RECEIVED
JUN 08 2023
TOWN OF SIMSBURY
PLANNING DEPARTMENT

Town of Simsbury

Office of Community Planning and Development - Zoning Commission Application

DATE: May 7, 2023 FEE: $ 715.68 CK #: 93 APP #: 23-26

PROPERTY ADDRESS: 530 Bushy Hill Road (Simsbury Commons)

NAME OF OWNER: Raising Cane's Restaurant, LLC (App) Simsbury Commons, LLC

MAILING ADDRESS: 6800 Bishop Road, Plano, TX 75024

EMAIL ADDRESS: _____ TELEPHONE # _____

NAME OF AGENT: T. J. Donohue, Jr., Esq., Killian & Donohue, LLC

MAILING ADDRESS: 363 Main Street, Hartford, CT 06106

EMAIL ADDRESS: tj@kdjlaw.com TELEPHONE # (860) 560-1977

ZONING DISTRICT: B3 LOT AREA: 52,494 Sq. Ft. SQ FT/ACRES

Does this site have wetlands? ☐YES ☒NO Have you applied for a wetlands permit? ☐YES ☒NO

REQUESTED ACTION (PLEASE CHECK APPROPRIATE BOX):

☐ **ZONE CHANGE**: The applicant hereby requests that said premises be changed from zone _____ to zone _____.

☐ **TEXT AMENDMENT**: Please attach proposed changes, including Sections and purposes.

☒ **SPECIAL EXCEPTION**: The applicant hereby requests a public hearing pursuant to Section NA.

☒ **SITE PLAN APPROVAL**: The applicant hereby requests

☐PRELIMINARY ☒FINAL ☐SITE PLAN AMENDMENT pursuant to Section 11

☐ **SIGN PERMIT**

☐ **OTHER (PLEASE EXPLAIN)**: _____

A check payable to the Town of Simsbury must accompany this **original signed and dated** application. **Five (5) complete sets of folded plans, one (1) completed application and correspondence including a project narrative** must be submitted. Please send PDF digitals to jhollis@simsbury-ct.gov.

6/7/23 6-8-23

Signature of Owner *Date* *Signature of Agent* *Date*

Baruch Aronson
Telephone (860) 658-3245
Facsimile (860) 658-3206

T. J. Donohue, Jr., Esq.
www.simsbury-ct.gov

933 Hopmeadow Street
Simsbury, CT 06070

06-08-2023 0652 CHECK 715.68

Killian and Donohue, LLC
363 Main Street
Hartford, Ct 06106

T.J. Donohue, *Of Counsel*
tj@kdjlaw.com

June 8, 2023

Mr. George McGregor
Planning & Land Use Department
Town of Simsbury
933 Hopmeadow Street
Simsbury, CT 06070

RE: SL Simsbury Application for Special Permit and Site Plan for Caine's Restaurant at Simsbury Commons, Bushy Hill Road.

Dear George:

This letter is to respectfully file and submit the captioned application together with the application fee in the amount of $715.68. The required plans are being delivered today under separate cover.

This application is for the construction of a 3,284 sq ft structure and 22 parking spaces to serve as a "Raising Cane's" fast service restaurant which features "chicken fingers" for on premises and drive through take out consumption.

