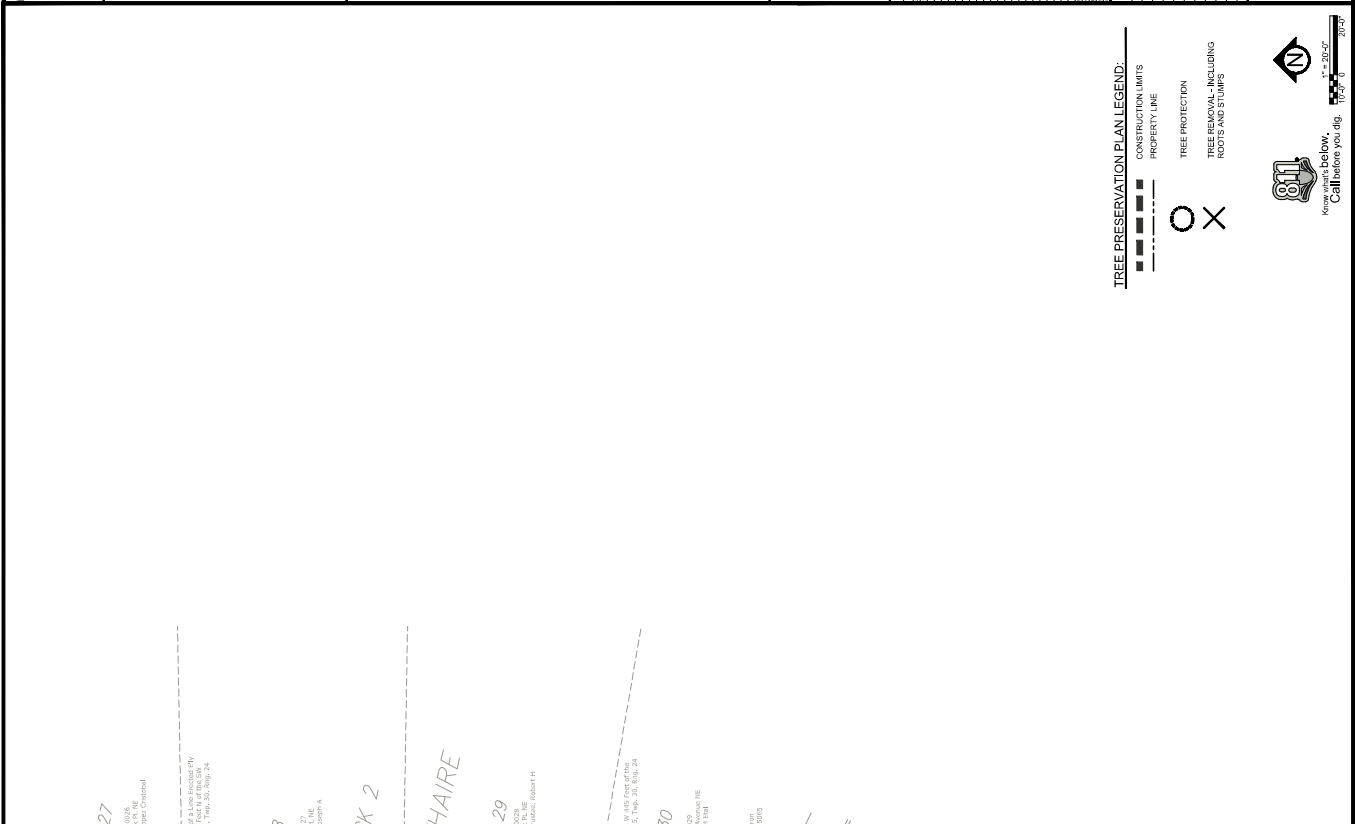
I HEREBY CERTIFY THAT THE PLAN PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AT THE TIME OF PREPARATION.

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NO.	DATE	DESCRIPTION
1	11/15/2024	ISSUE FOR PERMIT
2	11/15/2024	ISSUE FOR PERMIT
3	11/15/2024	ISSUE FOR PERMIT
4	11/15/2024	ISSUE FOR PERMIT
5	11/15/2024	ISSUE FOR PERMIT
6	11/15/2024	ISSUE FOR PERMIT
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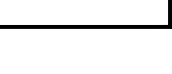
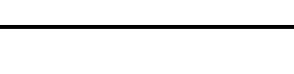
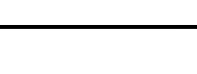
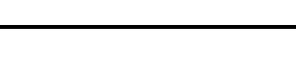
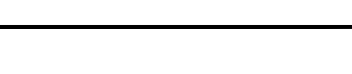
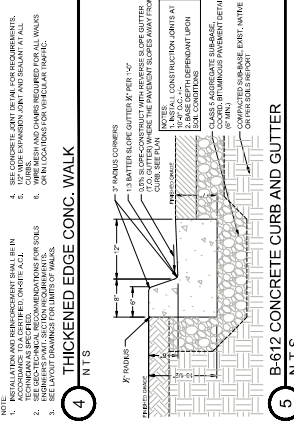
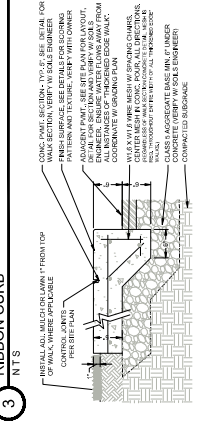
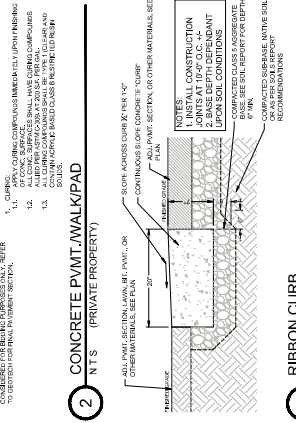
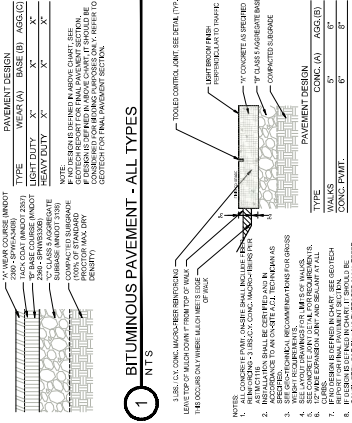
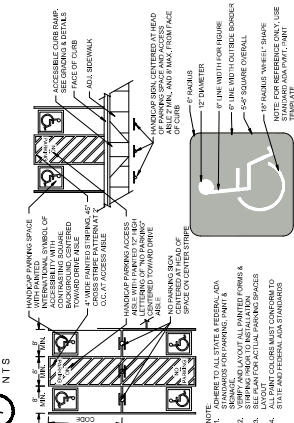
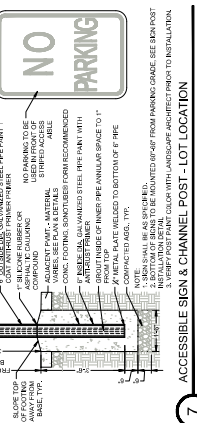
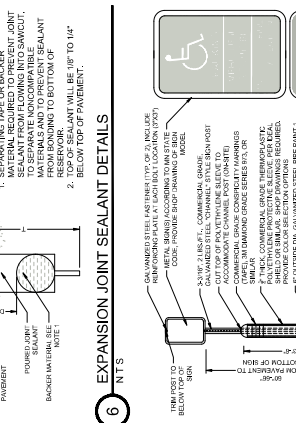
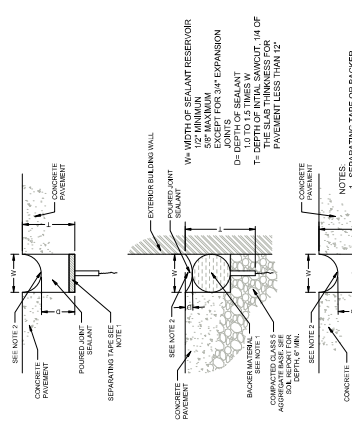
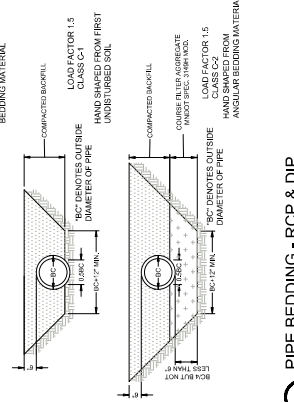
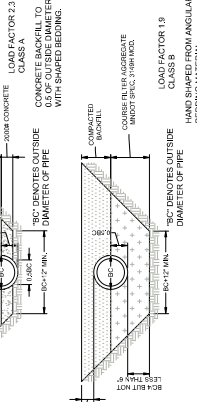
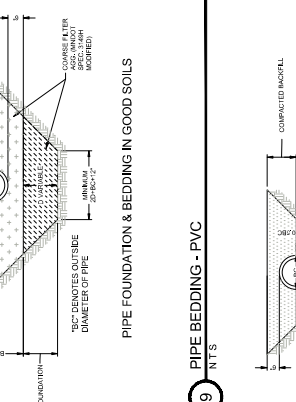
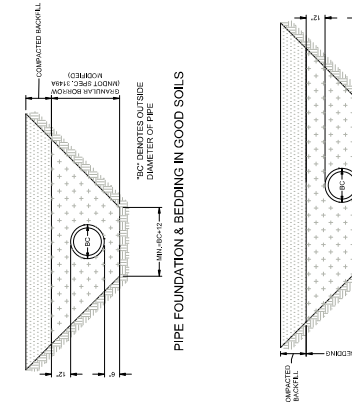
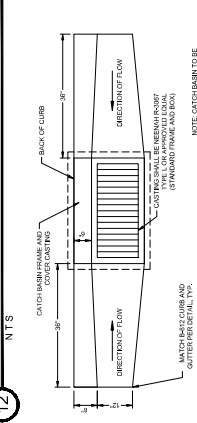
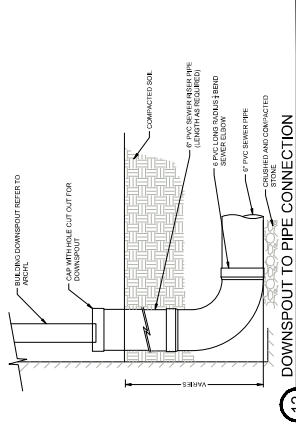
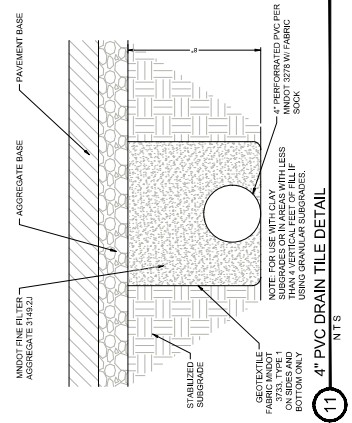
TREE TAG #	POINT ELEVATION	TREE TYPE	SPECIES	SIZE (CAL INCHES)	REMOVED	CAULIP INCHES	PRESERVED	CAULIP INCHES	CATEGORY	SIGNIFICANT	TREE PROTECTED
24295	934.45	TBD		15	6	15	5	15		15	
24297	938.06	TBD		6	6	6	5	6		6	
24298	938.06	TBD		13	13	13	5	13		13	
24299	938.51	TBD		13	13	13	5	13		13	
10	0.00	TRC	CED	2	2	2	R	2		R	
11	0.00	TRC	CED	2	2	2	R	2		R	
12	0.00	TRC	CED	2	2	2	R	2		R	
13	0.00	TRC	CED	2	2	2	R	2		R	
14	0.00	TRC	CED	2	2	2	R	2		R	
15	0.00	TRC	CED	2	2	2	R	2		R	
16	0.00	TRC	CED	2	2	2	R	2		R	
17	0.00	TRC	CED	2	2	2	R	2		R	
18	0.00	TRC	CED	2	2	2	R	2		R	
19	0.00	TRC	CED	2	2	2	R	2		R	
20	0.00	TRC	CED	2	2	2	R	2		R	
21	0.00	TRC	CED	2	2	2	R	2		R	
22	0.00	TRC	CED	2	2	2	R	2		R	
23	0.00	TRC	CED	2	2	2	R	2		R	
24	0.00	TRC	CED	2	2	2	R	2		R	
25	0.00	TRC	CED	2	2	2	R	2		R	
26	0.00	TRC	CED	2	2	2	R	2		R	
27	0.00	TRC	CED	2	2	2	R	2		R	
28	0.00	TRC	CED	2	2	2	R	2		R	
29	0.00	TRC	CED	2	2	2	R	2		R	
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41	0.00	TRC	CED	2	2	2	R	2		R	
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49	0.00	TRC	CED	2	2	2	R	2		R	
50	0.00	TRC	CED	2	2	2	R	2		R	

TREE TAG #	POINT ELEVATION	TREE TYPE	SPECIES	SIZE (CAL INCHES)	REMOVED	CAULIP INCHES	PRESERVED	CAULIP INCHES	CATEGORY	SIGNIFICANT	TREE PROTECTED
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24297	938.06	TBD		6	6	6	5	6		6	
24298	938.06	TBD		13	13	13	5	13		13	
24299	938.51	TBD		13	13	13	5	13		13	
10	0.00	TRC	CED	2	2	2	R	2		R	
11	0.00	TRC	CED	2	2	2	R	2		R	
12	0.00	TRC	CED	2	2	2	R	2		R	
13	0.00	TRC	CED	2	2	2	R	2		R	
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15	0.00	TRC	CED	2	2	2	R	2		R	
16	0.00	TRC	CED	2	2	2	R	2		R	
17	0.00	TRC	CED	2	2	2	R	2		R	
18	0.00	TRC	CED	2	2	2	R	2		R	
19	0.00	TRC	CED	2	2	2	R	2		R	
20	0.00	TRC	CED	2	2	2	R	2		R	
21	0.00	TRC	CED	2	2	2	R	2		R	
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24	0.00	TRC	CED	2	2	2	R	2		R	
25	0.00	TRC	CED	2	2	2	R	2		R	
26	0.00	TRC	CED	2	2	2	R	2		R	
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29	0.00	TRC	CED	2	2	2	R	2		R	
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31	0.00	TRC	CED	2	2	2	R	2		R	
32	0.00	TRC	CED	2	2	2	R	2		R	
33	0.00	TRC	CED	2	2	2	R	2		R	
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35	0.00	TRC	CED	2	2	2	R	2		R	
36	0.00	TRC	CED	2	2	2	R	2		R	
37	0.00	TRC	CED	2	2	2	R	2		R	
38	0.00	TRC	CED	2	2	2	R	2		R	
39	0.00	TRC	CED	2	2	2	R	2		R	
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49	0.00	TRC	CED	2	2	2	R	2		R	
50	0.00	TRC	CED	2	2	2	R	2		R	

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24298	938.06	TBD		13	13	13	5	13		13	
24299	938.51	TBD		13	13	13	5	13		13	
10	0.00	TRC	CED	2	2	2	R	2		R	
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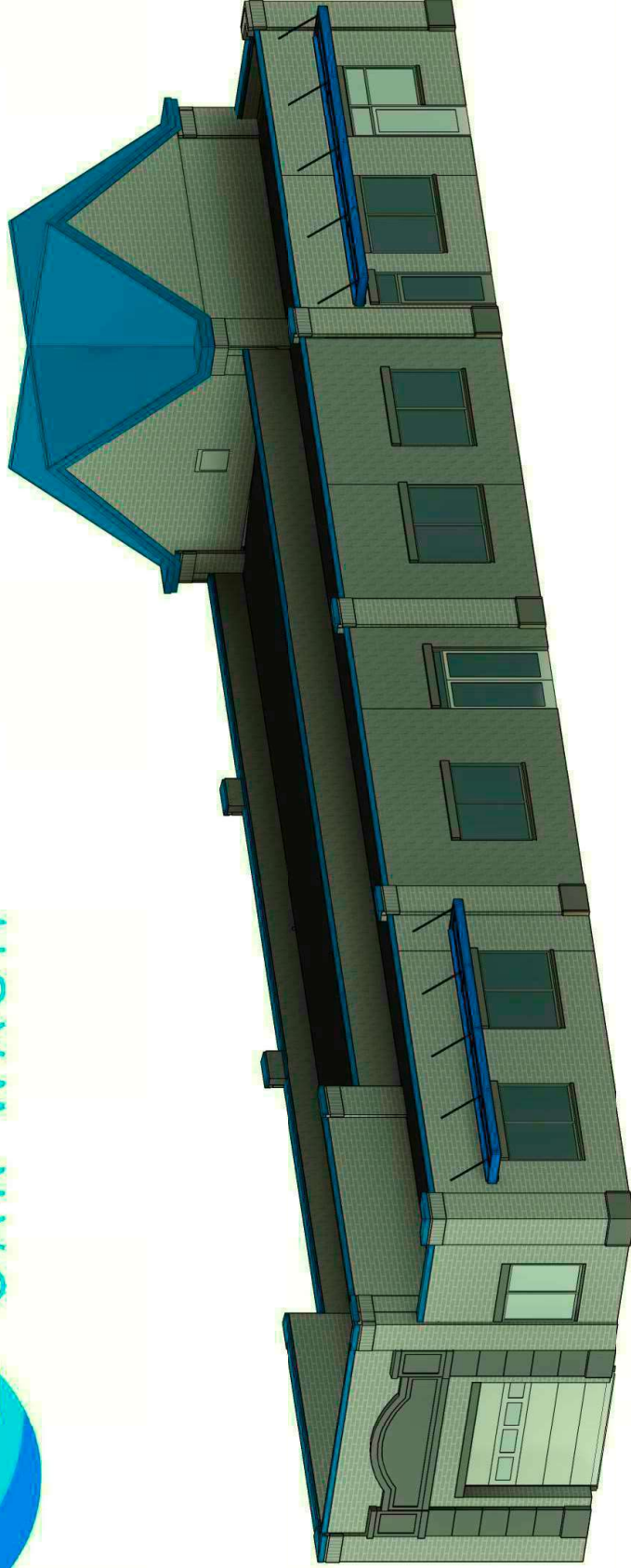
**PRELIMINARY:
 NOT FOR
 CONSTRUCTION**

NO.	DATE	DESCRIPTION
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2	10/20/2016	ISSUE FOR PERMITS
3	10/20/2016	ISSUE FOR PERMITS
4	10/20/2016	ISSUE FOR PERMITS
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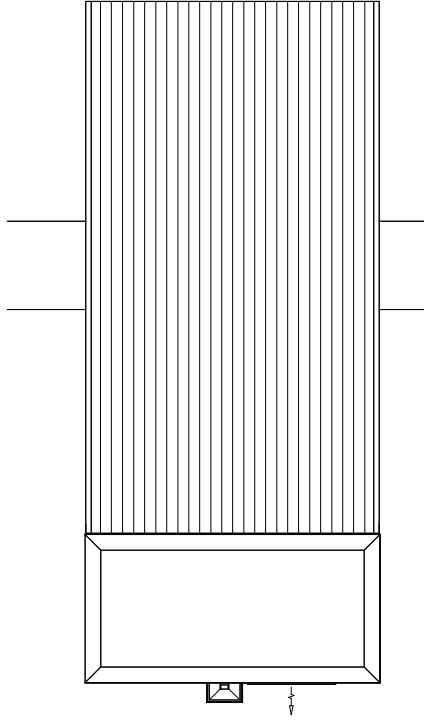


**TSUNAMI
EXPRESS**
CAR WASH

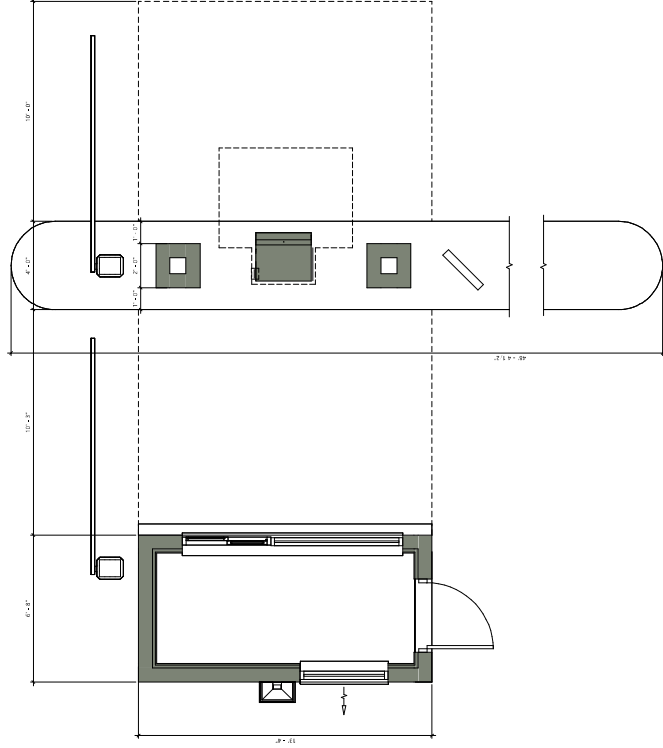


Tsunami Express Car Wash

Cover Sheet



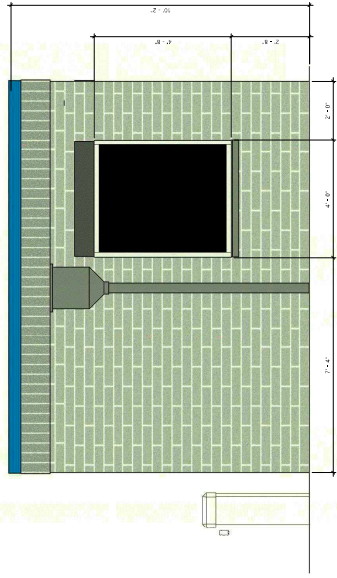
2 SALES BOOTH - ROOF PLAN
3/8" = 1'-0"



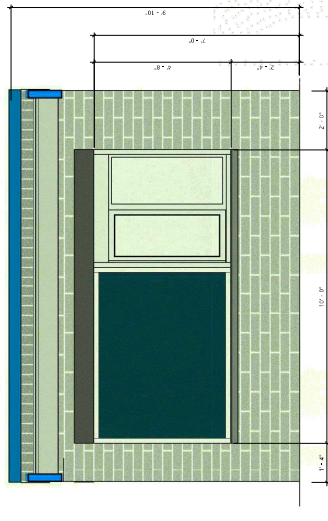
1 SALES BOOTH - FLOOR PLAN
3/8" = 1'-0"