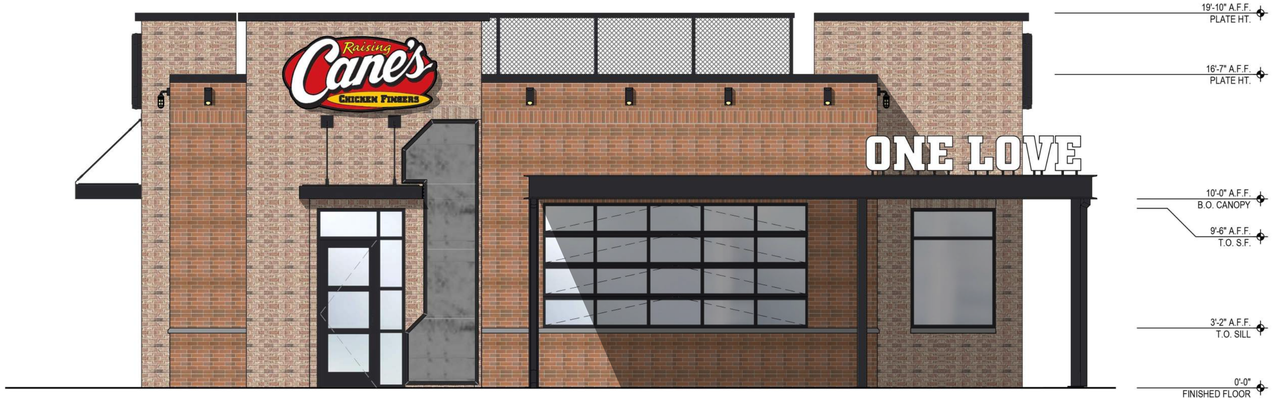
The structure is single story and is designed and to be signed in conformance with its national brand and branding. It will be a part of the Simsbury Commons and access will be had from internal traffic circulation routes within the Mall.

We look forward to working with you. Please be in touch with me if you need anything further.

Thanks for all of your help in this matter.

Very truly yours,

Thomas J. Donohue, Jr.
Of Counsel



2
EL 1

FRONT ENTRY ELEVATION

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

1
EL 1

DRIVE-THRU ELEVATION

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

Raising Cane's CHICKEN FINGERS
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

STORE:
RAISING CANE'S
RESTAURANT
ALBANY TPK. & BUSHY HILL RD.
SIMSBURY, CT, 06092
PROTOTYPE: P4-V-Av
SCHEME: B
RESTAURANT #RC935
VERSION: 2022-3.0 RELEASE 1.05.2022

ADA ARCHITECTS
17710 Detroit Avenue Lakewood, Ohio 44107
Phone (216) 521-5134 Fax (216) 521-4824
www.adaarchitects.com

ENGINEER INFORMATION:

SHEET REVISIONS

#	DATE	TYPE
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

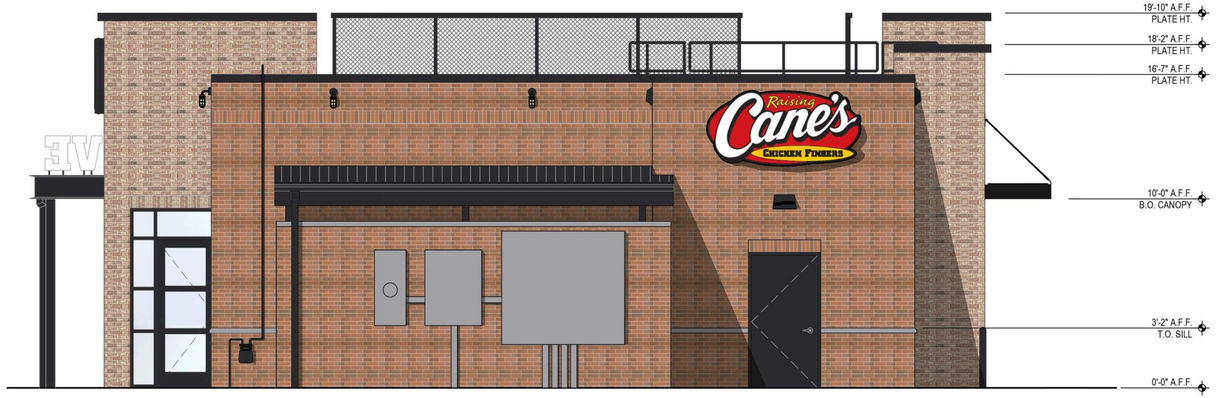
EXTERIOR ELEVATIONS

DATE: 04/19/23

JOB NO. 22031

EL 1

SHEET NO.



2 / EL 2 REAR ELEVATION
SCALE: 1/4" = 1'-0"

1 / EL 2 SIDE ENTRY ELEVATION
SCALE: 1/4" = 1'-0"

Raising Cane's Chicken Fingers
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

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EXTERIOR ELEVATIONS

DATE: 04/19/23

JOB NO. 22031

EL 2
SHEET NO.

PROPOSED SITE PLAN DOCUMENTS

FOR

Raising Cane's CHICKEN FINGERS

PROPOSED

PROPOSED RESTAURANT W/ DRIVE-THRU

LOCATION OF SITE:
530 BUSHY HILL ROAD, TOWN OF SIMSBURY
HARTFORD COUNTY, CT
MAP #B20, BLOCK #508, LOT #001-B

REFERENCES

BOUNDARY & TOPOGRAPHIC SURVEY:
CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD, SOUTHBOROUGH, MA 01772
DATE: 02/23/2022
REVISED: 02/23/2023

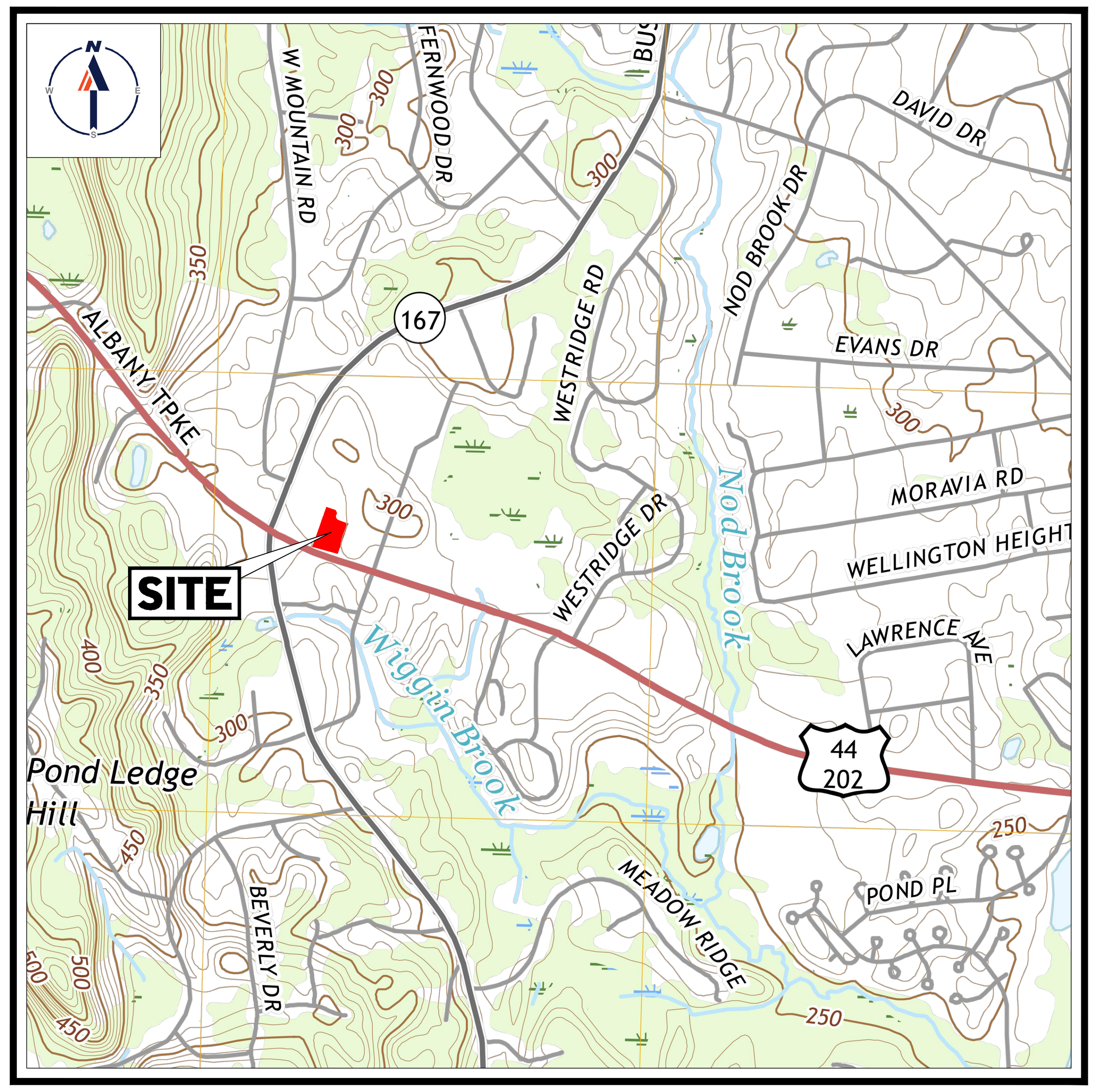
GEOTECHNICAL INVESTIGATION REPORT:
TERRACON CONSULTANTS, INC.
ROCKY HILL, CT
DATE: 12/12/2022