Tsunami Express Car Wash

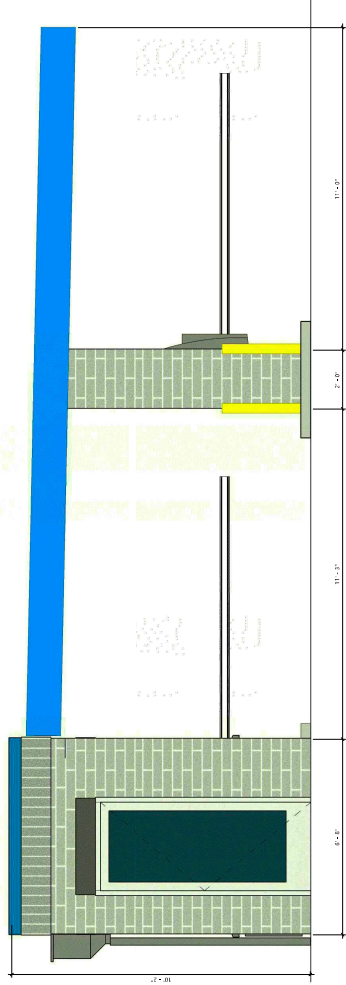
DE_Sales Booth - 2 Lane_Presentation



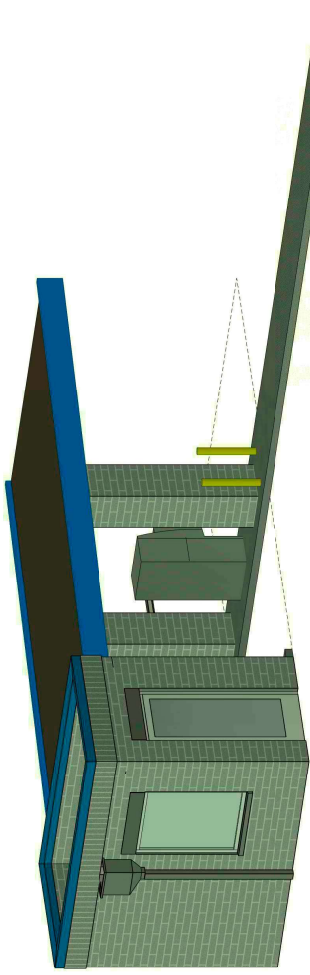
4 SALES 2 LANE - BACK ELEV
1/2" = 1'-0"



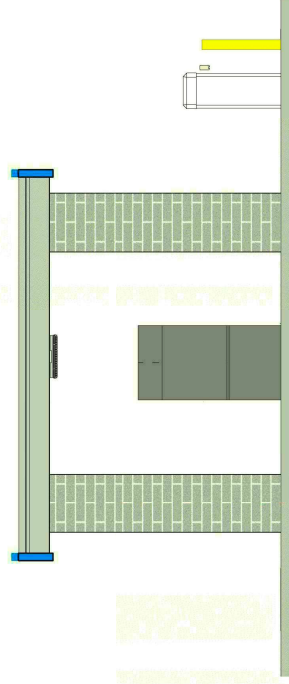
3 SALES - 2 LANE FRONT ELEV
1/2" = 1'-0"



1 SALES 2 LANE - APPROACH
1/2" = 1'-0"



5 SALES BOOTH - 3D VIEW



2 SALES BOOTH - SALES LANE ELEVATION
1/2" = 1'-0"

Tsunami Express Car Wash

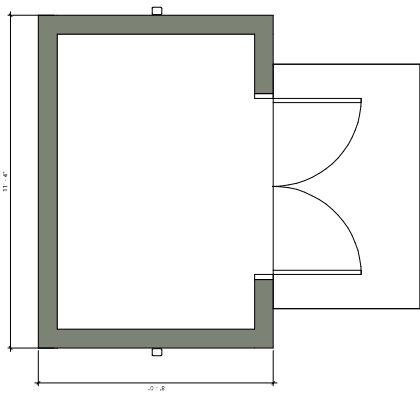
DE_Sales Booth - 2 Lane_Presentation



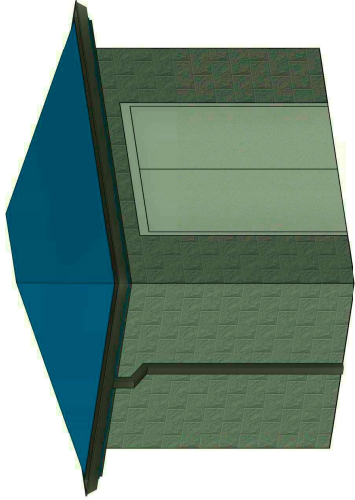
24656

07/17/24

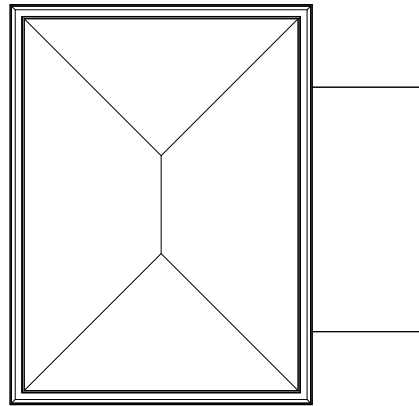
© 2023 The Redmond Company



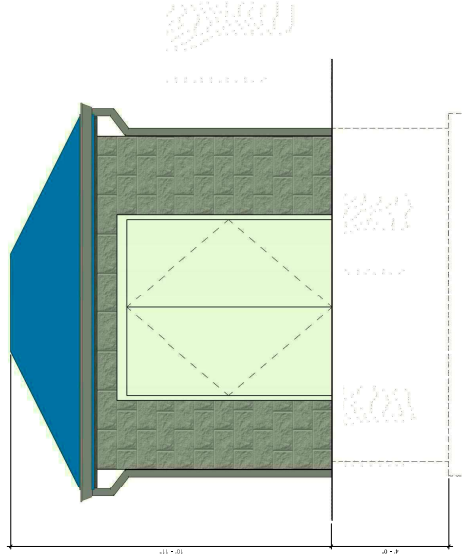
3 H. PUMP HOUSE - FLOOR PLAN PRESENTATION
1/2" = 1'-0"



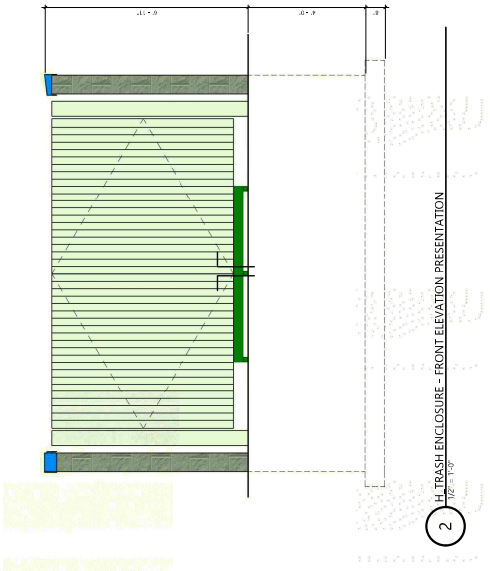
4 3D - PUMP ONLY



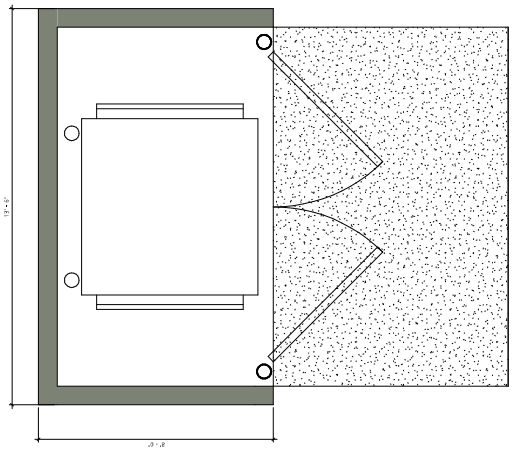
1 H. PUMP HOUSE - ROOF PLAN PRESENTATION
1/2" = 1'-0"



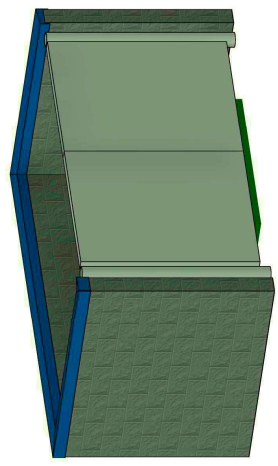
2 H. PUMP HOUSE - FRONT ELEVATION PRESENTATION
1/2" = 1'-0"



2 TRASH ENCLOSURE - FRONT ELEVATION PRESENTATION



1 TRASH ENCLOSURE - PLAN PRESENTATION



3 3D - TRASH ONLY

Tsunami Express Car Wash

SEP_Trash Bldg_Presentation

TYPOGRAPHY, ARROWS, FINISHES & VINYL

LOGOS



TSUNAMI EXPRESS
CAR WASH
(VERTICAL VERSION)



TSUNAMI EXPRESS
CAR WASH
(HORIZONTAL VERSION)

ARROWS



TYPOGRAPHY

T-01

Aa

UNIVA PRO BLACK

ABCDEFGHIJKLMNOPQRSTUVWXYZ
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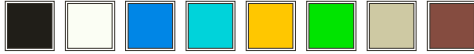
T-02

Aa

MONTERRAT REGULAR

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
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FINISHES



- P-01** - TO MATCH PMS BLACK C
- P-02** - WHITE, SATIN FINISH
- P-03** - TO MATCH PMS 2682 C (BLUE)
- P-04** - TO MATCH PMS 915 U (LT. BLUE)
- P-05** - TO MATCH PMS 7548 XGC (YELLOW)
- P-06** - TO MATCH PMS 2420 C (GREEN)
- P-07** - TO MATCH EXISTING BUILDING (TBD)
- P-08** - TO MATCH PMS 4715 C (DK BRICK RED)

VINYLS

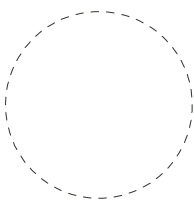


- V-01** - 3M 7725-12 BLACK
- V-02** - 3M 7725-10 WHITE
- V-03** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2382 C (BLUE)
- V-04** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 915 U (LT. BLUE)
- V-05** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 7548 XGC (YELLOW)
- V-06** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2420 C (GREEN)
- V-07** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 33% OF PMS 915 U (LT. BLUE)
- V-08** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 10% OF PMS 915 U (LT. BLUE)
- V-09** - DIGITALLY PRINTED ON 3M 3635-210 PERFORATED WHITE VINYL



PROJECT TITLE:
TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



ENGINEER OF RECORD SIGNATURE DATE:

REVISION HISTORY			
NO.	DATE	PREV. DRAWING	DESCRIPTION

PRODUCT TYPE:
PROJECT LOGO(S), TYPOGRAPHY,
ARROWS, FINISHES, & VINYL

DRAWING TYPE:		
PROJECT NO.	TASK NO.	QTY.
93745	233633	-
DWG. NO.	SHEET	
13323CH	2 OF 20	

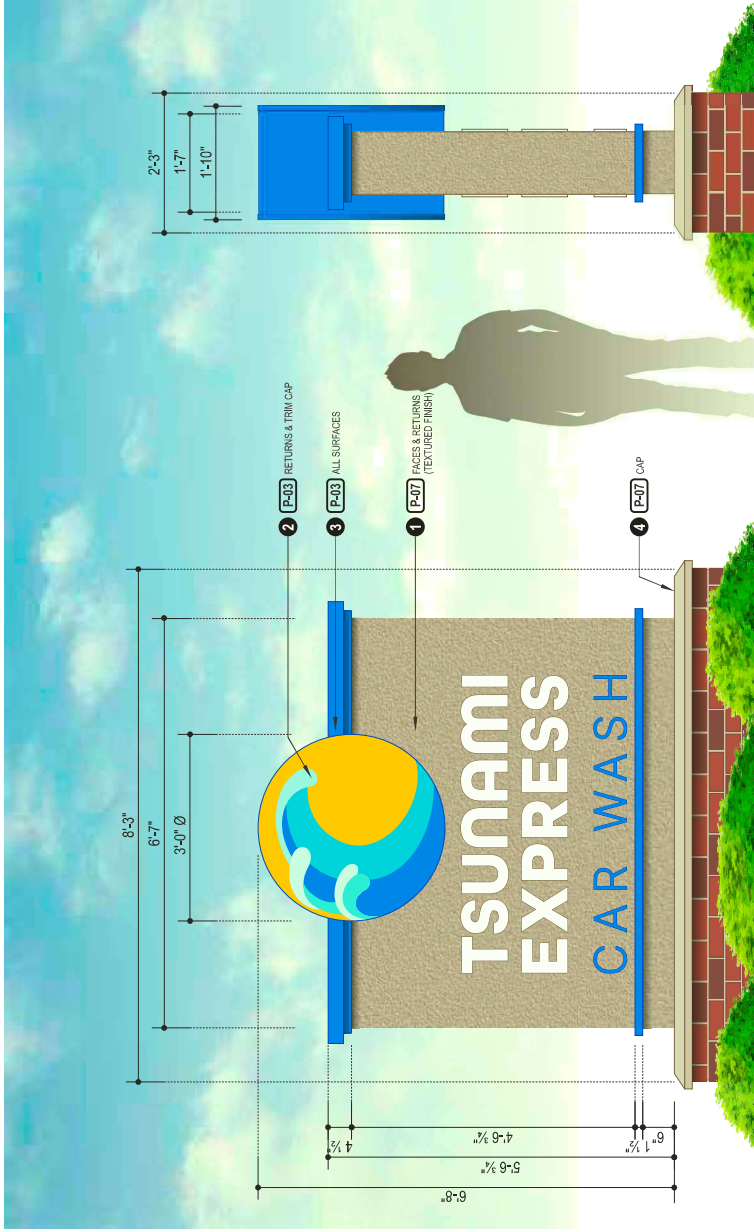
MN-2 SECONDARY MONUMENT SIGN

GENERAL NOTES:

ILLUMINATED: YES
 SIF OR DIF: D/F
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.
 ELECTRIC TO INSTALL LOCATION TO BE COORDINATED
 WITH E.C. AND TO BE PROVIDED BY THE E.C.

NOTES:

- CABINET:** D/F INTERNALLY ILLUMINATED CABINET. 1'-0" DEEP. ALUMINUM FACES & RETURNS OVER ALUMINUM ANGLE FRAME. FACES & OUTER RETURN TO HAVE A PAINTED TEXTURED FINISH. FACES TO HAVE ROUTED OUT W/ PUSHED THRU ACRYLIC COPY GRAPHICS. PUSHED THRU ACRYLIC TO BE CLEAR W/ APPLIED TRANS. VINYL OVERLAD ONTO THE FACES. INTERNAL ILLUMINATION TO BE WHITE LEDS. CABINET MOUNTED TO INSIDE OF BRICK COLUMN & BOTTOM CABINET VIA INTERNAL MAIN STEEL SUPPORT.
- LOGO CABINETS:** (2) SIF INTERNALLY ILLUMINATED 5" DEEP FAB'D CHANNEL CABINET. RETURNS & BACKS TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACES TO BE TRANS. WHITE ACRYLIC WITH APPLIED VINYL GRAPHICS. FACES ATTACHED TO RETURNS VIA 1" PLASTIC TRIM CAP. TRIM CAP FINISH TO MATCH RETURNS FINISH. INTERNALLY ILLUMINATED VIA WHITE LEDS. MOUNTED TO TOP CABINET.
- ACCENT MOLDING:** ALUMINUM TUBE DIMENSIONAL MOLDING. MOLDING TO HAVE A PAINTED FINISH. MOLDING MOUNTED TO CABINET FACE & OUTER RETURNS.
- BRICK BASE:** FAB'D STEEL FRAME WITH CEMENT BOARD CLADDING & BRICK VENEER W/ MORTAR. MOUNTED TO CONCRETE SLAB. BRICK VENEER TO MATCH BRICK ON EXISTING BUILDING. CAP TO BE FAB'D ALUMINUM WITH A PAINTED FINISH.
- BRICK COLUMN:** FAB'D STEEL FRAME WITH CEMENT BOARD CLADDING & BRICK VENEER W/ MORTAR. MOUNTED TO TOP OF BRICK BASE. INTERIOR OF COLUMN TO HAVE A STEEL TUBE SUPPORT. BRICK VENEER TO MATCH BRICK ON EXISTING BUILDING.



1 ELEVATION VIEW

SCALE: 1/2" = 1'-0"

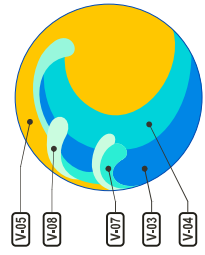
PAINTED FINISHES:

- P-03** - TO MATCH PMS 2382 C (BLUE)
- P-07** - TO MATCH EXISTING BUILDING (TBD)

VINYLS:

- V-02** - 3M 7725-10 WHITE
- V-03** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2382 C (BLUE)
- V-04** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 915 U (LT. BLUE)
- V-05** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 7548 XGC (YELLOW)

- V-07** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 33% OF PMS 915 U (LT. BLUE)
- V-08** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 10% OF PMS 915 U (LT. BLUE)



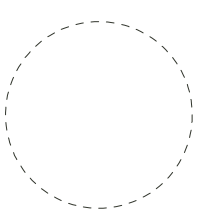
3 VINYL CALL OUTS

SCALE: 1/2" = 1'-0"



PROJECT TITLE:
TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL



ENGINEER OF RECORD SIGNATURE/DATE

REVISION HISTORY	
NO.	DESCRIPTION

PRODUCT TYPE:
SECONDARY MONUMENT SIGN

DRAWING TYPE:		
CONCEPTUAL		
PROJECT NO.	TASK NO.	QTY.
93745	233633	1
DWG. NO.	SHEET	
13323CH	6 OF 20	

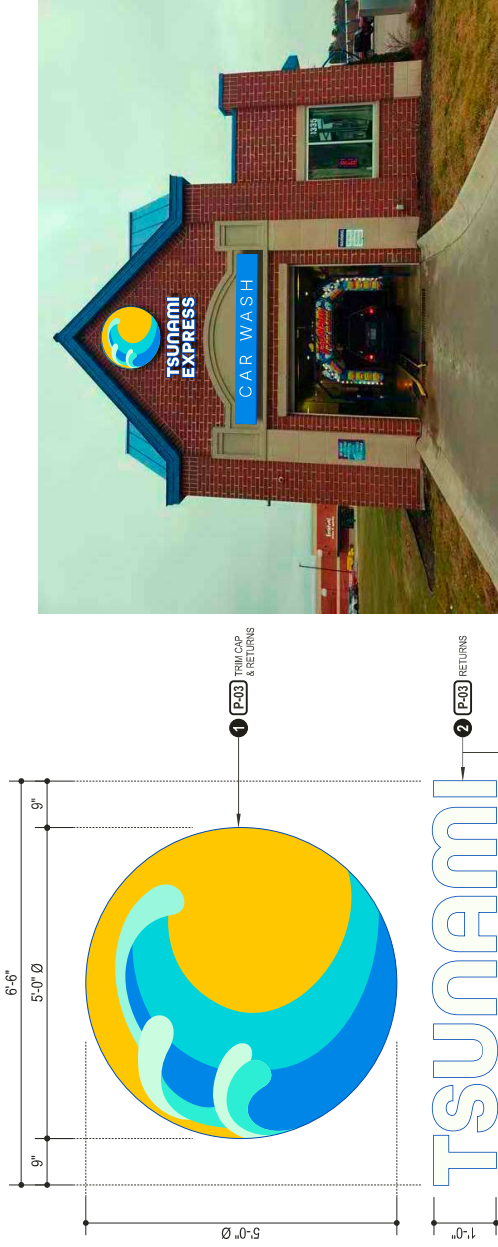
IDX-1 BUILDING ID - CAR WASH ENTRANCE

GENERAL NOTES:

ILLUMINATED: YES
 S/F OR D/F: S/F
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.
 ELECTRIC TO INSTALL LOCATION TO BE COORDINATED WITH E.C. AND TO BE PROVIDED BY THE E.C.

NOTES:

- 1** **LOGO CABINET:** S/F INTERNALLY ILLUMINATED 5" DEEP FAB'D CHANNEL CABINET. RETURNS & BACK TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACE TO BE TRANSPARENT ACRYLIC W/ APPLIED VINYL GRAPHICS. FACE ATTACHED TO RETURNS VIA 1" PLASTIC TRIM CAP. TRIM CAP FINISH TO MATCH RETURNS FINISH. INTERNALLY ILLUMINATED VIA WHITE LED'S. FLUSH MOUNTED TO EXISTING BRICK BUILDING.
- 2** **CHANNEL LETTERS:** INTERNALLY ILLUMINATED 5" DEEP FAB'D CHANNEL LETTERS. RETURNS & BACKS TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACES TO BE TRANSPARENT ACRYLIC. FACES ARE ATTACHED TO RETURNS VIA 1" PLASTIC TRIM CAP. TRIM CAP FINISH TO MATCH RETURNS FINISH. INTERNALLY ILLUMINATED VIA WHITE LED'S. FLUSH MOUNTED TO EXISTING BRICK BUILDING.
- 3** **CAR WASH CABINET:** S/F INTERNALLY ILLUMINATED 5" DEEP FAB'D CABINET. RETURNS & BACK TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACE TO BE ALUMINUM - FAB'D ALUMINUM "SHOE BOX" STYLE W/ 1 1/2" WELDED ALUMINUM RETURNS. FACE AND WELDED RETURNS TO HAVE A PAINTED FINISH. COPY TO BE ROUTED OUT OF ALUMINUM FACE. THE ROUTED OPENINGS TO BE BACKED W/ TRANS. WHITE ACRYLIC. FACE ATTACHED TO CABINET RETURNS VIA 1 1/2" WELDED ALUMINUM RETURNS. INTERNALLY ILLUMINATED VIA WHITE LED'S. FLUSH MOUNTED TO EXISTING BRICK BUILDING.

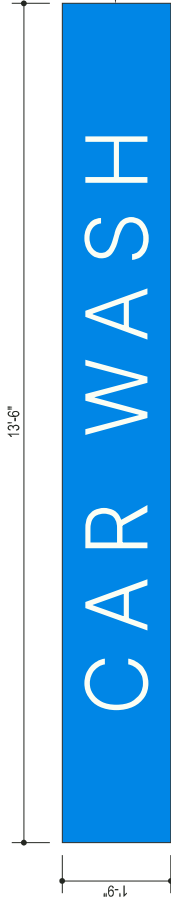


PROPOSED ELEVATION VIEW

SCALE: NTS

ELEVATION DETAIL 1

SCALE: 1/2" = 1'-0"



ELEVATION DETAIL 2

SCALE: 1/2" = 1'-0"

PAINTED FINISHES:

P-03 - TO MATCH PMS 2382 C (BLUE)

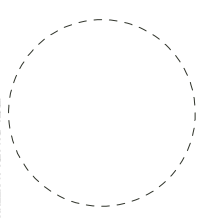
VINYLS:

- V-03** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2382 C (BLUE)
- V-04** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 915 U (LT. BLUE)
- V-05** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 7548 XGC (YELLOW)
- V-07** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 33% OF PMS 915 U (LT. BLUE)
- V-08** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 10% OF PMS 915 U (LT. BLUE)



PROJECT TITLE:
 TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



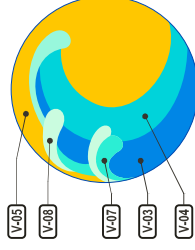
ENGINEER OF RECORD SIGNATURE DATE:

REVISION HISTORY	
NO.	DATE / PREV. DRWG. / DESCRIPTION

PRODUCT TYPE:
 SECONDARY MONUMENT SIGN

DRAWING TYPE:
 CONCEPTUAL

PROJECT NO.	TASK NO.	QTY.
93745	233633	1 SET
DWG. NO.	SHEET	
13323CH	7 OF 20	



VINYL CALL OUTS

SCALE: NTS

4

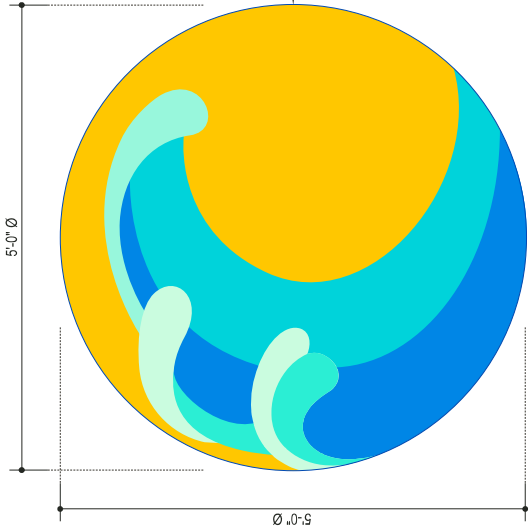
IDX-2 BUILDING ID - TOWER SIDES

GENERAL NOTES:

ILLUMINATED: YES
 S/F OR D/F: S/F
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.
 ELECTRIC TO INSTALL LOCATION TO BE COORDINATED WITH E.C. AND TO BE PROVIDED BY THE E.C.

NOTES:

1 LOGO CABINET: S/F INTERNALLY ILLUMINATED 5" DEEP FAB'D CHANNEL CABINET. RETURNS & BACK TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACE TO BE TRANS. WHITE ACRYLIC WITH APPLIED VINYL GRAPHICS. FACE ATTACHED TO RETURNS VIA 1" PLASTIC TRIM CAP. TRIM CAP FINISH TO MATCH RETURNS FINISH. INTERNALLY ILLUMINATED VIA WHITE LED'S. FLUSH MOUNTED TO EXISTING BRICK BUILDING.



1 ELEVATION DETAIL

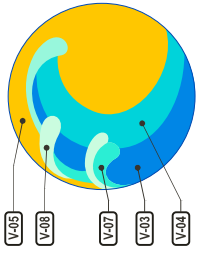
SCALE: 3/4" = 1'-0"

PAINTED FINISHES:

P-03 - TO MATCH PMS 2382 C (BLUE)

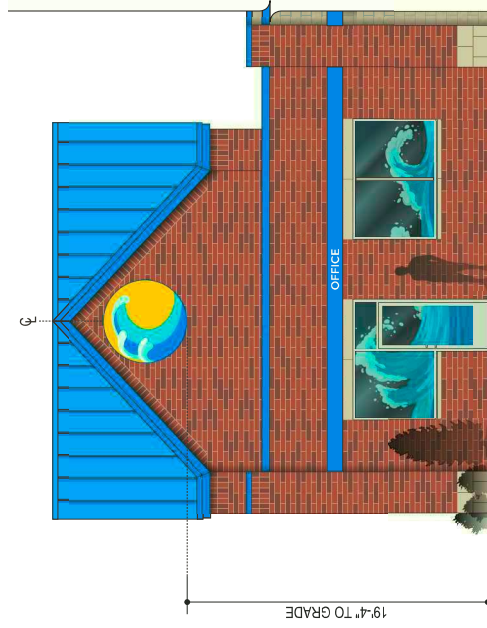
VINYLS:

- V-03** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2382 C (BLUE)
- V-04** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 915 U (LT. BLUE)
- V-05** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 7548 XGC (YELLOW)
- V-07** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 33% OF PMS 915 U (LT. BLUE)
- V-08** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH 10% OF PMS 915 U (LT. BLUE)



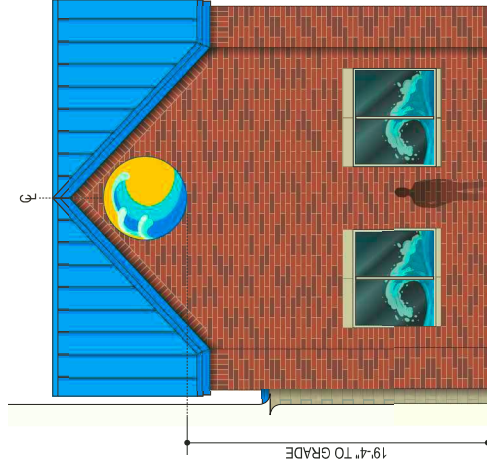
4 VINYL CALL OUTS

SCALE: NTS



2 SOUTH ELEVATION VIEW - PARTIAL

SCALE: 1/8" = 1'-0"



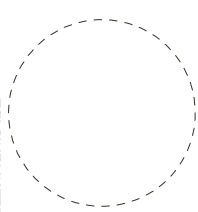
3 NORTH ELEVATION VIEW - PARTIAL

SCALE: 1/8" = 1'-0"



PROJECT TITLE:
 TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



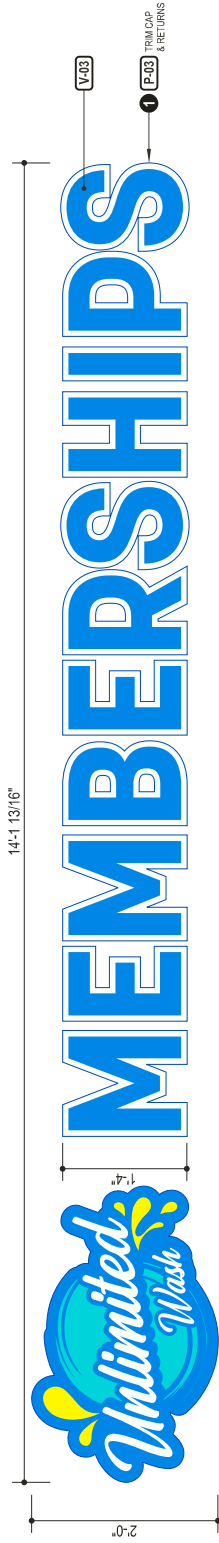
ENGINEER OF RECORD SIGNATURE DATE:

REVISION HISTORY	
NO.	DATE PREVIOUS DESCRIPTION

PRODUCT TYPE:
 SECONDARY MONUMENT SIGN

DRAWING TYPE:
 CONCEPTUAL

PROJECT NO.	93745	TASK NO.	233633	QTY.	2
DWG. NO.	13323CH	DWG. NO.	13323CH	SHEET	8 OF 20



1 ELEVATION DETAIL
SCALE: 3/4" = 1'-0"

GENERAL NOTES:

ILLUMINATED: YES
SIF OR DIF: SIF
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C. ELECTRIC TO INSTALL LOCATION TO BE COORDINATED WITH E.C. AND TO BE PROVIDED BY THE E.C.

NOTES:

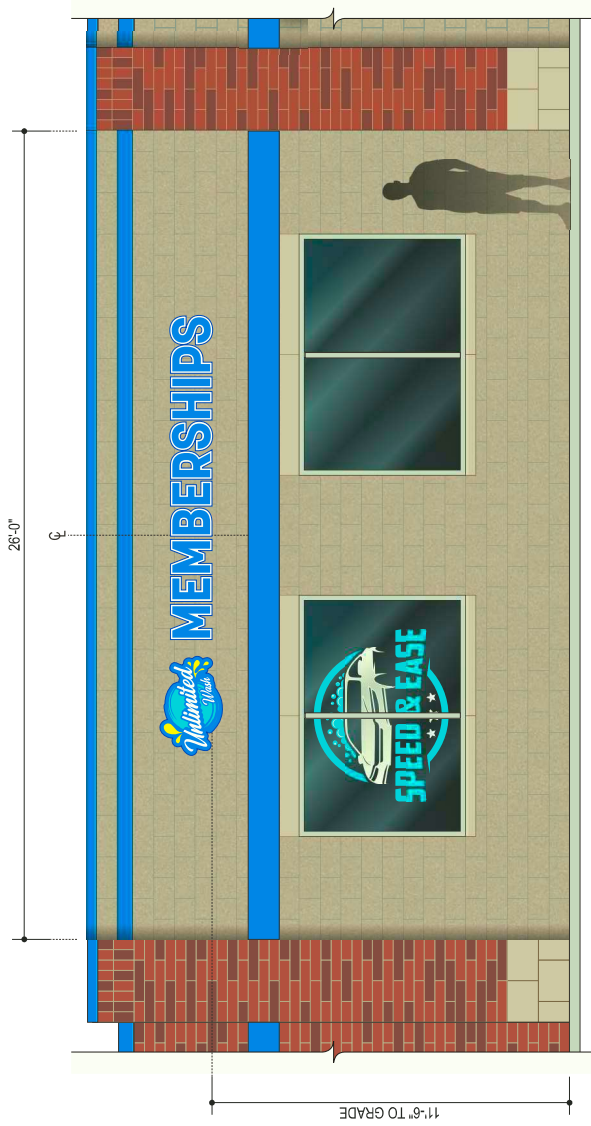
1 CHANNEL LETTERS: INTERNALLY ILLUMINATED, 5" DEEP FABR. CHANNEL LETTERS. RETURNS & BACKS TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACES TO BE TRANS. WHITE ACRYLIC w/ APPLIED VINYL INLAYS. FACES ARE ATTACHED TO RETURNS VIA T PLASTIC TRIM CAP. TRIM CAP FINISH TO MATCH RETURNS FINISH. INTERNALLY ILLUMINATED VIA WHITE LEDS. FLUSH MOUNTED TO CMU BLOCK OF EXISTING BUILDING.

PAINTED FINISHES:

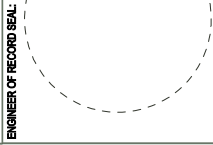
 **P-03** - TO MATCH PMS 2382 C (BLUE)

VINYLS:

 **V-03** - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2382 C (BLUE)



2 SOUTH ELEVATION VIEW - PARTIAL
SCALE: 1/4" = 1'-0"



ENGINEER OF RECORD SEAL

ENGINEER OF RECORD SIGNATURE DATE

REVISION HISTORY	
NO.	DATE PREVIOUS DESCRIPTION

PRODUCT TYPE:
CHANNEL LETTERS

DRAWING TYPE:
CONCEPTUAL

PROJECT NO.	93745	TASK NO.	233633	QTY.	1 SET
DWG. NO.	13323CH	DWG. NO.	13323CH	SHEET	9 OF 20

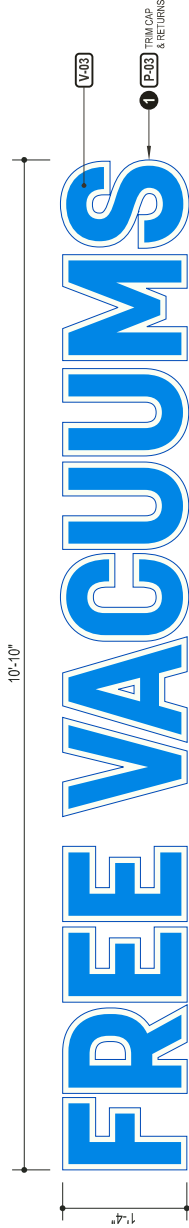
CL-2 CHANNEL LETTERS

GENERAL NOTES:

ILLUMINATED: YES
 S/F OR D/F: S/F
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.
 ELECTRIC TO INSTALL LOCATION TO BE COORDINATED
 WITH E.C. AND TO BE PROVIDED BY THE E.C.

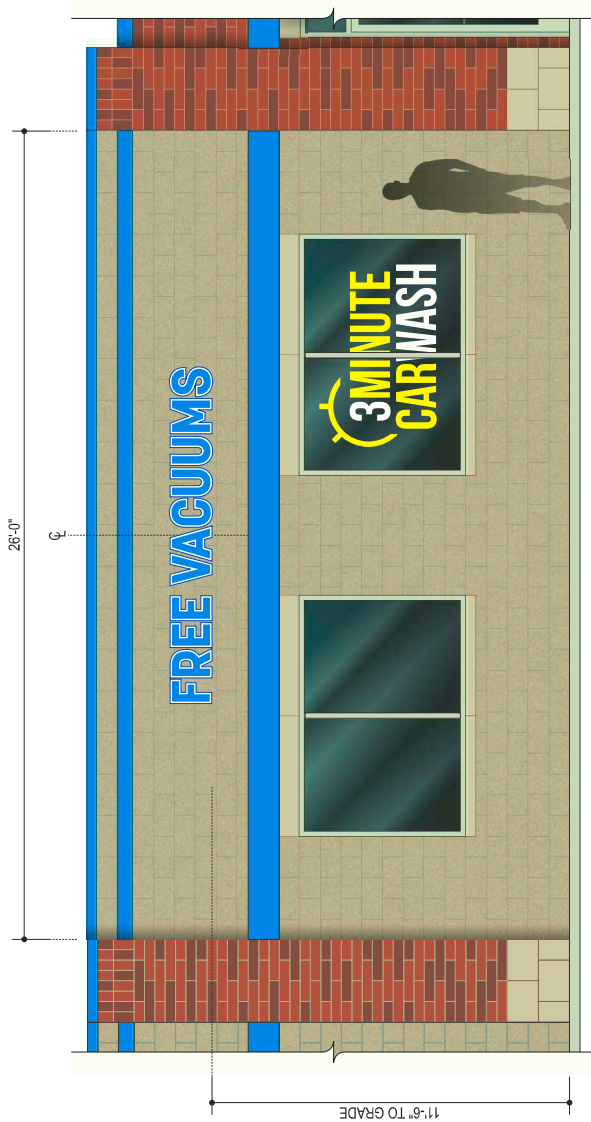
NOTES:

1 CHANNEL LETTERS: INTERNALLY ILLUMINATED 5" DEEP FAB'D CHANNEL LETTERS. RETURNS & BACKS TO BE ALUMINUM & TO HAVE A PAINTED FINISH. FACES TO BE TRANS. WHITE ACRYLIC W/ APPLIED VINYL INLAYS. FACES ARE ATTACHED TO RETURNS VIA 1" PLASTIC TRIM CAP. TRIM CAP FINISH TO MATCH RETURNS FINISH. INTERNALLY ILLUMINATED VIA WHITE LED'S. FLUSH MOUNTED TO CMU BLOCK OF EXISTING BUILDING.



1 ELEVATION DETAIL

SCALE: 3/4" = 1'-0"



2 SOUTH ELEVATION VIEW - PARTIAL

SCALE: 1/4" = 1'-0"

PAINTED FINISHES:



P-03 - TO MATCH PMS 2382 C (BLUE)

VINYLS:

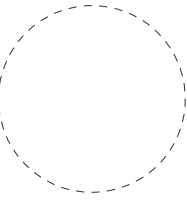


V-03 - DIGITALLY PRINTED ON 3M 7725-10 WHITE VINYL TO MATCH PMS 2382 C (BLUE)



PROJECT TITLE:
 TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



ENGINEER OF RECORD SIGNATURE DATE:

REVISION HISTORY

NO.	DATE	PREV. DRWG.	DESCRIPTION

PRODUCT TYPE:
 CHANNEL LETTERS

DRAWING TYPE:
 CONCEPTUAL

PROJECT NO.	TASK NO.	QTY.
93745	233633	1 SET
DWG. NO.	SHEET	
13323CH	10 OF 20	

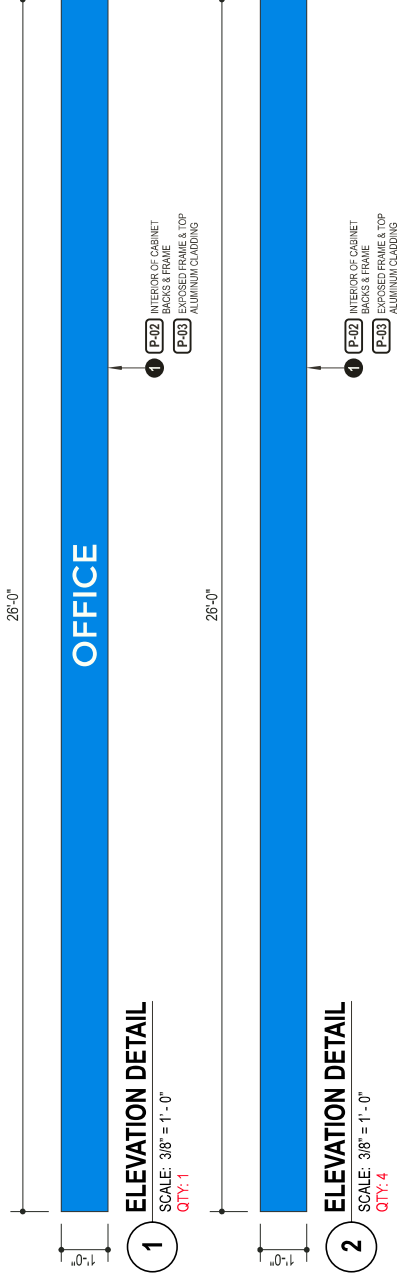
LB-1 LIGHT BANDS

GENERAL NOTES:

ILLUMINATED: YES
 S/F OR D/F: S/F
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.
 ELECTRIC TO INSTALL LOCATION TO BE COORDINATED
 WITH E.C. AND TO BE PROVIDED BY THE E.C.

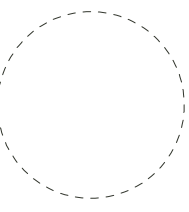
NOTES:

1 LIGHT BAND: INTERNALLY ILLUMINATED 6" DEEP FAB'D ALUMINUM TUBE FRAME. TOPS & BACKS TO HAVE ALUMINUM CLADDING. CLADDING TO HAVE A PAINTED FINISH. FACE TO BE #6025 REFLEX BLUE COOLEY BRITE®. COPY ON THE TWO OUTER LIGHT BANDS TO BE ERADICATED FROM COOLEY MATERIAL. BOTTOM OF LIGHT BAND CABINET TO HAVE TRANS. WHITE ACRYLIC LENS. INTERNALLY ILLUMINATED VIA WHITE LEDS. FLUSH MOUNTED TO CMU BLOCK OF EXISTING BUILDING.