ARCHITECTURAL PLAN:
ADA ARCHITECTS, INC.
17710 DETROIT AVENUE, CLEVLAND, OHIO 44107
DATE: 11/14/2022
REVISED: 04/27/2023

* THE ABOVE REFERENCED DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THESE PLANS, HOWEVER, BOHLER ENGINEERING DOES NOT CERTIFY THE ACCURACY OF THE WORK REFERENCED OR DERIVED FROM THESE DOCUMENTS, BY OTHERS.

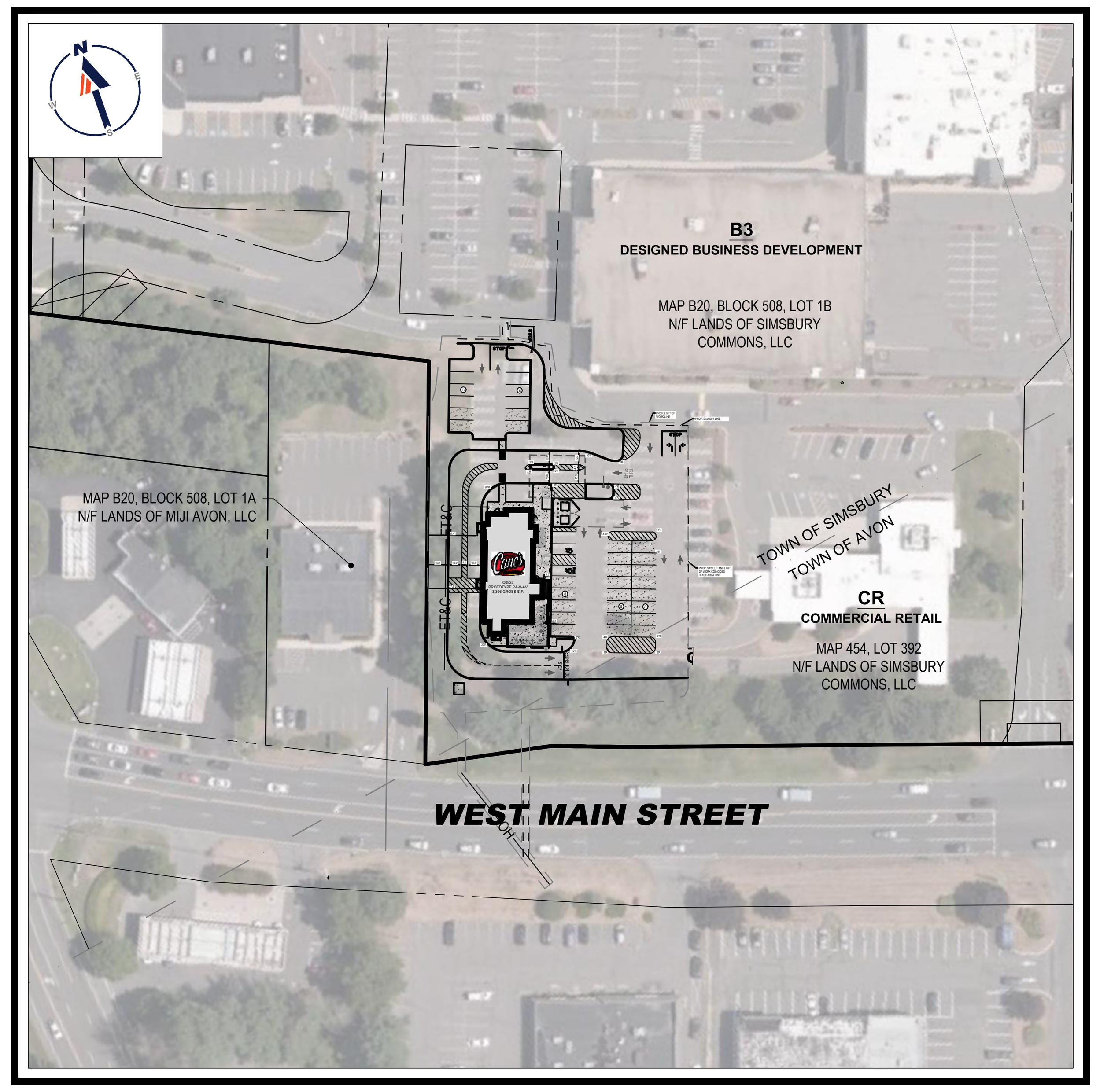
DRAWING SHEET INDEX

SHEET INDEX	
SHEET TITLE	NUMBER
COVER SHEET	C-101
GENERAL NOTES SHEET	C-102
DEMOLITION PLAN	C-201
SITE LAYOUT PLAN	C-301
GRADING & DRAINAGE PLAN	C-401
UTILITY PLAN	C-501
SOIL EROSION & SEDIMENT CONTROL PLAN	C-601
SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS	C-602
LANDSCAPE PLAN	C-701
LANDSCAPE NOTES & DETAILS	C-702
DETAIL SHEET	C-901
DETAIL SHEET	C-902
REFERENCE PLANS	
ALTA/NSPS LAND TITLE SURVEY (BY OTHERS)	3 SHEETS



USGS MAP

SCALE: 1" = 1,000'
SOURCE: 2021 AVON QUADRANGLE



SITE MAP

SCALE: 1" = 100'
SOURCE: 2022 MICROSOFT CORPORATION

PREPARED BY

BOHLER //

Raising Cane's CHICKEN FINGERS

Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:

RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:

BOHLER //
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 30414

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE: **COVER SHEET**

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER: **C-101**

GENERAL NOTES

[illegible]

GENERAL DEMOLITION NOTES

[illegible]

GENERAL SITE NOTES

[illegible]

GENERAL GRADING NOTES

[illegible]

GENERAL DRAINAGE & UTILITY NOTES

[illegible]

ADA INSTRUCTIONS TO CONTRACTOR:

1. ALL ACCESSIBLE (A.K.A. ADA) COMPONENTS AND ACCESSIBLE ROUTES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF: (A) THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 ET SEQ. AND 42 U.S.C. § 4151 ET SEQ.); AND (B) ANY APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AND ALL AMENDMENTS TO BOTH, WHICH ARE IN EFFECT WHEN THESE PLANS WERE COMPLETED.
2. THE CONTRACTOR MUST REVIEW ALL DOCUMENTS REFERENCED IN THESE NOTES FOR ACCURACY, COMPLIANCE AND CONSISTENCY WITH INDUSTRY GUIDELINES.
3. THE CONTRACTOR MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ACCESSIBLE (ADA) COMPONENTS AND ACCESSIBLE ROUTES FOR THE SITE. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACES, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, AND INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT, MUST COMPLY WITH THE ACCESSIBLE GUIDELINES AND REQUIREMENTS WHICH INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   - 3.1. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SLOPES MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
   - 3.2. PATH OF TRAVEL ALONG ACCESSIBLE ROUTE MUST PROVIDE A 36-INCHES MINIMUM WIDTH (48-INCHES PREFERRED), OR AS SPECIFIED BY THE GOVERNING AGENCY. UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS) MUST NOT REDUCE THIS MINIMUM WIDTH. THE SLOPE MUST NOT EXCEED 1:20 (5.0%) IN THE DIRECTION OF TRAVEL AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE ACCESSIBLE PATH OF TRAVEL IS GREATER THAN 1:20 (5.0%), AN ACCESSIBLE RAMP MUST BE PROVIDED. ALONG THE ACCESSIBLE PATH OF TRAVEL, OPENINGS MUST NOT EXCEED 1/2-INCH IN WIDTH. VERTICAL CHANGES OF UP TO 1/2-INCH ARE PERMITTED ONLY IF THEY INCLUDES A 1/4-INCH BEVEL AT A SLOPE NOT STEEPER THAN 1:2. NO VERTICAL CHANGES OVER 1/4-INCH ARE PERMITTED.
   - 3.3. ACCESSIBLE RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%) AND A RISE OF 30-INCHES. LEVEL LANDINGS MUST BE PROVIDED AT EACH END OF ACCESSIBLE RAMPS. LANDING MUST PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES, AND MUST NOT EXCEED 1:50 (2.0%) SLOPE IN ANY DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS MUST HAVE A CLEAR LANDING OF A MINIMUM OF 60-INCHES BY 60-INCHES. HAND RAILS ON BOTH SIDES OF THE RAMP MUST BE PROVIDED ON AN ACCESSIBLE RAMP WITH A RISE GREATER THAN 6-INCHES.
   - 3.4. ACCESSIBLE CURB RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%). WHERE FLARED SIDES ARE PROVIDED, THEY MUST NOT EXCEED 1:10 (10%) SLOPE. LEVEL LANDING MUST BE PROVIDED AT RAMPS TOP AT A MINIMUM OF 36-INCHES LONG (48-INCHES PREFERRED). IN ALTERATIONS, WHEN THERE IS NO LANDING AT THE TOP, FLARE SIDES SLOPES MUST NOT EXCEED A SLOPE OF 1:12 (8.3%).