PROJECT TITLE:
 TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



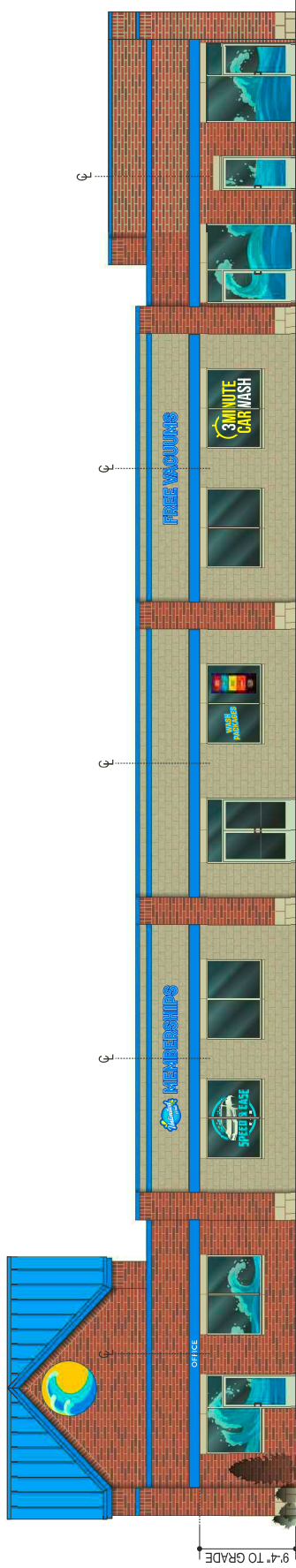
ENGINEER OF RECORD SIGNATURE/DATE:

REVISION HISTORY	
NO.	DATE PREV. DRWG. DESCRIPTION

PRODUCT TYPE:
 LIGHT BANDS

DRAWING TYPE:
 CONCEPTUAL

PROJECT NO.	TASK NO.	QTY.	AS NOTED	SHEET
93745	233633			
DWG. NO.	13323CH			11 OF 20



3 SOUTH ELEVATION VIEW

SCALE: 3/32" = 1'-0"

PAINTED FINISHES:

- P-02 - WHITE, SATIN FINISH
- P-03 - TO MATCH PMS 2382 C (BLUE)

LB-1 LIGHT BANDS



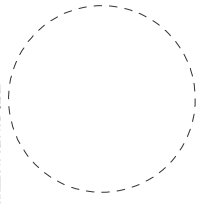
1 SOUTH ELEVATION VIEW - EVENING VIEW

SCALE: 3/32" = 1'-0"

FAST SIGNS
OF KANKAKEE

PROJECT TITLE:
TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



ENGINEER OF RECORD SIGNATURE DATE:

REVISION HISTORY	
NO.	DESCRIPTION

PRODUCT TYPE:
LIGHT BANDS

DRAWING TYPE:		
CONCEPTUAL		
PROJECT NO.	TASK NO.	QTY.
93745	233633	AS NOTED
DWG. NO.	SHEET	
13323CH	12 OF 20	

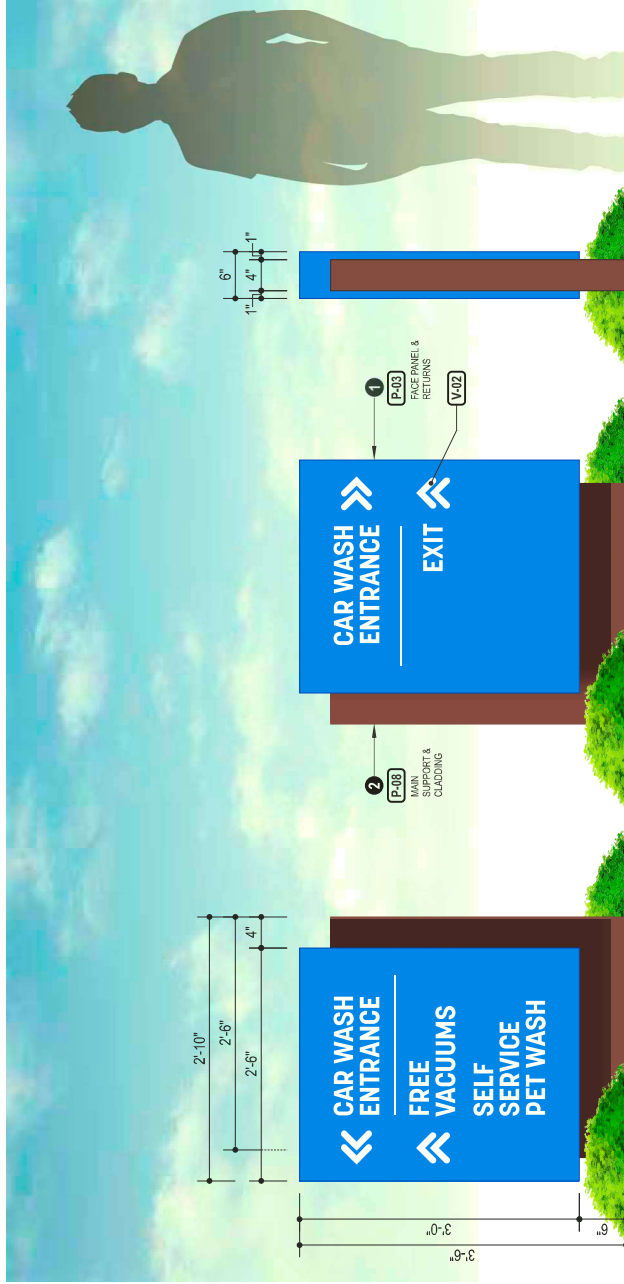
DIR-1 DIRECTIONAL SIGN

GENERAL NOTES:

ILLUMINATED: NO
S/F OR D/F: D/F
EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.

NOTES:

- 1** **FACE PANEL:** D/F: 6" DEEP FAB'D ALUMINUM PANEL. PANEL TO HAVE A PAINTED FINISH. WHITE VINYL GRAPHICS APPLIED TO FACE. FLAG MOUNTED TO MAIN SUPPORT.
- 2** **MAIN SUPPORT:** (1) ALUMINUM TUBE SUPPORT w/ ALUMINUM CLADDING TO WRAP UNDER FACE PANEL TO GRADE. CLADDING TO HAVE A PAINTED FINISH. MAIN SUPPORT TO BE MOUNTED TO GROUND VIA CONCRETE FOOTER. MAIN SUPPORT TO BE DIRECTLY BURIED INTO CONCRETE FOOTER.



1 TYPICAL ELEVATION VIEW
SCALE: 3/4" = 1'-0"

2 SIDE VIEW
SCALE: 3/4" = 1'-0"

PAINTED FINISHES:

P-03 - TO MATCH PMS 2382 C (BLUE)

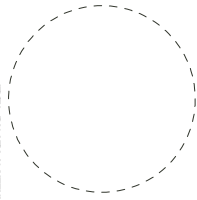
P-08 - TO MATCH PMS 4715 C (DK BRICK RED)

V-02 - 3M 7725-10 WHITE



PROJECT TITLE:
TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



ENGINEER OF RECORD SIGNATURE DATE:

REVISION HISTORY	
NO.	DATE PREVIOUS DESCRIPTION

PRODUCT TYPE:
DIRECTIONAL SIGN

DRAWING TYPE:
CONCEPTUAL

PROJECT NO.	TASK NO.	QTY.
93745	233633	3
DWG. NO.	SHEET	
13323CH	17 OF 20	

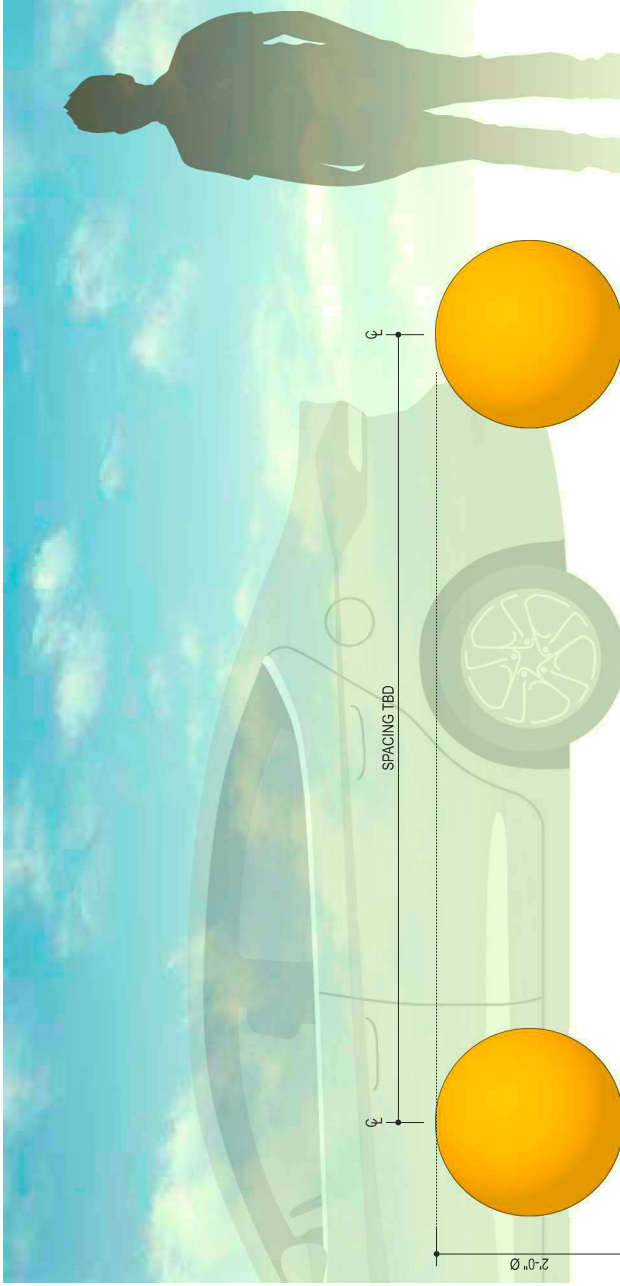
BOL-1 CONCRETE SPHERE BOLLARDS

GENERAL NOTES:

ILLUMINATED: NO
 S/F OR D/F: N/A
 EXACT INSTALL LOCATION TO BE COORDINATED WITH G.C.

NOTES:

- 1 **CONCRETE BOLLARDS:** 2'-0" PRE-CAST CONCRETE SPHERES. BOLLARDS TO HAVE A STAINED FINISH. BOLLARDS ARE PLACED ON OUTSIDE PERIMETER OF PATH TO THE CAR WASH IN THE GRASS AREA.



1 TYPICAL ELEVATION VIEW

SCALE: 3/4" = 1'-0"



2 EXAMPLES OF CONCRETE SPHERE BOLLARDS

SCALE: NTS

PAINTED FINISHES:

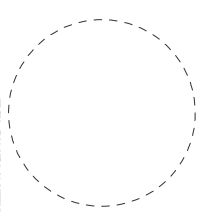


[P-05] - TO MATCH PMS 7568 XGC (YELLOW)



PROJECT TITLE:
 TSUNAMI CAR WASH

ENGINEER OF RECORD SEAL:



ENGINEER OF RECORD SIGNATURE/DATE:

REVISION HISTORY

NO.	DATE	PREV. DRWG.	DESCRIPTION

PRODUCT TYPE:
 CONCRETE SPHERE BOLLARDS

DRAWING TYPE:
 CONCEPTUAL

PROJECT NO.	TASK NO.	QTY.
93745	233633	14
DWG. NO.	SHEET	
13323CH	18 OF 20	

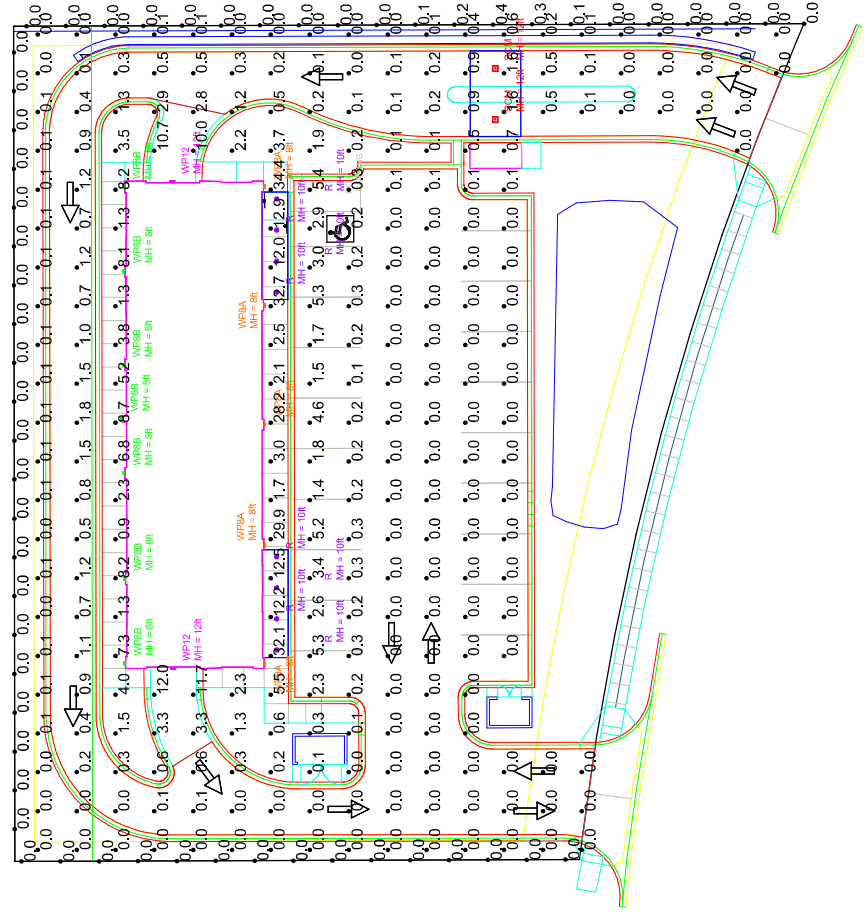
#	Date	Comments

REVISIONS	

Drawn By: Joe Frey	Date: 10/9/2024	Sales Agent: Steve Hahn	Scale: 1" = 16'
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Columbia Heights
Tsunami Car Wash

LS952-4209-1



SYMBOL	QTY	Label	Arrangement	lum. Lumens	LF/F	Description	lum. Watts	lum. Ballasts	lum. Ballasts	lum. Ballasts	lum. Ballasts
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7	2	WPSB	2x12	3.4	1.7	2x12	4.6	2.3	1.4	1.8	0.9
8	2	WPSB	2x12	5.3	2.65	2x12	5.2	2.6	3.4	1.7	0.85
9	2	WPSB	2x12	2.6	1.3	2x12	1.4	0.7	1.8	0.9	0.45
10	2	WPSB	2x12	3.4	1.7	2x12	4.6	2.3	1.4	1.8	0.9
11	2	WPSB	2x12	5.3	2.65	2x12	5.2	2.6	3.4	1.7	0.85
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Stormwater Management Memo

Developer:

Tsunami Express Car Wash
4800 Meadows Road, Suite #300
Lake Oswego, OR 97035

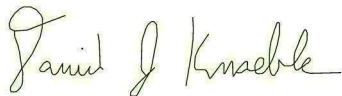
Project:

Tsunami Express Car Wash - Mankato
999 50th Avenue NE
Columbia Heights, MN 55421

Engineer's Certification:

All plans and supporting Documentation contained in this report have been reviewed by me and it is hereby certified that to the best of my knowledge the plans comply with the requirements of the ordinance.

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.



David J. Knaeble P.E.

Registration Number: 48776

Date:

8/5/2024

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2.0	Summary Analysis / Narrative
2.1	Introduction
2.2	Existing Site Conditions
2.3	Proposed Site Conditions
2.4	Stormwater Requirements – City
2.5	Stormwater Requirements – Watershed District
2.6	Stormwater Requirements – MPCA / NPDES
3.0	Stormwater Calculations
3.1	Proposed Stormwater Management Strategy & Facilities Description
3.2	Rate Control
3.3	Volume Control
3.4	Water Quality
4.0	Conclusions

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Figure 2 – Existing Conditions Drainage Area Map
Figure 3 – Proposed Conditions Drainage Area Map

Appendices:

- HydroCAD
 - Existing Conditions HydroCAD Modeling
 - Proposed Conditions HydroCAD Modeling
- Storm Sewer Sizing [TO BE PROVIDED AT A FUTURE DATE]
 - Storm Sewer Sizing Map
 - Storm Sewer Sizing Spreadsheet
- Geotechnical Report (On File at the Office of the Engineer)

2.0 Summary Analysis / Narrative:

2.1 Introduction:

This stormwater management report accompanies the Civil Engineering Plans prepared by Civil Site Group for the subject project dated 8/5/24. This report includes a summary of the existing and proposed site conditions, the stormwater requirements of relevant regulatory agencies, and proposed design calculations and data to meet the requirements.

2.2 Existing Site Conditions :

Site Description:

The existing site is an office building and parking lot. Below is the existing surface area tabulation.

Existing Conditions						
Drainage Area	Impervious Area		Pervious Area		Total Area	
	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
EX1	24929	98	11339	61	36268	86

Existing Soils:

A geotechnical evaluation report has not been completed yet for this project. Based on the soils report from the neighboring ALDI site directly west of the project site, soils in this region are typically silts sands (SM) hydrologic soil group "B" designation.

Groundwater:

Groundwater has not been analyzed yet for this site and information will be provided once a geotechnical report has been completed.

2.3 Proposed Site Conditions:

Site Description:

The proposed site is a commercial car wash building with associated parking, landscaping and utility improvements. Below is the proposed surface area tabulation.

The proposed site surface coverage areas are shown in the table below:

Proposed Conditions						
Drainage Area	Impervious Area		Pervious Area		Total Area	
	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
PR1A	15948	98	6368	61	22316	87
PR1B	9743	98	4208	61	13951	87

2.4 Stormwater Requirements City (Columbia Heights):

Requirement threshold - Projects that either create or disturb 1 acre or greater of new impervious will require the submittal of a Stormwater Management Plan. Projects that disturb less than 1 acre and down to 10,000 SF are only required to develop an erosion control plan.

Rate Control – Limit peak runoff flow rates to existing conditions for 2-YR, 10-YR, and 100-YR frequency storms (utilize Atlas 14 rainfall data).

Water Quality – The water quality control standard shall be considered satisfied if the volume control standard has been satisfied.

Volume Control – A proposed development shall capture and retain on site 1.0 inches of runoff from the net new impervious surfaces in post-construction conditions and at a minimum as per the requirements of the NPDES Construction General Permit.

This project will not be disturbing over 1.0 acre, so permanent stormwater management is not required per the City Requirements. Per discussions with the City of Columbia Heights Engineering Staff, rate control will still be required.

2.5 Stormwater Requirements Watershed District – (Mississippi Water Management Organization):

Requirement threshold – Any project creating greater than one acre of land disturbance.

Rate Control – Limit peak runoff flow rates to existing conditions for 2-YR, 10-YR, and 100-YR frequency storms (utilize Atlas 14 rainfall data).

Water Quality – The water quality control standard shall be considered satisfied if the volume control standard has been satisfied.

Volume Control – For projects without limitations that disturb one or more acre of land, 1.1 inches of runoff from the new and fully reconstructed impervious surfaces shall be captured and retained on site. For projects on sites with limitations, the MWMO Design Sequence Flow Chart shall be used.

This project will not be disturbing over 1.0 acre, so permanent stormwater management is not required per the MWMO.

2.6 Stormwater Requirements - Minnesota Pollution Control Agency – NPPDES permit (MPCA):

Requirement threshold - A permit is required for projects with a disturbed area over 1 acre in size, Stormwater management is required for a project adding 1-acre of more of NEW impervious surface (reconstructed impervious is not included).

Rate Control – No specific regulation, may not degrade downstream facilities.

Water Quality – Stormwater water quality treatment volume must be provided equal to 1.0” over all new impervious surfaces (includes all newly constructed impervious surfaces only, re-constructed impervious surfaces are not included).

Volume Control – Must consider volume reduction if feasible and not prohibited on site. The required infiltration volume is equal to the water quality volume described above.

This project will not be increasing the impervious surface area by over 1.0 acre, so permanent stormwater management is not required per the MPCA.

3.0 Stormwater Calculations:

3.1 Proposed Stormwater Management Strategy & Facilities Description

This project is disturbing approximately 0.9 acres of land. The project will be constructing approximately 0.6 acres of new/reconstructed impervious surfaces. This land disturbance and creation of impervious surfaces will not trigger stormwater management requirements from the City of Columbia Heights, the MWMP and for the MPCA NPDES Permit.

Per discussions with the City of Columbia Heights Engineering Staff, rate control will still be required.

This project is proposing to use an aboveground detention basin to meet the rate control requirements.

3.2 Rate Control

Limit peak runoff flow rates to existing conditions for 2-YR, 10-YR, and 100-YR frequency storms (utilize Atlas 14 rainfall data).

Rate control is provided by live storage within the proposed aboveground detention basin. This information was derived using HydroCAD stormwater modeling software. The existing and proposed runoff rates are shown in the summary table below.

Stormwater Rate Summary			
Drainage Area	Existing Rate (cfs)		
	2-YR [2.84"]	10-YR [4.26"]	100-YR [7.38"]
EX1	2.47	4.00	7.60
TOTAL	2.47	4.00	7.60
Drainage Area	Proposed Conditions Rate (cfs)		
	2-YR [2.84"]	10-YR [4.26"]	100-YR [7.38"]
PR1A	1.58	2.55	4.84
1P (PR1B)	0.74	1.01	1.47
TOTAL	2.32	3.56	6.31
Overall Stormwater Rate Summary			
	Existing Conditions Rate (cfs)	Proposed Conditions Rate (cfs)	
2-Year Event	2.47	2.32	
10-Year Event	4.00	3.56	
100-Year Event	7.60	6.31	

The existing project site discharges to 50th Avenue NE. The overall discharge rates from the proposed site will be less than the existing discharge rates in all events.

The overall proposed runoff rates are less than the existing peak runoff rates. – REQUIREMENT SATISFIED

3.3 Volume Control

Since this project is not disturbing over 1.0 acres of land, volume control is not required.

3.4 Water Quality

Since this project is not disturbing over 1.0 acres of land, water quality control is not required.

4.0 Conclusions:

To the best of our knowledge, this project meets all State, City and Watershed District stormwater management requirements.

**Tsunami Express Car Wash - Columbia Heights
Civil Site Group - Stormwater Calculations**

Existing Conditions

Drainage Area	Impervious Area		Pervious Area		Total Area	
	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
EX1	24929	98	11339	61	36268	86

Proposed Conditions

Drainage Area	Impervious Area		Pervious Area		Total Area	
	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
PR1A	15948	98	6368	61	22316	87
PR1B	9743	98	4208	61	13951	87

Site Area Summary

	Impervious [SF]	Impervious [AC]	Pervious [SF]	Pervious [AC]	Total [SF]	Total [AC]
Existing Site	24929	0.57	11339	0.26	36268	0.83
Proposed Site	25691	0.59	10576	0.24	36267	0.83

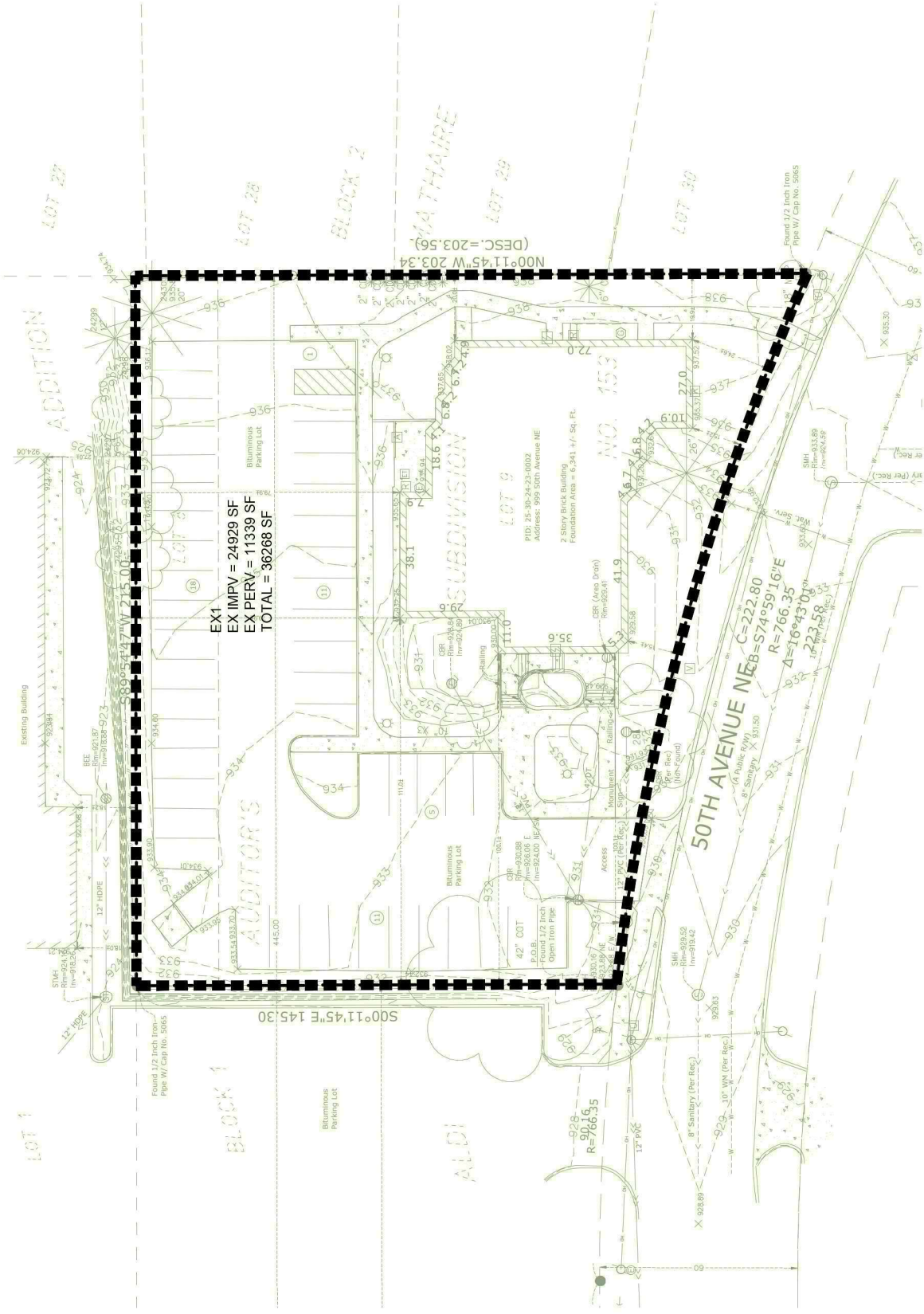
Stormwater Rate Summary

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100-Year Event	7.60	6.31

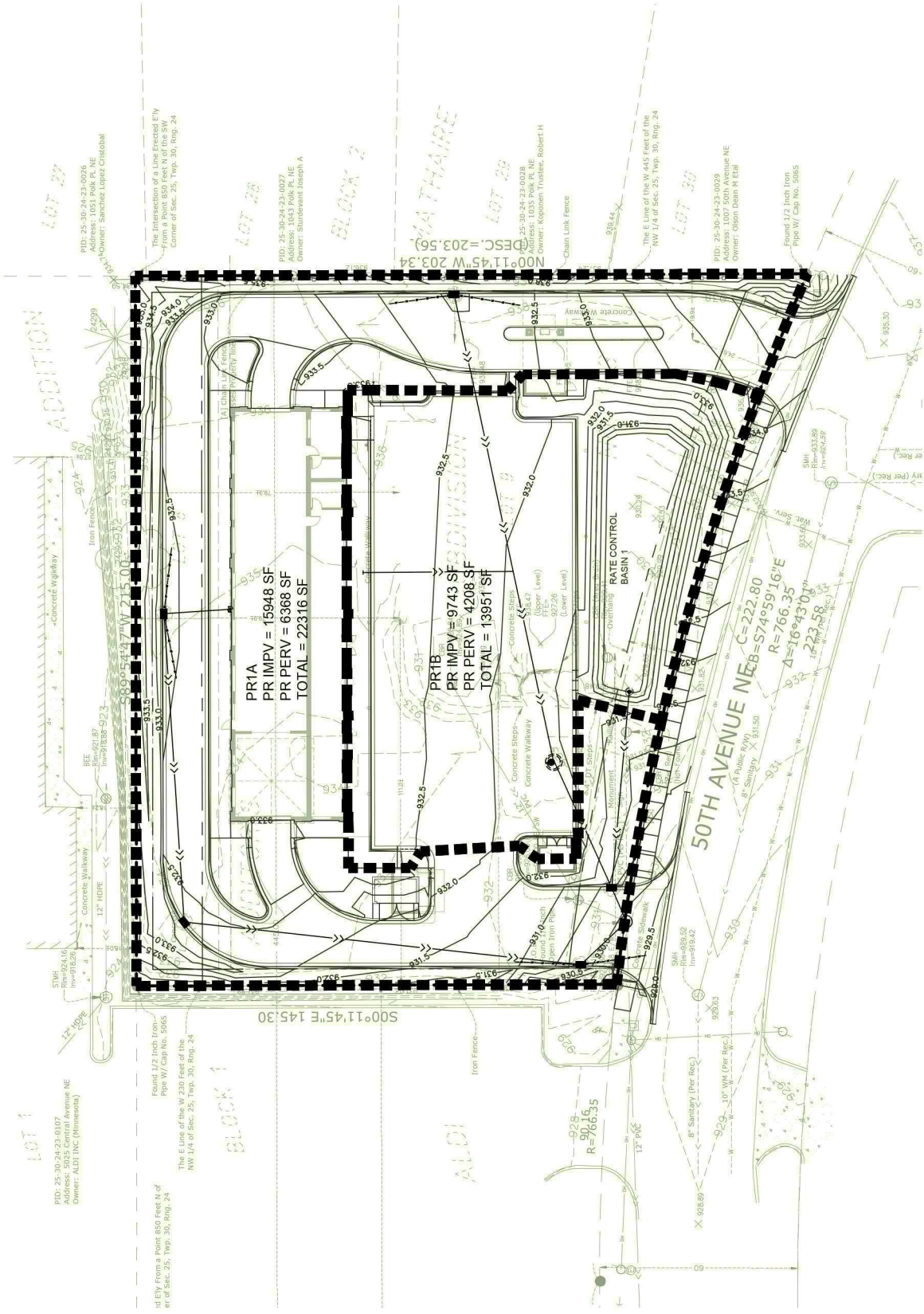


999 50TH AVENUE NE, COLUMBIA HEIGHTS, MN 55421
 Project Number: 24289 Revision Number:
 Issue Date: 7/29/24 Revision Date:

EXISTING DRAINAGE MAP

Tsunami Express Car Wash - Columbia Heights
 8000 Glenwood Avenue
 Golden Valley, MN 55422
 612.615.0080
 www.CivilSiteGroup.com



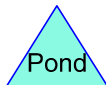
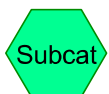


1" = 30'-0"
 15'-0" 0 30'-0"

		Tsunami Express Car Wash - Columbia Heights 5000 Glenwood Avenue Golden Valley, MN 55422 612.615.0080 www.CivilSiteGroup.com	
<h2>PROPOSED DRAINAGE MAP</h2>		999 50TH AVENUE NE, COLUMBIA HEIGHTS, MN 55421 Project Number: 24289 Revision Number: 7/29/24 Revision Date:	
PID: 25-30-24-23-0107 Address: 5025 Central Avenue NE Owner: ALDI INC (Minnesota)		PID: 25-30-24-23-0026 Address: 1051 Polk Pl. NE Owner: Sanchez Lopez Cristobal	
d E/W From a Point 850 Feet N of er of Sec. 25, Twp. 30, Rng. 24 The E Line of the W 230 Feet of the NW 1/4 of Sec. 25, Twp. 30, Rng. 24		The Intersection of a Line Erected Ely Corner of Sec. 25, Twp. 30, Rng. 24	
Found 1/2 Inch Iron Pipe W/ Cap No. 5065		Found 1/2 Inch Iron Pipe W/ Cap No. 5065	



**EX1 - DRAINS SOUTH
TO 50TH AVE.**



Routing Diagram for 24289 - TSUNAMI COLUMBIA HEIGHTS EXISTING

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2y 24hr AT-14	MSE 24-hr	3	Default	24.00	1	2.84	2
2	10y 24hr AT-14	MSE 24-hr	3	Default	24.00	1	4.26	2
3	100y 24hr AT-14	MSE 24-hr	3	Default	24.00	1	7.38	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.234	61	>75% Grass cover, Good, HSG B (EX1)
0.572	98	Paved parking, HSG B (EX1)
0.806	87	TOTAL AREA

24289 - TSUNAMI COLUMBIA HEIGHTS EXISTING

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.806	HSG B	EX1
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.806		TOTAL AREA

24289 - TSUNAMI COLUMBIA HEIGHTS EXISTING

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.234	0.000	0.000	0.000	0.234	>75% Grass cover, Good	EX1
0.000	0.572	0.000	0.000	0.000	0.572	Paved parking	EX1
0.000	0.806	0.000	0.000	0.000	0.806	TOTAL AREA	

Time span=0.00-240.00 hrs, dt=0.01 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

SubcatchmentEX1: EX1 - DRAINS SOUTH Runoff Area=35,104 sf 71.01% Impervious Runoff Depth=1.94"
Tc=6.0 min CN=WQ Runoff=2.47 cfs 0.130 af

Total Runoff Area = 0.806 ac Runoff Volume = 0.130 af Average Runoff Depth = 1.94"
28.99% Pervious = 0.234 ac 71.01% Impervious = 0.572 ac

Summary for Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Runoff = 2.47 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.94"
 Routed to nonexistent node EX-DA 1

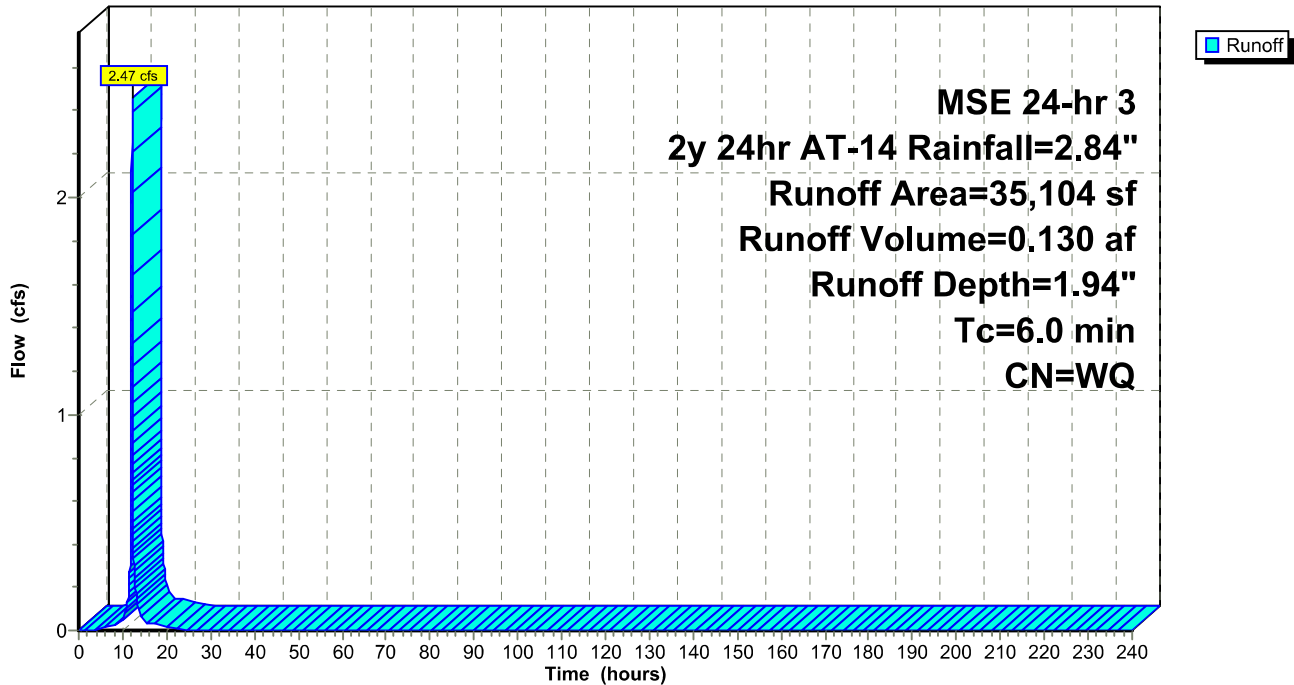
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2y 24hr AT-14 Rainfall=2.84"

Area (sf)	CN	Description
24,929	98	Paved parking, HSG B
10,175	61	>75% Grass cover, Good, HSG B
35,104		Weighted Average
10,175		28.99% Pervious Area
24,929		71.01% Impervious Area

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

Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Hydrograph



Hydrograph for Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.11	0.00	0.01
10.00	0.39	0.01	0.05
15.00	2.55	1.35	0.06
20.00	2.77	1.54	0.02
25.00	2.84	1.60	0.00
30.00	2.84	1.60	0.00
35.00	2.84	1.60	0.00
40.00	2.84	1.60	0.00
45.00	2.84	1.60	0.00
50.00	2.84	1.60	0.00
55.00	2.84	1.60	0.00
60.00	2.84	1.60	0.00
65.00	2.84	1.60	0.00
70.00	2.84	1.60	0.00
75.00	2.84	1.60	0.00
80.00	2.84	1.60	0.00
85.00	2.84	1.60	0.00
90.00	2.84	1.60	0.00
95.00	2.84	1.60	0.00
100.00	2.84	1.60	0.00
105.00	2.84	1.60	0.00
110.00	2.84	1.60	0.00
115.00	2.84	1.60	0.00
120.00	2.84	1.60	0.00
125.00	2.84	1.60	0.00
130.00	2.84	1.60	0.00
135.00	2.84	1.60	0.00
140.00	2.84	1.60	0.00
145.00	2.84	1.60	0.00
150.00	2.84	1.60	0.00
155.00	2.84	1.60	0.00
160.00	2.84	1.60	0.00
165.00	2.84	1.60	0.00
170.00	2.84	1.60	0.00
175.00	2.84	1.60	0.00
180.00	2.84	1.60	0.00
185.00	2.84	1.60	0.00
190.00	2.84	1.60	0.00
195.00	2.84	1.60	0.00
200.00	2.84	1.60	0.00
205.00	2.84	1.60	0.00
210.00	2.84	1.60	0.00
215.00	2.84	1.60	0.00
220.00	2.84	1.60	0.00
225.00	2.84	1.60	0.00
230.00	2.84	1.60	0.00
235.00	2.84	1.60	0.00
240.00	2.84	1.60	0.00

Time span=0.00-240.00 hrs, dt=0.01 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 - DRAINS SOUTH Runoff Area=35,104 sf 71.01% Impervious Runoff Depth=3.13"
Tc=6.0 min CN=WQ Runoff=4.00 cfs 0.210 af

Total Runoff Area = 0.806 ac Runoff Volume = 0.210 af Average Runoff Depth = 3.13"
28.99% Pervious = 0.234 ac 71.01% Impervious = 0.572 ac

Summary for Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Runoff = 4.00 cfs @ 12.13 hrs, Volume= 0.210 af, Depth= 3.13"
 Routed to nonexistent node EX-DA 1

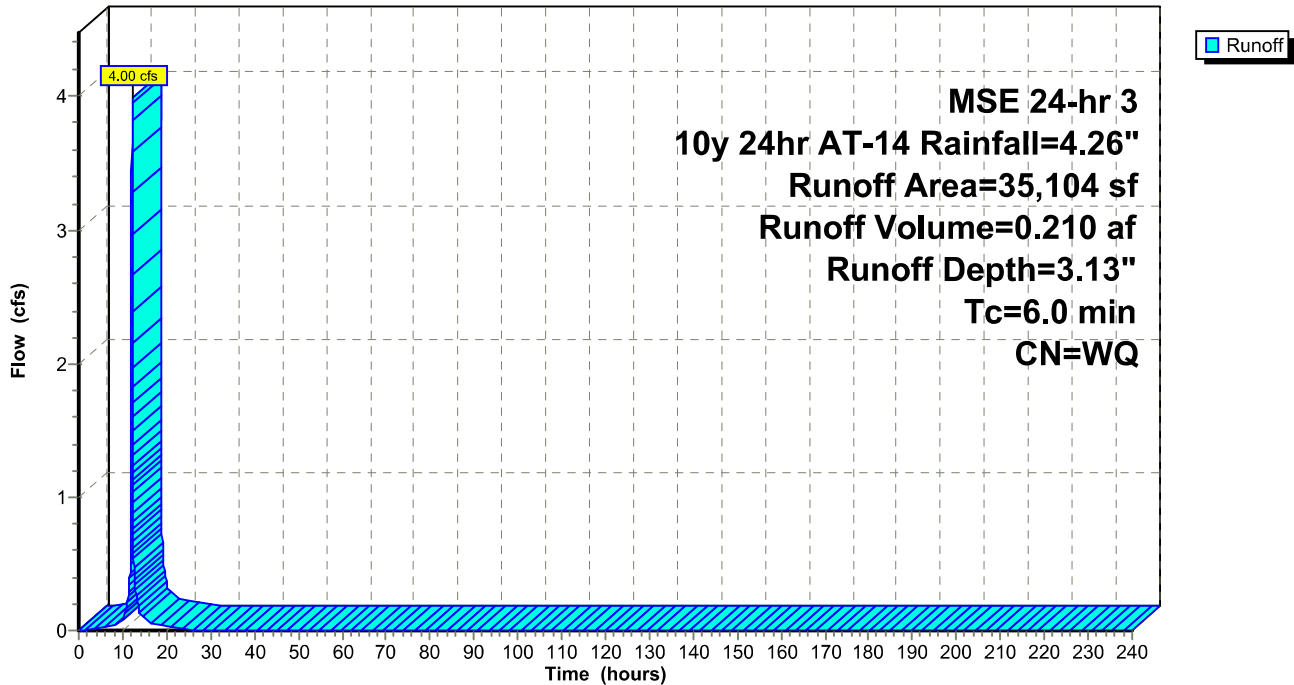
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10y 24hr AT-14 Rainfall=4.26"

Area (sf)	CN	Description
24,929	98	Paved parking, HSG B
10,175	61	>75% Grass cover, Good, HSG B
35,104		Weighted Average
10,175		28.99% Pervious Area
24,929		71.01% Impervious Area

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

Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Hydrograph



Hydrograph for Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.16	0.00	0.02
10.00	0.59	0.05	0.08
15.00	3.82	2.47	0.10
20.00	4.15	2.77	0.03
25.00	4.26	2.88	0.00
30.00	4.26	2.88	0.00
35.00	4.26	2.88	0.00
40.00	4.26	2.88	0.00
45.00	4.26	2.88	0.00
50.00	4.26	2.88	0.00
55.00	4.26	2.88	0.00
60.00	4.26	2.88	0.00
65.00	4.26	2.88	0.00
70.00	4.26	2.88	0.00
75.00	4.26	2.88	0.00
80.00	4.26	2.88	0.00
85.00	4.26	2.88	0.00
90.00	4.26	2.88	0.00
95.00	4.26	2.88	0.00
100.00	4.26	2.88	0.00
105.00	4.26	2.88	0.00
110.00	4.26	2.88	0.00
115.00	4.26	2.88	0.00
120.00	4.26	2.88	0.00
125.00	4.26	2.88	0.00
130.00	4.26	2.88	0.00
135.00	4.26	2.88	0.00
140.00	4.26	2.88	0.00
145.00	4.26	2.88	0.00
150.00	4.26	2.88	0.00
155.00	4.26	2.88	0.00
160.00	4.26	2.88	0.00
165.00	4.26	2.88	0.00
170.00	4.26	2.88	0.00
175.00	4.26	2.88	0.00
180.00	4.26	2.88	0.00
185.00	4.26	2.88	0.00
190.00	4.26	2.88	0.00
195.00	4.26	2.88	0.00
200.00	4.26	2.88	0.00
205.00	4.26	2.88	0.00
210.00	4.26	2.88	0.00
215.00	4.26	2.88	0.00
220.00	4.26	2.88	0.00
225.00	4.26	2.88	0.00
230.00	4.26	2.88	0.00
235.00	4.26	2.88	0.00
240.00	4.26	2.88	0.00

Time span=0.00-240.00 hrs, dt=0.01 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1 - DRAINS SOUTH Runoff Area=35,104 sf 71.01% Impervious Runoff Depth=5.93"
Tc=6.0 min CN=WQ Runoff=7.60 cfs 0.399 af

Total Runoff Area = 0.806 ac Runoff Volume = 0.399 af Average Runoff Depth = 5.93"
28.99% Pervious = 0.234 ac 71.01% Impervious = 0.572 ac

Summary for Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Runoff = 7.60 cfs @ 12.13 hrs, Volume= 0.399 af, Depth= 5.93"
 Routed to nonexistent node EX-DA 1

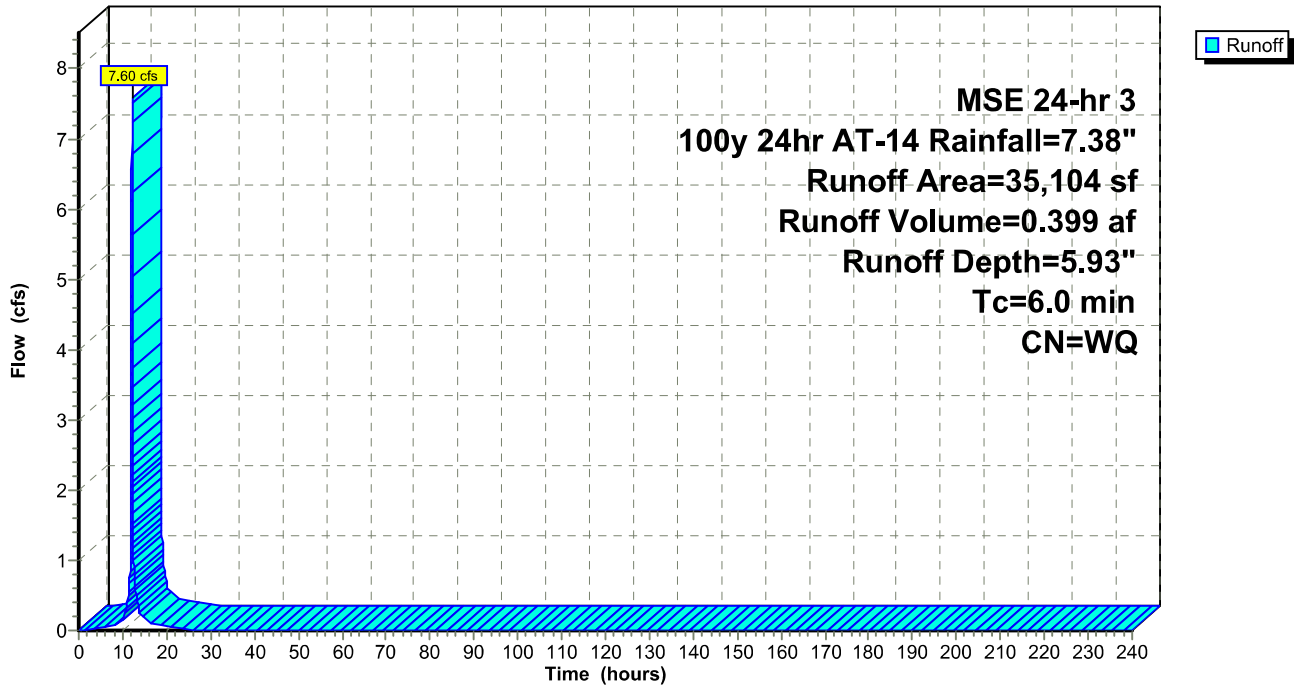
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100y 24hr AT-14 Rainfall=7.38"

Area (sf)	CN	Description
24,929	98	Paved parking, HSG B
10,175	61	>75% Grass cover, Good, HSG B
35,104		Weighted Average
10,175		28.99% Pervious Area
24,929		71.01% Impervious Area

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

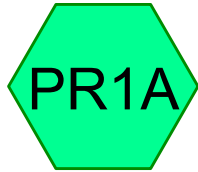
Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

Hydrograph

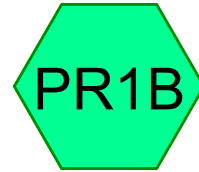


Hydrograph for Subcatchment EX1: EX1 - DRAINS SOUTH TO 50TH AVE.