   - 3.5. DOORWAY LANDINGS AREAS MUST BE PROVIDED ON THE EXTERIOR SIDE OF ANY DOOR LEADING TO AN ACCESSIBLE PATH OF TRAVEL. THIS LANDING MUST BE SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA MUST BE NO FEWER THAN 60-INCHES (5 FEET) LONG, EXCEPT WHERE OTHERWISE CLEARLY PERMITTED BY ACCESSIBLE STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2009 AND OTHER REFERENCES INCORPORATED BY CODE).
   - 3.6. WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO ACCESSIBLE COMPONENTS FROM EXISTING DOORWAYS OR SURFACES, THE CONTRACTOR MUST VERIFY ALL EXISTING ELEVATIONS SHOWN ON THE PLAN. NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES, IN RARE CIRCUMSTANCES. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR IN ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS BEFORE COMMENCING ANY WORK. CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ACCESSIBLE GUIDELINES.
   - 3.7. THE CONTRACTOR MUST VERIFY ALL OF THE SLOPES OF THE CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE EXISTS OR IS OBSERVED OR DISCOVERED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, PRIOR TO POURING CONCRETE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL COSTS TO REMOVE, REPAIR AND/OR REPLACE NON-CONFORMING CONCRETE AND/OR PAVEMENT SURFACES.
4. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION TO ENSURE SAME IS CONSISTENT WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCING CONSTRUCTION.

ABBREVIATIONS

KEY	DESCRIPTION
AG / ABVG	ABOVE GROUND
ARCH	ARCHITECT
BC	BACK OF CURB
BCC	BITUMINOUS CONCRETE CURB
BM	BENCHMARK
BOC	BOTTOM OF CURB
BW	BOTTOM OF WALL
BLDG	BUILDING
CC	CONCRETE CURB
CCB	CAPE COD BERM
CONC.	CONCRETE
DEC	DECORATIVE
°	DEGREE
DEP	DEPRESSED
Ø / DIA	DIAMETER
DMH	DRAIN MANHOLE
DIP	DUCTILE IRON PIPE
ECC	EXTRUDED CONCRETE CURB
EOP	EDGE OF PAVEMENT
ELEV	ELEVATION
EXIST.	EXISTING
FF	FINISH FLOOR
FFE	FINISH FLOOR ELEVATION
GC	GENERAL CONTRACTOR
GRT	GRATE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
INT	INTERSECTION
INV	INVERT
L.S.A.	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
LOW	LIMIT OF WORK
LF	LINEAR FOOT / FEET
LP	LOW POINT
MAX	MAXIMUM
MEP	MECHANICAL, ELECTRICAL, PLUMBING
ME	MEET OR MATCH EXISTING
MIN	MINIMUM
No. / #	NUMBER
±	PLUS OR MINUS
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
PVI	POINT OF VERTICAL INTERSECTION
PVC	POLYVINYL CHLORIDE PIPE
PROP.	PROPOSED
R	RADIUS OR RADII
RCP	REINFORCED CONCRETE PIPE
R.O.W.	RIGHT-OF-WAY
SAN	SANITARY
SMH	SEWER MANHOLE
S	SLOPE
SF	SQUARE FOOT
SGC	SLOPED GRANITE CURB
STA	STATION
STM	STORM
TBR	TO BE REMOVED
TBR/R	TO BE REMOVED AND REPLACED
TC	TOP OF CURB
TW	TOP OF WALL
TPF	TREE PROTECTION FENCE
TRANS	TRANSITION
TYP.	TYPICAL
UG / UNDG	UNDERGROUND
V.I.F.	VERIFY IN FIELD
VGC	VERTICAL GRANITE CURB
W	WIDTH