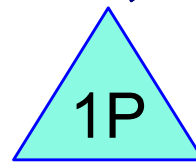
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.28	0.00	0.04
10.00	1.01	0.23	0.15
15.00	6.62	5.11	0.18
20.00	7.19	5.66	0.06
25.00	7.38	5.85	0.00
30.00	7.38	5.85	0.00
35.00	7.38	5.85	0.00
40.00	7.38	5.85	0.00
45.00	7.38	5.85	0.00
50.00	7.38	5.85	0.00
55.00	7.38	5.85	0.00
60.00	7.38	5.85	0.00
65.00	7.38	5.85	0.00
70.00	7.38	5.85	0.00
75.00	7.38	5.85	0.00
80.00	7.38	5.85	0.00
85.00	7.38	5.85	0.00
90.00	7.38	5.85	0.00
95.00	7.38	5.85	0.00
100.00	7.38	5.85	0.00
105.00	7.38	5.85	0.00
110.00	7.38	5.85	0.00
115.00	7.38	5.85	0.00
120.00	7.38	5.85	0.00
125.00	7.38	5.85	0.00
130.00	7.38	5.85	0.00
135.00	7.38	5.85	0.00
140.00	7.38	5.85	0.00
145.00	7.38	5.85	0.00
150.00	7.38	5.85	0.00
155.00	7.38	5.85	0.00
160.00	7.38	5.85	0.00
165.00	7.38	5.85	0.00
170.00	7.38	5.85	0.00
175.00	7.38	5.85	0.00
180.00	7.38	5.85	0.00
185.00	7.38	5.85	0.00
190.00	7.38	5.85	0.00
195.00	7.38	5.85	0.00
200.00	7.38	5.85	0.00
205.00	7.38	5.85	0.00
210.00	7.38	5.85	0.00
215.00	7.38	5.85	0.00
220.00	7.38	5.85	0.00
225.00	7.38	5.85	0.00
230.00	7.38	5.85	0.00
235.00	7.38	5.85	0.00
240.00	7.38	5.85	0.00



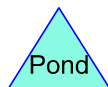
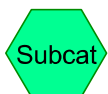
PR1A - DRAINS SOUTH TO 50TH AVE



PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE



1P - DETENTION BASIN



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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2y 24hr AT-14	MSE 24-hr	3	Default	24.00	1	2.84	2
2	10y 24hr AT-14	MSE 24-hr	3	Default	24.00	1	4.26	2
3	100y 24hr AT-14	MSE 24-hr	3	Default	24.00	1	7.38	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.243	61	>75% Grass cover, Good, HSG B (PR1A, PR1B)
0.590	98	Paved parking, HSG B (PR1A, PR1B)
0.833	87	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.833	HSG B	PR1A, PR1B
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.833		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.243	0.000	0.000	0.000	0.243	>75% Grass cover, Good	PR1A, PR1B
0.000	0.590	0.000	0.000	0.000	0.590	Paved parking	PR1A, PR1B
0.000	0.833	0.000	0.000	0.000	0.833	TOTAL AREA	

Time span=0.00-240.00 hrs, dt=0.01 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment PR1A: PR1A - DRAINS Runoff Area=22,316 sf 71.46% Impervious Runoff Depth=1.95"
Tc=6.0 min CN=WQ Runoff=1.58 cfs 0.083 af

Subcatchment PR1B: PR1B - DRAINS TO Runoff Area=13,951 sf 69.84% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=WQ Runoff=0.97 cfs 0.051 af

Pond 1P: 1P - DETENTION BASIN Peak Elev=930.23' Storage=321 cf Inflow=0.97 cfs 0.051 af
Outflow=0.74 cfs 0.051 af

Total Runoff Area = 0.833 ac Runoff Volume = 0.134 af Average Runoff Depth = 1.94"
29.16% Pervious = 0.243 ac 70.84% Impervious = 0.590 ac

Summary for Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Runoff = 1.58 cfs @ 12.13 hrs, Volume= 0.083 af, Depth= 1.95"

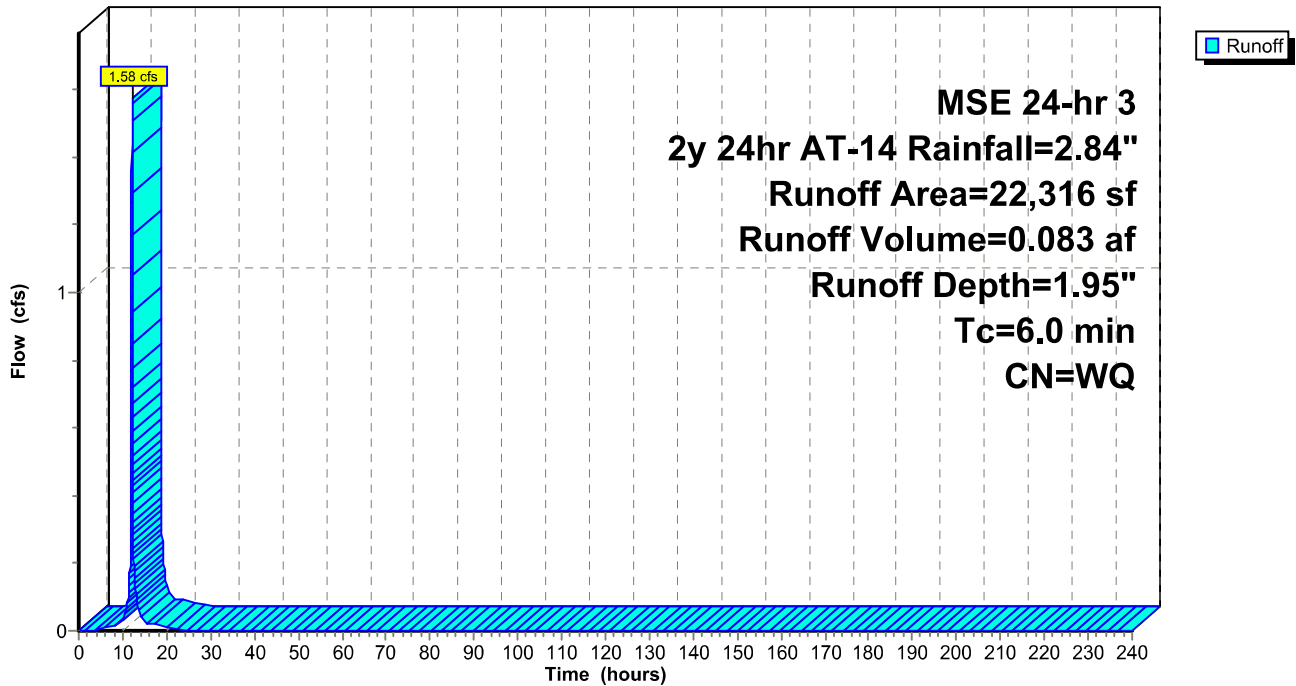
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2y 24hr AT-14 Rainfall=2.84"

Area (sf)	CN	Description
15,948	98	Paved parking, HSG B
6,368	61	>75% Grass cover, Good, HSG B
22,316		Weighted Average
6,368		28.54% Pervious Area
15,948		71.46% Impervious Area

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

Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Hydrograph



Hydrograph for Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.11	0.00	0.01
10.00	0.39	0.01	0.03
15.00	2.55	1.35	0.04
20.00	2.77	1.54	0.01
25.00	2.84	1.60	0.00
30.00	2.84	1.60	0.00
35.00	2.84	1.60	0.00
40.00	2.84	1.60	0.00
45.00	2.84	1.60	0.00
50.00	2.84	1.60	0.00
55.00	2.84	1.60	0.00
60.00	2.84	1.60	0.00
65.00	2.84	1.60	0.00
70.00	2.84	1.60	0.00
75.00	2.84	1.60	0.00
80.00	2.84	1.60	0.00
85.00	2.84	1.60	0.00
90.00	2.84	1.60	0.00
95.00	2.84	1.60	0.00
100.00	2.84	1.60	0.00
105.00	2.84	1.60	0.00
110.00	2.84	1.60	0.00
115.00	2.84	1.60	0.00
120.00	2.84	1.60	0.00
125.00	2.84	1.60	0.00
130.00	2.84	1.60	0.00
135.00	2.84	1.60	0.00
140.00	2.84	1.60	0.00
145.00	2.84	1.60	0.00
150.00	2.84	1.60	0.00
155.00	2.84	1.60	0.00
160.00	2.84	1.60	0.00
165.00	2.84	1.60	0.00
170.00	2.84	1.60	0.00
175.00	2.84	1.60	0.00
180.00	2.84	1.60	0.00
185.00	2.84	1.60	0.00
190.00	2.84	1.60	0.00
195.00	2.84	1.60	0.00
200.00	2.84	1.60	0.00
205.00	2.84	1.60	0.00
210.00	2.84	1.60	0.00
215.00	2.84	1.60	0.00
220.00	2.84	1.60	0.00
225.00	2.84	1.60	0.00
230.00	2.84	1.60	0.00
235.00	2.84	1.60	0.00
240.00	2.84	1.60	0.00

Summary for Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE

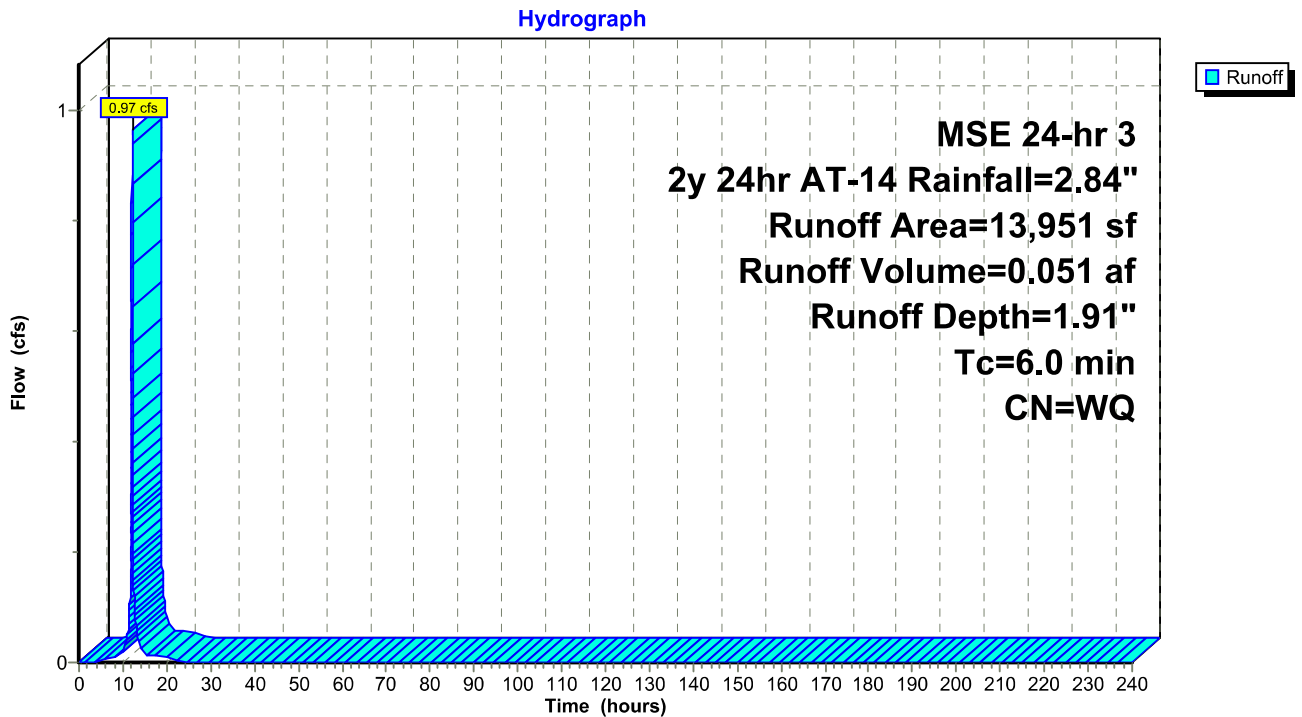
Runoff = 0.97 cfs @ 12.13 hrs, Volume= 0.051 af, Depth= 1.91"
 Routed to Pond 1P : 1P - DETENTION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2y 24hr AT-14 Rainfall=2.84"

Area (sf)	CN	Description
9,743	98	Paved parking, HSG B
4,208	61	>75% Grass cover, Good, HSG B
13,951		Weighted Average
4,208		30.16% Pervious Area
9,743		69.84% Impervious Area

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

Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE



Hydrograph for Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.11	0.00	0.00
10.00	0.39	0.01	0.02
15.00	2.55	1.35	0.02
20.00	2.77	1.54	0.01
25.00	2.84	1.60	0.00
30.00	2.84	1.60	0.00
35.00	2.84	1.60	0.00
40.00	2.84	1.60	0.00
45.00	2.84	1.60	0.00
50.00	2.84	1.60	0.00
55.00	2.84	1.60	0.00
60.00	2.84	1.60	0.00
65.00	2.84	1.60	0.00
70.00	2.84	1.60	0.00
75.00	2.84	1.60	0.00
80.00	2.84	1.60	0.00
85.00	2.84	1.60	0.00
90.00	2.84	1.60	0.00
95.00	2.84	1.60	0.00
100.00	2.84	1.60	0.00
105.00	2.84	1.60	0.00
110.00	2.84	1.60	0.00
115.00	2.84	1.60	0.00
120.00	2.84	1.60	0.00
125.00	2.84	1.60	0.00
130.00	2.84	1.60	0.00
135.00	2.84	1.60	0.00
140.00	2.84	1.60	0.00
145.00	2.84	1.60	0.00
150.00	2.84	1.60	0.00
155.00	2.84	1.60	0.00
160.00	2.84	1.60	0.00
165.00	2.84	1.60	0.00
170.00	2.84	1.60	0.00
175.00	2.84	1.60	0.00
180.00	2.84	1.60	0.00
185.00	2.84	1.60	0.00
190.00	2.84	1.60	0.00
195.00	2.84	1.60	0.00
200.00	2.84	1.60	0.00
205.00	2.84	1.60	0.00
210.00	2.84	1.60	0.00
215.00	2.84	1.60	0.00
220.00	2.84	1.60	0.00
225.00	2.84	1.60	0.00
230.00	2.84	1.60	0.00
235.00	2.84	1.60	0.00
240.00	2.84	1.60	0.00

Summary for Pond 1P: 1P - DETENTION BASIN

Inflow Area = 0.320 ac, 69.84% Impervious, Inflow Depth = 1.91" for 2y 24hr AT-14 event
 Inflow = 0.97 cfs @ 12.13 hrs, Volume= 0.051 af
 Outflow = 0.74 cfs @ 12.18 hrs, Volume= 0.051 af, Atten= 23%, Lag= 2.8 min
 Primary = 0.74 cfs @ 12.18 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 Peak Elev= 930.23' @ 12.18 hrs Surf.Area= 1,478 sf Storage= 321 cf

Plug-Flow detention time= 14.2 min calculated for 0.051 af (100% of inflow)
 Center-of-Mass det. time= 14.2 min (774.3 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	930.00'	3,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

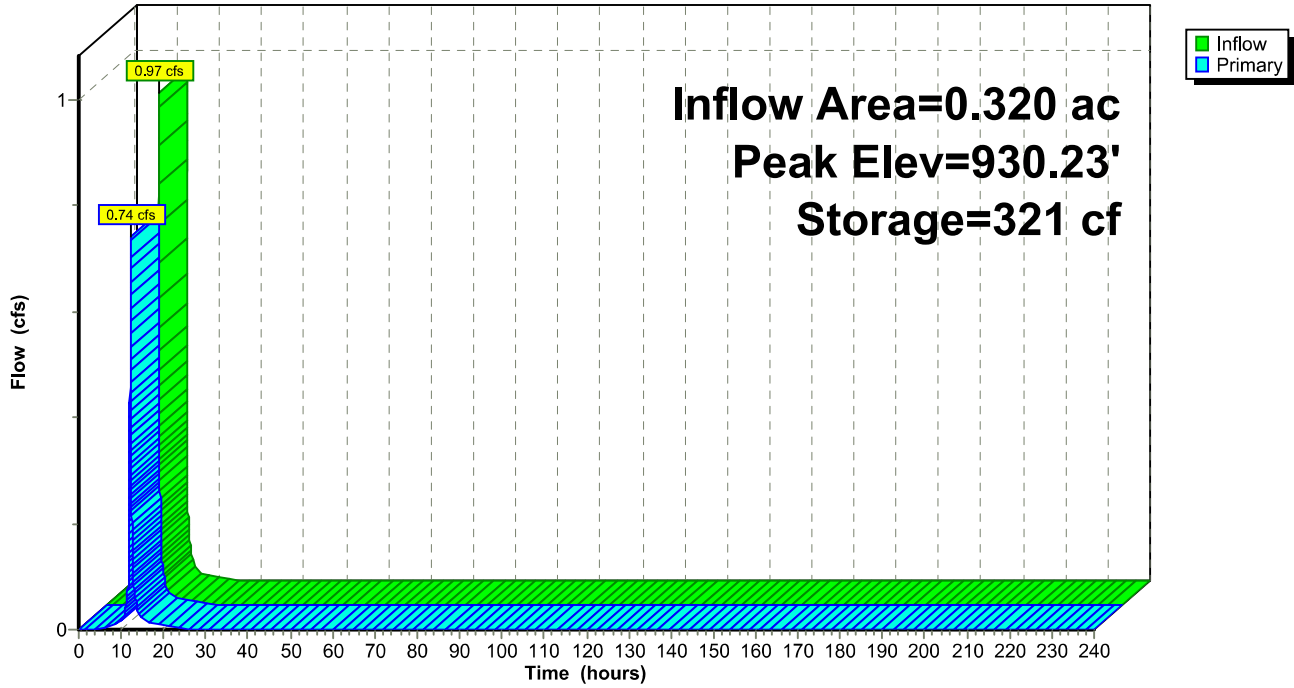
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.00	1,347	0	0
930.50	1,634	745	745
931.00	1,937	893	1,638
931.50	2,323	1,065	2,703
932.00	2,665	1,247	3,950

Device	Routing	Invert	Outlet Devices
#1	Primary	930.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.74 cfs @ 12.18 hrs HW=930.23' (Free Discharge)
 ↑1=Orifice/Grate (Weir Controls 0.74 cfs @ 1.56 fps)

Pond 1P: 1P - DETENTION BASIN

Hydrograph



Hydrograph for Pond 1P: 1P - DETENTION BASIN

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	930.00	0.00
5.00	0.00	4	930.00	0.00
10.00	0.02	25	930.02	0.02
15.00	0.02	31	930.02	0.02
20.00	0.01	12	930.01	0.01
25.00	0.00	0	930.00	0.00
30.00	0.00	0	930.00	0.00
35.00	0.00	0	930.00	0.00
40.00	0.00	0	930.00	0.00
45.00	0.00	0	930.00	0.00
50.00	0.00	0	930.00	0.00
55.00	0.00	0	930.00	0.00
60.00	0.00	0	930.00	0.00
65.00	0.00	0	930.00	0.00
70.00	0.00	0	930.00	0.00
75.00	0.00	0	930.00	0.00
80.00	0.00	0	930.00	0.00
85.00	0.00	0	930.00	0.00
90.00	0.00	0	930.00	0.00
95.00	0.00	0	930.00	0.00
100.00	0.00	0	930.00	0.00
105.00	0.00	0	930.00	0.00
110.00	0.00	0	930.00	0.00
115.00	0.00	0	930.00	0.00
120.00	0.00	0	930.00	0.00
125.00	0.00	0	930.00	0.00
130.00	0.00	0	930.00	0.00
135.00	0.00	0	930.00	0.00
140.00	0.00	0	930.00	0.00
145.00	0.00	0	930.00	0.00
150.00	0.00	0	930.00	0.00
155.00	0.00	0	930.00	0.00
160.00	0.00	0	930.00	0.00
165.00	0.00	0	930.00	0.00
170.00	0.00	0	930.00	0.00
175.00	0.00	0	930.00	0.00
180.00	0.00	0	930.00	0.00
185.00	0.00	0	930.00	0.00
190.00	0.00	0	930.00	0.00
195.00	0.00	0	930.00	0.00
200.00	0.00	0	930.00	0.00
205.00	0.00	0	930.00	0.00
210.00	0.00	0	930.00	0.00
215.00	0.00	0	930.00	0.00
220.00	0.00	0	930.00	0.00
225.00	0.00	0	930.00	0.00
230.00	0.00	0	930.00	0.00
235.00	0.00	0	930.00	0.00
240.00	0.00	0	930.00	0.00

Stage-Area-Storage for Pond 1P: 1P - DETENTION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
930.00	1,347	0	931.04	1,968	1,716
930.02	1,358	27	931.06	1,983	1,756
930.04	1,370	54	931.08	1,999	1,795
930.06	1,381	82	931.10	2,014	1,836
930.08	1,393	110	931.12	2,030	1,876
930.10	1,404	138	931.14	2,045	1,917
930.12	1,416	166	931.16	2,061	1,958
930.14	1,427	194	931.18	2,076	1,999
930.16	1,439	223	931.20	2,091	2,041
930.18	1,450	252	931.22	2,107	2,083
930.20	1,462	281	931.24	2,122	2,125
930.22	1,473	310	931.26	2,138	2,168
930.24	1,485	340	931.28	2,153	2,211
930.26	1,496	370	931.30	2,169	2,254
930.28	1,508	400	931.32	2,184	2,297
930.30	1,519	430	931.34	2,199	2,341
930.32	1,531	460	931.36	2,215	2,385
930.34	1,542	491	931.38	2,230	2,430
930.36	1,554	522	931.40	2,246	2,475
930.38	1,565	553	931.42	2,261	2,520
930.40	1,577	585	931.44	2,277	2,565
930.42	1,588	616	931.46	2,292	2,611
930.44	1,600	648	931.48	2,308	2,657
930.46	1,611	680	931.50	2,323	2,703
930.48	1,623	713	931.52	2,337	2,750
930.50	1,634	745	931.54	2,350	2,796
930.52	1,646	778	931.56	2,364	2,844
930.54	1,658	811	931.58	2,378	2,891
930.56	1,670	844	931.60	2,391	2,939
930.58	1,682	878	931.62	2,405	2,987
930.60	1,695	912	931.64	2,419	3,035
930.62	1,707	946	931.66	2,432	3,083
930.64	1,719	980	931.68	2,446	3,132
930.66	1,731	1,014	931.70	2,460	3,181
930.68	1,743	1,049	931.72	2,473	3,231
930.70	1,755	1,084	931.74	2,487	3,280
930.72	1,767	1,119	931.76	2,501	3,330
930.74	1,779	1,155	931.78	2,515	3,380
930.76	1,792	1,191	931.80	2,528	3,431
930.78	1,804	1,227	931.82	2,542	3,481
930.80	1,816	1,263	931.84	2,556	3,532
930.82	1,828	1,299	931.86	2,569	3,584
930.84	1,840	1,336	931.88	2,583	3,635
930.86	1,852	1,373	931.90	2,597	3,687
930.88	1,864	1,410	931.92	2,610	3,739
930.90	1,876	1,447	931.94	2,624	3,791
930.92	1,889	1,485	931.96	2,638	3,844
930.94	1,901	1,523	931.98	2,651	3,897
930.96	1,913	1,561	932.00	2,665	3,950
930.98	1,925	1,599			
931.00	1,937	1,638			
931.02	1,952	1,677			

24289 - TSUNAMI COLUMBIA HEIGHTS PROPOMSE 24-hr 3 10y 24hr AT-14 Rainfall=4.26"

Prepared by Civil Site Group

Printed 7/29/2024

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Time span=0.00-240.00 hrs, dt=0.01 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

SubcatchmentPR1A: PR1A - DRAINS Runoff Area=22,316 sf 71.46% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=WQ Runoff=2.55 cfs 0.134 af

SubcatchmentPR1B: PR1B - DRAINS TO Runoff Area=13,951 sf 69.84% Impervious Runoff Depth=3.10"
Tc=6.0 min CN=WQ Runoff=1.57 cfs 0.083 af

Pond 1P: 1P - DETENTIONBASIN Peak Elev=930.36' Storage=522 cf Inflow=1.57 cfs 0.083 af
Outflow=1.01 cfs 0.083 af

Total Runoff Area = 0.833 ac Runoff Volume = 0.217 af Average Runoff Depth = 3.13"
29.16% Pervious = 0.243 ac 70.84% Impervious = 0.590 ac

Summary for Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Runoff = 2.55 cfs @ 12.13 hrs, Volume= 0.134 af, Depth= 3.15"

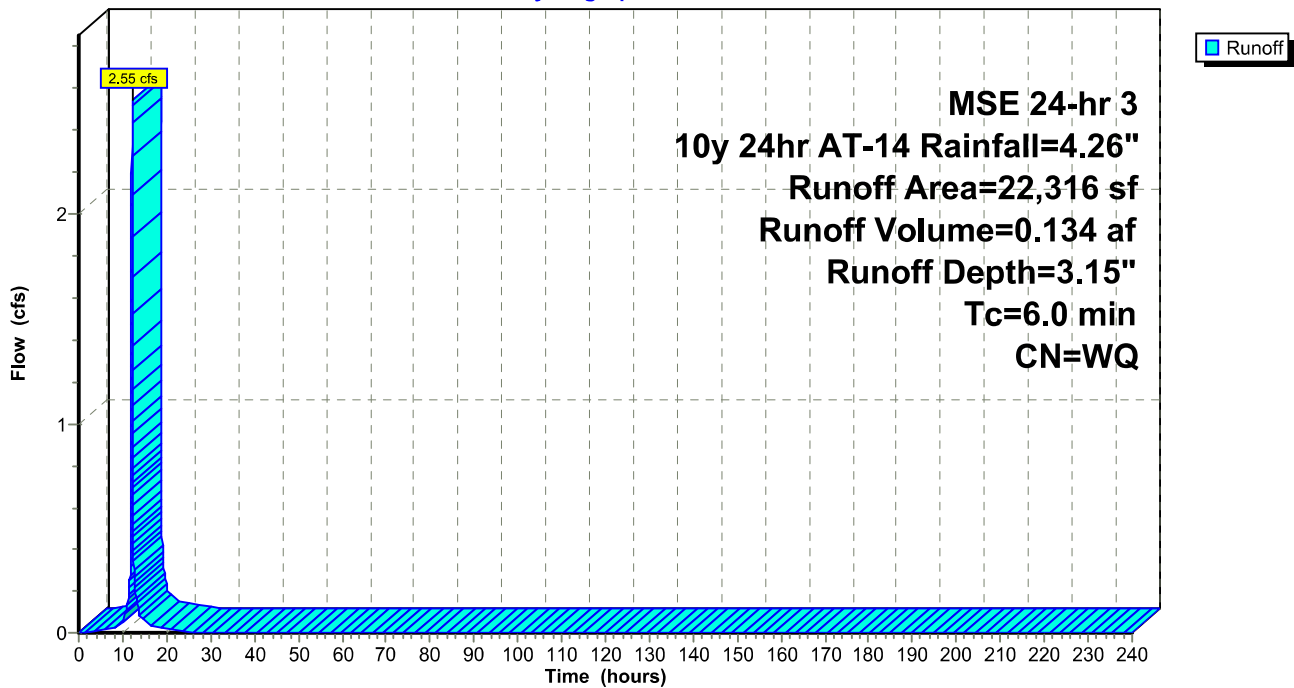
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10y 24hr AT-14 Rainfall=4.26"

Area (sf)	CN	Description
15,948	98	Paved parking, HSG B
6,368	61	>75% Grass cover, Good, HSG B
22,316		Weighted Average
6,368		28.54% Pervious Area
15,948		71.46% Impervious Area

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

Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Hydrograph



Hydrograph for Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.16	0.00	0.01
10.00	0.59	0.05	0.05
15.00	3.82	2.47	0.06
20.00	4.15	2.77	0.02
25.00	4.26	2.88	0.00
30.00	4.26	2.88	0.00
35.00	4.26	2.88	0.00
40.00	4.26	2.88	0.00
45.00	4.26	2.88	0.00
50.00	4.26	2.88	0.00
55.00	4.26	2.88	0.00
60.00	4.26	2.88	0.00
65.00	4.26	2.88	0.00
70.00	4.26	2.88	0.00
75.00	4.26	2.88	0.00
80.00	4.26	2.88	0.00
85.00	4.26	2.88	0.00
90.00	4.26	2.88	0.00
95.00	4.26	2.88	0.00
100.00	4.26	2.88	0.00
105.00	4.26	2.88	0.00
110.00	4.26	2.88	0.00
115.00	4.26	2.88	0.00
120.00	4.26	2.88	0.00
125.00	4.26	2.88	0.00
130.00	4.26	2.88	0.00
135.00	4.26	2.88	0.00
140.00	4.26	2.88	0.00
145.00	4.26	2.88	0.00
150.00	4.26	2.88	0.00
155.00	4.26	2.88	0.00
160.00	4.26	2.88	0.00
165.00	4.26	2.88	0.00
170.00	4.26	2.88	0.00
175.00	4.26	2.88	0.00
180.00	4.26	2.88	0.00
185.00	4.26	2.88	0.00
190.00	4.26	2.88	0.00
195.00	4.26	2.88	0.00
200.00	4.26	2.88	0.00
205.00	4.26	2.88	0.00
210.00	4.26	2.88	0.00
215.00	4.26	2.88	0.00
220.00	4.26	2.88	0.00
225.00	4.26	2.88	0.00
230.00	4.26	2.88	0.00
235.00	4.26	2.88	0.00
240.00	4.26	2.88	0.00

Summary for Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE

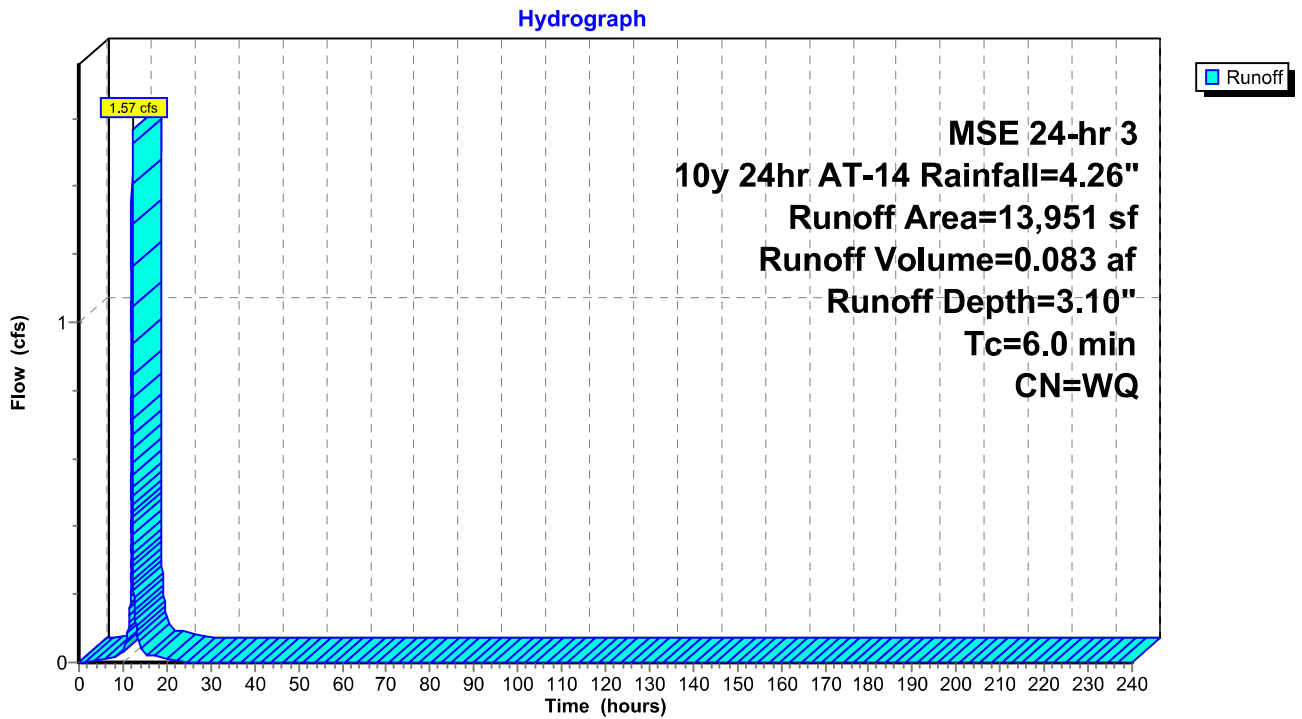
Runoff = 1.57 cfs @ 12.13 hrs, Volume= 0.083 af, Depth= 3.10"
 Routed to Pond 1P : 1P - DETENTION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10y 24hr AT-14 Rainfall=4.26"

Area (sf)	CN	Description
9,743	98	Paved parking, HSG B
4,208	61	>75% Grass cover, Good, HSG B
13,951		Weighted Average
4,208		30.16% Pervious Area
9,743		69.84% Impervious Area

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

Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE



24289 - TSUNAMI COLUMBIA HEIGHTS PROPOMSE 24-hr 3 10y 24hr AT-14 Rainfall=4.26"

Prepared by Civil Site Group

Printed 7/29/2024

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Hydrograph for Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.16	0.00	0.01
10.00	0.59	0.05	0.03
15.00	3.82	2.47	0.04
20.00	4.15	2.77	0.01
25.00	4.26	2.88	0.00
30.00	4.26	2.88	0.00
35.00	4.26	2.88	0.00
40.00	4.26	2.88	0.00
45.00	4.26	2.88	0.00
50.00	4.26	2.88	0.00
55.00	4.26	2.88	0.00
60.00	4.26	2.88	0.00
65.00	4.26	2.88	0.00
70.00	4.26	2.88	0.00
75.00	4.26	2.88	0.00
80.00	4.26	2.88	0.00
85.00	4.26	2.88	0.00
90.00	4.26	2.88	0.00
95.00	4.26	2.88	0.00
100.00	4.26	2.88	0.00
105.00	4.26	2.88	0.00
110.00	4.26	2.88	0.00
115.00	4.26	2.88	0.00
120.00	4.26	2.88	0.00
125.00	4.26	2.88	0.00
130.00	4.26	2.88	0.00
135.00	4.26	2.88	0.00
140.00	4.26	2.88	0.00
145.00	4.26	2.88	0.00
150.00	4.26	2.88	0.00
155.00	4.26	2.88	0.00
160.00	4.26	2.88	0.00
165.00	4.26	2.88	0.00
170.00	4.26	2.88	0.00
175.00	4.26	2.88	0.00
180.00	4.26	2.88	0.00
185.00	4.26	2.88	0.00
190.00	4.26	2.88	0.00
195.00	4.26	2.88	0.00
200.00	4.26	2.88	0.00
205.00	4.26	2.88	0.00
210.00	4.26	2.88	0.00
215.00	4.26	2.88	0.00
220.00	4.26	2.88	0.00
225.00	4.26	2.88	0.00
230.00	4.26	2.88	0.00
235.00	4.26	2.88	0.00
240.00	4.26	2.88	0.00

Summary for Pond 1P: 1P - DETENTION BASIN

Inflow Area = 0.320 ac, 69.84% Impervious, Inflow Depth = 3.10" for 10y 24hr AT-14 event
 Inflow = 1.57 cfs @ 12.13 hrs, Volume= 0.083 af
 Outflow = 1.01 cfs @ 12.19 hrs, Volume= 0.083 af, Atten= 36%, Lag= 3.8 min
 Primary = 1.01 cfs @ 12.19 hrs, Volume= 0.083 af

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 Peak Elev= 930.36' @ 12.19 hrs Surf.Area= 1,553 sf Storage= 522 cf

Plug-Flow detention time= 13.1 min calculated for 0.083 af (100% of inflow)
 Center-of-Mass det. time= 13.1 min (769.6 - 756.5)

Volume	Invert	Avail.Storage	Storage Description
#1	930.00'	3,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

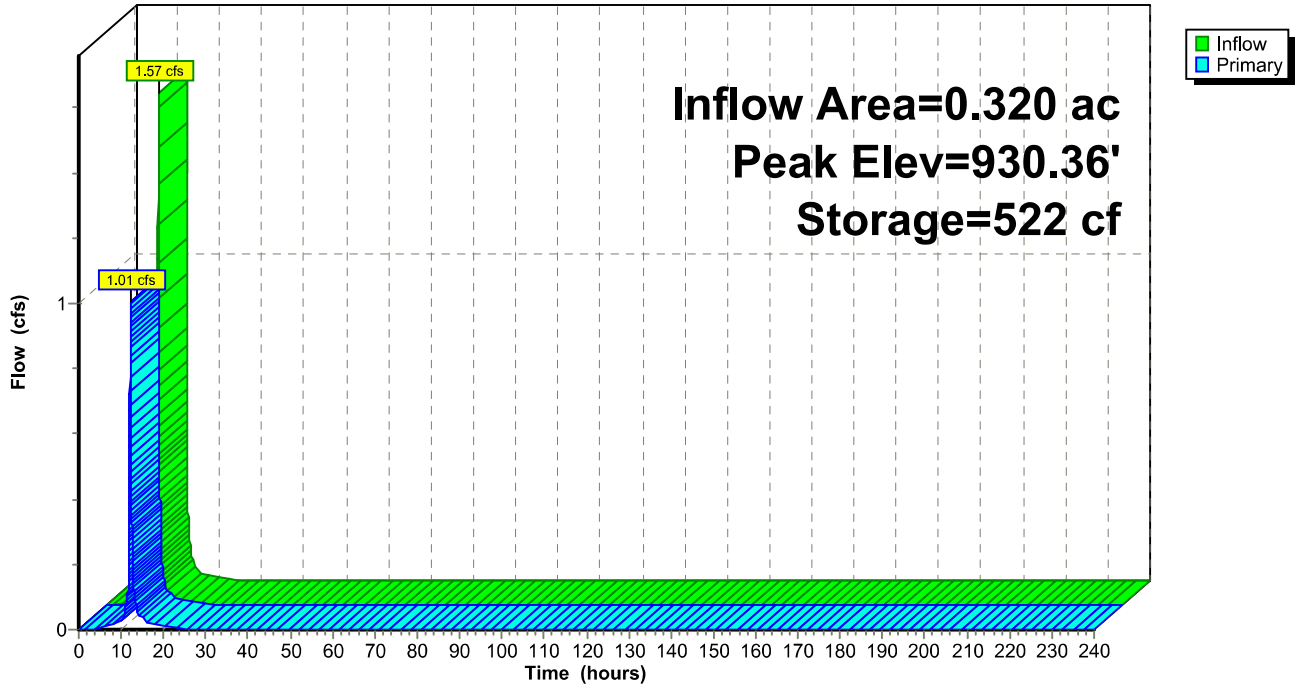
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.00	1,347	0	0
930.50	1,634	745	745
931.00	1,937	893	1,638
931.50	2,323	1,065	2,703
932.00	2,665	1,247	3,950

Device	Routing	Invert	Outlet Devices
#1	Primary	930.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.01 cfs @ 12.19 hrs HW=930.36' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 1.01 cfs @ 2.89 fps)

Pond 1P: 1P - DETENTION BASIN

Hydrograph



Hydrograph for Pond 1P: 1P - DETENTION BASIN

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	930.00	0.00
5.00	0.01	8	930.01	0.01
10.00	0.03	36	930.03	0.03
15.00	0.04	42	930.03	0.04
20.00	0.01	19	930.01	0.01
25.00	0.00	1	930.00	0.00
30.00	0.00	0	930.00	0.00
35.00	0.00	0	930.00	0.00
40.00	0.00	0	930.00	0.00
45.00	0.00	0	930.00	0.00
50.00	0.00	0	930.00	0.00
55.00	0.00	0	930.00	0.00
60.00	0.00	0	930.00	0.00
65.00	0.00	0	930.00	0.00
70.00	0.00	0	930.00	0.00
75.00	0.00	0	930.00	0.00
80.00	0.00	0	930.00	0.00
85.00	0.00	0	930.00	0.00
90.00	0.00	0	930.00	0.00
95.00	0.00	0	930.00	0.00
100.00	0.00	0	930.00	0.00
105.00	0.00	0	930.00	0.00
110.00	0.00	0	930.00	0.00
115.00	0.00	0	930.00	0.00
120.00	0.00	0	930.00	0.00
125.00	0.00	0	930.00	0.00
130.00	0.00	0	930.00	0.00
135.00	0.00	0	930.00	0.00
140.00	0.00	0	930.00	0.00
145.00	0.00	0	930.00	0.00
150.00	0.00	0	930.00	0.00
155.00	0.00	0	930.00	0.00
160.00	0.00	0	930.00	0.00
165.00	0.00	0	930.00	0.00
170.00	0.00	0	930.00	0.00
175.00	0.00	0	930.00	0.00
180.00	0.00	0	930.00	0.00
185.00	0.00	0	930.00	0.00
190.00	0.00	0	930.00	0.00
195.00	0.00	0	930.00	0.00
200.00	0.00	0	930.00	0.00
205.00	0.00	0	930.00	0.00
210.00	0.00	0	930.00	0.00
215.00	0.00	0	930.00	0.00
220.00	0.00	0	930.00	0.00
225.00	0.00	0	930.00	0.00
230.00	0.00	0	930.00	0.00
235.00	0.00	0	930.00	0.00
240.00	0.00	0	930.00	0.00

Stage-Area-Storage for Pond 1P: 1P - DETENTION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
930.00	1,347	0	931.04	1,968	1,716
930.02	1,358	27	931.06	1,983	1,756
930.04	1,370	54	931.08	1,999	1,795
930.06	1,381	82	931.10	2,014	1,836
930.08	1,393	110	931.12	2,030	1,876
930.10	1,404	138	931.14	2,045	1,917
930.12	1,416	166	931.16	2,061	1,958
930.14	1,427	194	931.18	2,076	1,999
930.16	1,439	223	931.20	2,091	2,041
930.18	1,450	252	931.22	2,107	2,083
930.20	1,462	281	931.24	2,122	2,125
930.22	1,473	310	931.26	2,138	2,168
930.24	1,485	340	931.28	2,153	2,211
930.26	1,496	370	931.30	2,169	2,254
930.28	1,508	400	931.32	2,184	2,297
930.30	1,519	430	931.34	2,199	2,341
930.32	1,531	460	931.36	2,215	2,385
930.34	1,542	491	931.38	2,230	2,430
930.36	1,554	522	931.40	2,246	2,475
930.38	1,565	553	931.42	2,261	2,520
930.40	1,577	585	931.44	2,277	2,565
930.42	1,588	616	931.46	2,292	2,611
930.44	1,600	648	931.48	2,308	2,657
930.46	1,611	680	931.50	2,323	2,703
930.48	1,623	713	931.52	2,337	2,750
930.50	1,634	745	931.54	2,350	2,796
930.52	1,646	778	931.56	2,364	2,844
930.54	1,658	811	931.58	2,378	2,891
930.56	1,670	844	931.60	2,391	2,939
930.58	1,682	878	931.62	2,405	2,987
930.60	1,695	912	931.64	2,419	3,035
930.62	1,707	946	931.66	2,432	3,083
930.64	1,719	980	931.68	2,446	3,132
930.66	1,731	1,014	931.70	2,460	3,181
930.68	1,743	1,049	931.72	2,473	3,231
930.70	1,755	1,084	931.74	2,487	3,280
930.72	1,767	1,119	931.76	2,501	3,330
930.74	1,779	1,155	931.78	2,515	3,380
930.76	1,792	1,191	931.80	2,528	3,431
930.78	1,804	1,227	931.82	2,542	3,481
930.80	1,816	1,263	931.84	2,556	3,532
930.82	1,828	1,299	931.86	2,569	3,584
930.84	1,840	1,336	931.88	2,583	3,635
930.86	1,852	1,373	931.90	2,597	3,687
930.88	1,864	1,410	931.92	2,610	3,739
930.90	1,876	1,447	931.94	2,624	3,791
930.92	1,889	1,485	931.96	2,638	3,844
930.94	1,901	1,523	931.98	2,651	3,897
930.96	1,913	1,561	932.00	2,665	3,950
930.98	1,925	1,599			
931.00	1,937	1,638			
931.02	1,952	1,677			

Time span=0.00-240.00 hrs, dt=0.01 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment PR1A: PR1A - DRAINS Runoff Area=22,316 sf 71.46% Impervious Runoff Depth=5.95"
Tc=6.0 min CN=WQ Runoff=4.84 cfs 0.254 af

Subcatchment PR1B: PR1B - DRAINS TO Runoff Area=13,951 sf 69.84% Impervious Runoff Depth=5.89"
Tc=6.0 min CN=WQ Runoff=3.00 cfs 0.157 af

Pond 1P: 1P - DETENTION BASIN Peak Elev=930.77' Storage=1,201 cf Inflow=3.00 cfs 0.157 af
Outflow=1.47 cfs 0.157 af

Total Runoff Area = 0.833 ac Runoff Volume = 0.411 af Average Runoff Depth = 5.93"
29.16% Pervious = 0.243 ac 70.84% Impervious = 0.590 ac

Summary for Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Runoff = 4.84 cfs @ 12.13 hrs, Volume= 0.254 af, Depth= 5.95"

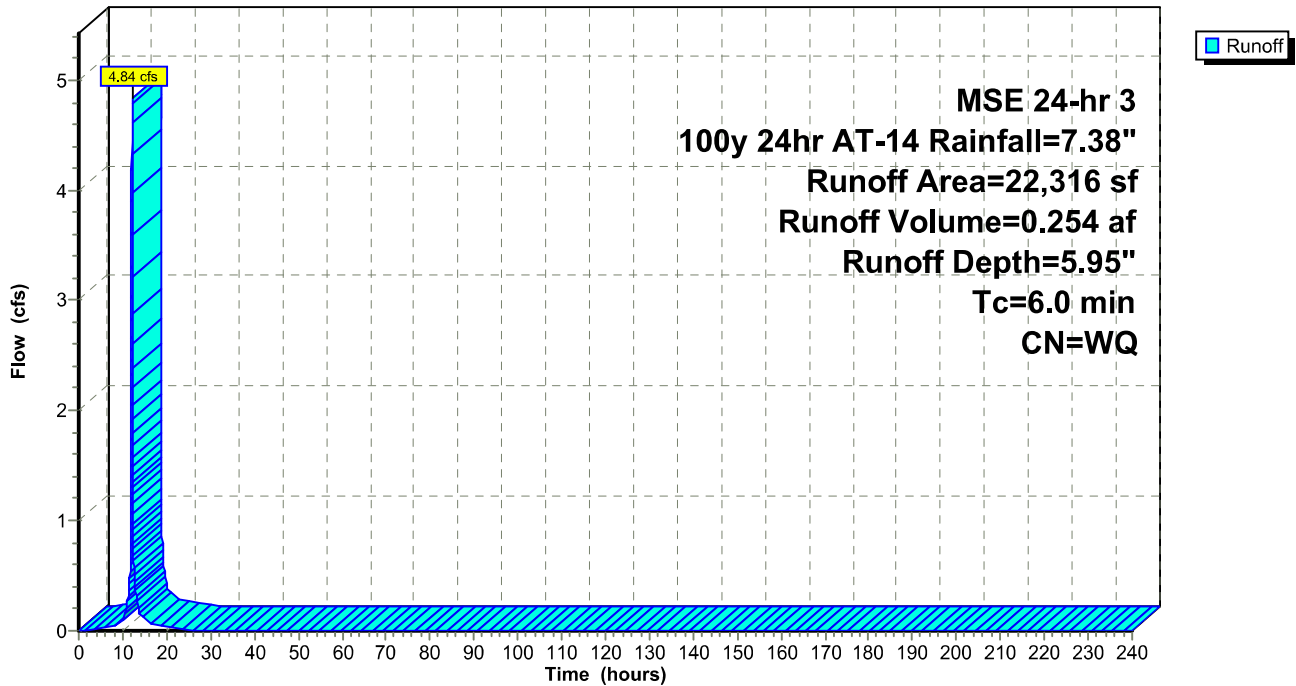
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100y 24hr AT-14 Rainfall=7.38"

Area (sf)	CN	Description
15,948	98	Paved parking, HSG B
6,368	61	>75% Grass cover, Good, HSG B
22,316		Weighted Average
6,368		28.54% Pervious Area
15,948		71.46% Impervious Area

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

Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Hydrograph



Hydrograph for Subcatchment PR1A: PR1A - DRAINS SOUTH TO 50TH AVE

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.28	0.00	0.03
10.00	1.01	0.23	0.10
15.00	6.62	5.11	0.11
20.00	7.19	5.66	0.04
25.00	7.38	5.85	0.00
30.00	7.38	5.85	0.00
35.00	7.38	5.85	0.00
40.00	7.38	5.85	0.00
45.00	7.38	5.85	0.00
50.00	7.38	5.85	0.00
55.00	7.38	5.85	0.00
60.00	7.38	5.85	0.00
65.00	7.38	5.85	0.00
70.00	7.38	5.85	0.00
75.00	7.38	5.85	0.00
80.00	7.38	5.85	0.00
85.00	7.38	5.85	0.00
90.00	7.38	5.85	0.00
95.00	7.38	5.85	0.00
100.00	7.38	5.85	0.00
105.00	7.38	5.85	0.00
110.00	7.38	5.85	0.00
115.00	7.38	5.85	0.00
120.00	7.38	5.85	0.00
125.00	7.38	5.85	0.00
130.00	7.38	5.85	0.00
135.00	7.38	5.85	0.00
140.00	7.38	5.85	0.00
145.00	7.38	5.85	0.00
150.00	7.38	5.85	0.00
155.00	7.38	5.85	0.00
160.00	7.38	5.85	0.00
165.00	7.38	5.85	0.00
170.00	7.38	5.85	0.00
175.00	7.38	5.85	0.00
180.00	7.38	5.85	0.00
185.00	7.38	5.85	0.00
190.00	7.38	5.85	0.00
195.00	7.38	5.85	0.00
200.00	7.38	5.85	0.00
205.00	7.38	5.85	0.00
210.00	7.38	5.85	0.00
215.00	7.38	5.85	0.00
220.00	7.38	5.85	0.00
225.00	7.38	5.85	0.00
230.00	7.38	5.85	0.00
235.00	7.38	5.85	0.00
240.00	7.38	5.85	0.00

Summary for Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE

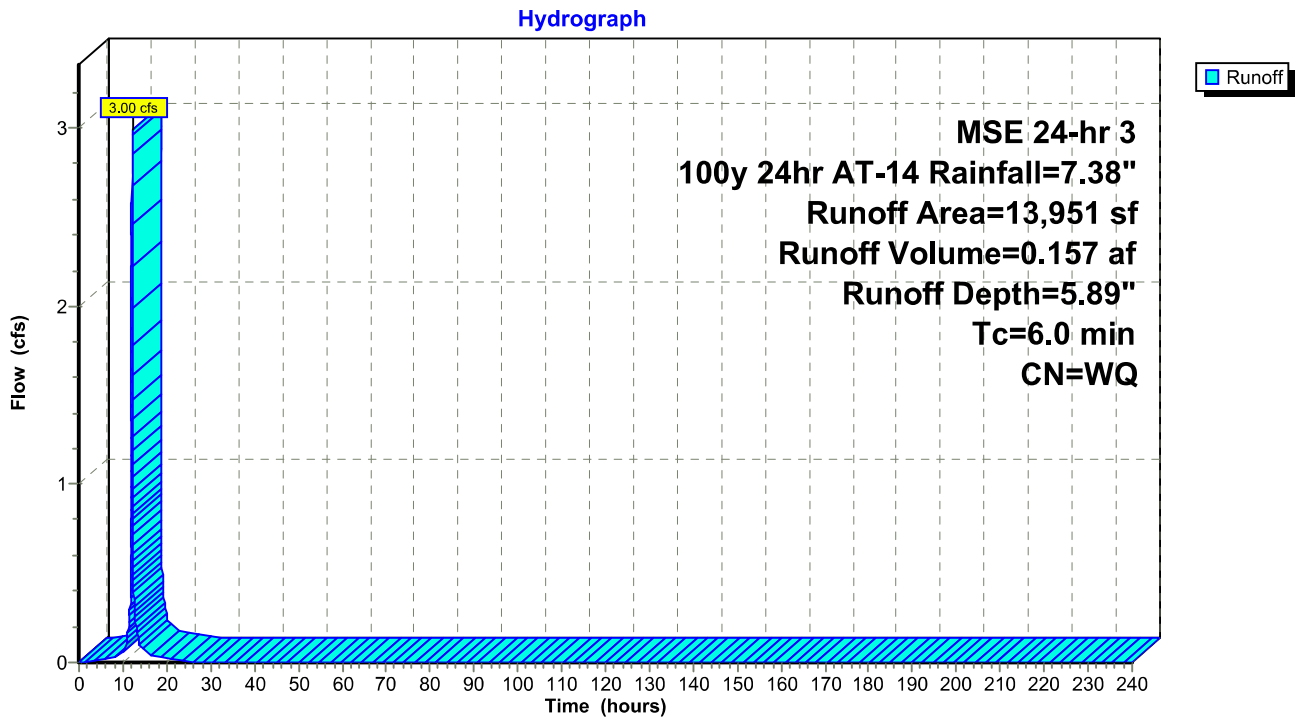
Runoff = 3.00 cfs @ 12.13 hrs, Volume= 0.157 af, Depth= 5.89"
 Routed to Pond 1P : 1P - DETENTION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100y 24hr AT-14 Rainfall=7.38"

Area (sf)	CN	Description
9,743	98	Paved parking, HSG B
4,208	61	>75% Grass cover, Good, HSG B
13,951		Weighted Average
4,208		30.16% Pervious Area
9,743		69.84% Impervious Area

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

Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE



Hydrograph for Subcatchment PR1B: PR1B - DRAINS TO DETENTION BASIN THEN SOUTH TO 50TH AVE

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
5.00	0.28	0.00	0.02
10.00	1.01	0.23	0.06
15.00	6.62	5.11	0.07
20.00	7.19	5.66	0.02
25.00	7.38	5.85	0.00
30.00	7.38	5.85	0.00
35.00	7.38	5.85	0.00
40.00	7.38	5.85	0.00
45.00	7.38	5.85	0.00
50.00	7.38	5.85	0.00
55.00	7.38	5.85	0.00
60.00	7.38	5.85	0.00
65.00	7.38	5.85	0.00
70.00	7.38	5.85	0.00
75.00	7.38	5.85	0.00
80.00	7.38	5.85	0.00
85.00	7.38	5.85	0.00
90.00	7.38	5.85	0.00
95.00	7.38	5.85	0.00
100.00	7.38	5.85	0.00
105.00	7.38	5.85	0.00
110.00	7.38	5.85	0.00
115.00	7.38	5.85	0.00
120.00	7.38	5.85	0.00
125.00	7.38	5.85	0.00
130.00	7.38	5.85	0.00
135.00	7.38	5.85	0.00
140.00	7.38	5.85	0.00
145.00	7.38	5.85	0.00
150.00	7.38	5.85	0.00
155.00	7.38	5.85	0.00
160.00	7.38	5.85	0.00
165.00	7.38	5.85	0.00
170.00	7.38	5.85	0.00
175.00	7.38	5.85	0.00
180.00	7.38	5.85	0.00
185.00	7.38	5.85	0.00
190.00	7.38	5.85	0.00
195.00	7.38	5.85	0.00
200.00	7.38	5.85	0.00
205.00	7.38	5.85	0.00
210.00	7.38	5.85	0.00
215.00	7.38	5.85	0.00
220.00	7.38	5.85	0.00
225.00	7.38	5.85	0.00
230.00	7.38	5.85	0.00
235.00	7.38	5.85	0.00
240.00	7.38	5.85	0.00

Summary for Pond 1P: 1P - DETENTION BASIN

Inflow Area = 0.320 ac, 69.84% Impervious, Inflow Depth = 5.89" for 100y 24hr AT-14 event
 Inflow = 3.00 cfs @ 12.13 hrs, Volume= 0.157 af
 Outflow = 1.47 cfs @ 12.22 hrs, Volume= 0.157 af, Atten= 51%, Lag= 5.4 min
 Primary = 1.47 cfs @ 12.22 hrs, Volume= 0.157 af

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs
 Peak Elev= 930.77' @ 12.22 hrs Surf.Area= 1,795 sf Storage= 1,201 cf

Plug-Flow detention time= 12.9 min calculated for 0.157 af (100% of inflow)
 Center-of-Mass det. time= 12.9 min (765.3 - 752.3)

Volume	Invert	Avail.Storage	Storage Description
#1	930.00'	3,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

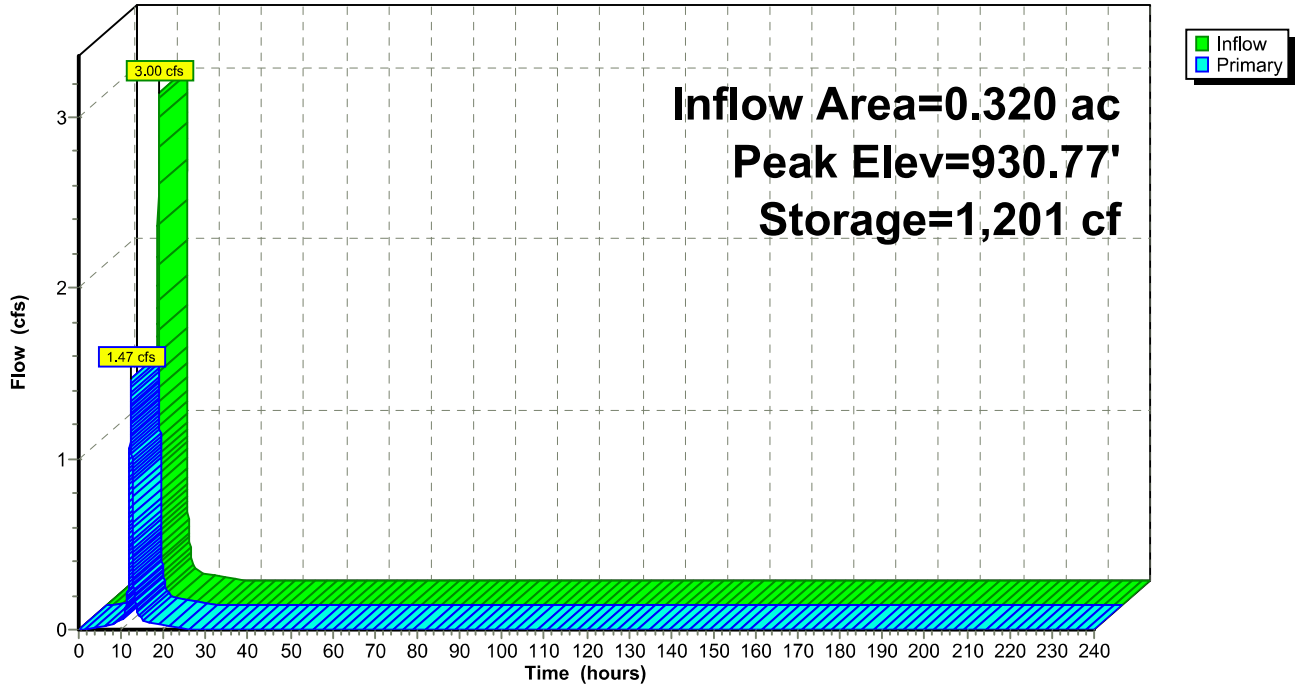
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.00	1,347	0	0
930.50	1,634	745	745
931.00	1,937	893	1,638
931.50	2,323	1,065	2,703
932.00	2,665	1,247	3,950

Device	Routing	Invert	Outlet Devices
#1	Primary	930.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.47 cfs @ 12.22 hrs HW=930.77' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 1.47 cfs @ 4.21 fps)

Pond 1P: 1P - DETENTION BASIN

Hydrograph



Hydrograph for Pond 1P: 1P - DETENTION BASIN

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	930.00	0.00
5.00	0.02	20	930.01	0.01
10.00	0.06	55	930.04	0.06
15.00	0.07	65	930.05	0.07
20.00	0.02	31	930.02	0.02
25.00	0.00	1	930.00	0.00
30.00	0.00	0	930.00	0.00
35.00	0.00	0	930.00	0.00
40.00	0.00	0	930.00	0.00
45.00	0.00	0	930.00	0.00
50.00	0.00	0	930.00	0.00
55.00	0.00	0	930.00	0.00
60.00	0.00	0	930.00	0.00
65.00	0.00	0	930.00	0.00
70.00	0.00	0	930.00	0.00
75.00	0.00	0	930.00	0.00
80.00	0.00	0	930.00	0.00
85.00	0.00	0	930.00	0.00
90.00	0.00	0	930.00	0.00
95.00	0.00	0	930.00	0.00
100.00	0.00	0	930.00	0.00
105.00	0.00	0	930.00	0.00
110.00	0.00	0	930.00	0.00
115.00	0.00	0	930.00	0.00
120.00	0.00	0	930.00	0.00
125.00	0.00	0	930.00	0.00
130.00	0.00	0	930.00	0.00
135.00	0.00	0	930.00	0.00
140.00	0.00	0	930.00	0.00
145.00	0.00	0	930.00	0.00
150.00	0.00	0	930.00	0.00
155.00	0.00	0	930.00	0.00
160.00	0.00	0	930.00	0.00
165.00	0.00	0	930.00	0.00
170.00	0.00	0	930.00	0.00
175.00	0.00	0	930.00	0.00
180.00	0.00	0	930.00	0.00
185.00	0.00	0	930.00	0.00
190.00	0.00	0	930.00	0.00
195.00	0.00	0	930.00	0.00
200.00	0.00	0	930.00	0.00
205.00	0.00	0	930.00	0.00
210.00	0.00	0	930.00	0.00
215.00	0.00	0	930.00	0.00
220.00	0.00	0	930.00	0.00
225.00	0.00	0	930.00	0.00
230.00	0.00	0	930.00	0.00
235.00	0.00	0	930.00	0.00
240.00	0.00	0	930.00	0.00

Stage-Area-Storage for Pond 1P: 1P - DETENTION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
930.00	1,347	0	931.04	1,968	1,716
930.02	1,358	27	931.06	1,983	1,756
930.04	1,370	54	931.08	1,999	1,795
930.06	1,381	82	931.10	2,014	1,836
930.08	1,393	110	931.12	2,030	1,876
930.10	1,404	138	931.14	2,045	1,917
930.12	1,416	166	931.16	2,061	1,958
930.14	1,427	194	931.18	2,076	1,999
930.16	1,439	223	931.20	2,091	2,041
930.18	1,450	252	931.22	2,107	2,083
930.20	1,462	281	931.24	2,122	2,125
930.22	1,473	310	931.26	2,138	2,168
930.24	1,485	340	931.28	2,153	2,211
930.26	1,496	370	931.30	2,169	2,254
930.28	1,508	400	931.32	2,184	2,297
930.30	1,519	430	931.34	2,199	2,341
930.32	1,531	460	931.36	2,215	2,385
930.34	1,542	491	931.38	2,230	2,430
930.36	1,554	522	931.40	2,246	2,475
930.38	1,565	553	931.42	2,261	2,520
930.40	1,577	585	931.44	2,277	2,565
930.42	1,588	616	931.46	2,292	2,611
930.44	1,600	648	931.48	2,308	2,657
930.46	1,611	680	931.50	2,323	2,703
930.48	1,623	713	931.52	2,337	2,750
930.50	1,634	745	931.54	2,350	2,796
930.52	1,646	778	931.56	2,364	2,844
930.54	1,658	811	931.58	2,378	2,891
930.56	1,670	844	931.60	2,391	2,939
930.58	1,682	878	931.62	2,405	2,987
930.60	1,695	912	931.64	2,419	3,035
930.62	1,707	946	931.66	2,432	3,083
930.64	1,719	980	931.68	2,446	3,132
930.66	1,731	1,014	931.70	2,460	3,181
930.68	1,743	1,049	931.72	2,473	3,231
930.70	1,755	1,084	931.74	2,487	3,280
930.72	1,767	1,119	931.76	2,501	3,330
930.74	1,779	1,155	931.78	2,515	3,380
930.76	1,792	1,191	931.80	2,528	3,431
930.78	1,804	1,227	931.82	2,542	3,481
930.80	1,816	1,263	931.84	2,556	3,532
930.82	1,828	1,299	931.86	2,569	3,584
930.84	1,840	1,336	931.88	2,583	3,635
930.86	1,852	1,373	931.90	2,597	3,687
930.88	1,864	1,410	931.92	2,610	3,739
930.90	1,876	1,447	931.94	2,624	3,791
930.92	1,889	1,485	931.96	2,638	3,844
930.94	1,901	1,523	931.98	2,651	3,897
930.96	1,913	1,561	932.00	2,665	3,950
930.98	1,925	1,599			
931.00	1,937	1,638			
931.02	1,952	1,677			