TYPICAL LINE TYPE LEGEND

PROPERTY LINE	EXISTING	
	PROPOSED	
ADJACENT PROPERTY LINE	EXISTING	
	PROPOSED	
RIGHT-OF-WAY LINE	EXISTING	
	PROPOSED	
SETBACK OR BUFFER	EXISTING	
	PROPOSED	
EASEMENT LINE	EXISTING	
	PROPOSED	
WETLAND BOUNDARY	EXISTING	
	PROPOSED	
WETLAND BUFFER	EXISTING	
	PROPOSED	
WATER WAY BOUNDARY	EXISTING	
	PROPOSED	
WATERWAY BUFFER	EXISTING	
	PROPOSED	
WETLAND OR WATERWAY FLAG	EXISTING	
RIGHT-OF-WAY CENTER OR BASE LINE	EXISTING	
	PROPOSED	
APPROX. LIMIT OF WORK OR DISTURBANCE	EXISTING	
	PROPOSED	
APPROX. SAWCUT LINE	EXISTING	
	PROPOSED	
TREE LINE	EXISTING	
	PROPOSED	
SURFACE OR SUBSURFACE BASIN	EXISTING	
	PROPOSED	
OVERHEAD WIRES	EXISTING	OH
	PROPOSED	OH
CURBING	EXISTING	
	PROPOSED	CC/BCC MONOLITHIC VGC SGC TRANS/FLUSH CCB
FENCE OR RAILING	EXISTING	
	PROPOSED	CHAIN LINK STOCKADE RAILING
RETAINING WALL	EXISTING	
	PROPOSED	
CONTOURS	EXISTING	
	PROPOSED	50
SWALE	EXISTING	
	PROPOSED	
BERM	EXISTING	
	PROPOSED	
RIDGE	EXISTING	
	PROPOSED	
DRAIN PIPE	EXISTING	
	PROPOSED	
SEWER PIPE	EXISTING	S
	PROPOSED	SL
SEWER FORCE MAIN	EXISTING	FM
	PROPOSED	FM
ELECTRIC	EXISTING	E
	PROPOSED	E
TELECOMMUNICATIONS	EXISTING	T
	PROPOSED	T
CABLE TV	EXISTING	C
	PROPOSED	C
GAS	EXISTING	G
	PROPOSED	G
WATER	EXISTING	W
	PROPOSED	W

REFER TO SITE LAYOUT PLAN FOR ZONING ANALYSIS TABLE AND LAND USE / ZONING INFORMATION & NOTES

REFER TO EROSION AND SEDIMENT CONTROL NOTES & DETAILS SHEET FOR TYPICAL EROSION NOTES AND DETAILS

REFER TO LANDSCAPE NOTES & DETAILS SHEET FOR TYPICAL LANDSCAPE NOTES AND DETAILS

REFER TO LIGHTING PLAN FOR TYPICAL LIGHTING NOTES AND TABLES

Raising Cane's Chicken Fingers
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
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530 BUSHY HILL ROAD
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Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:
BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

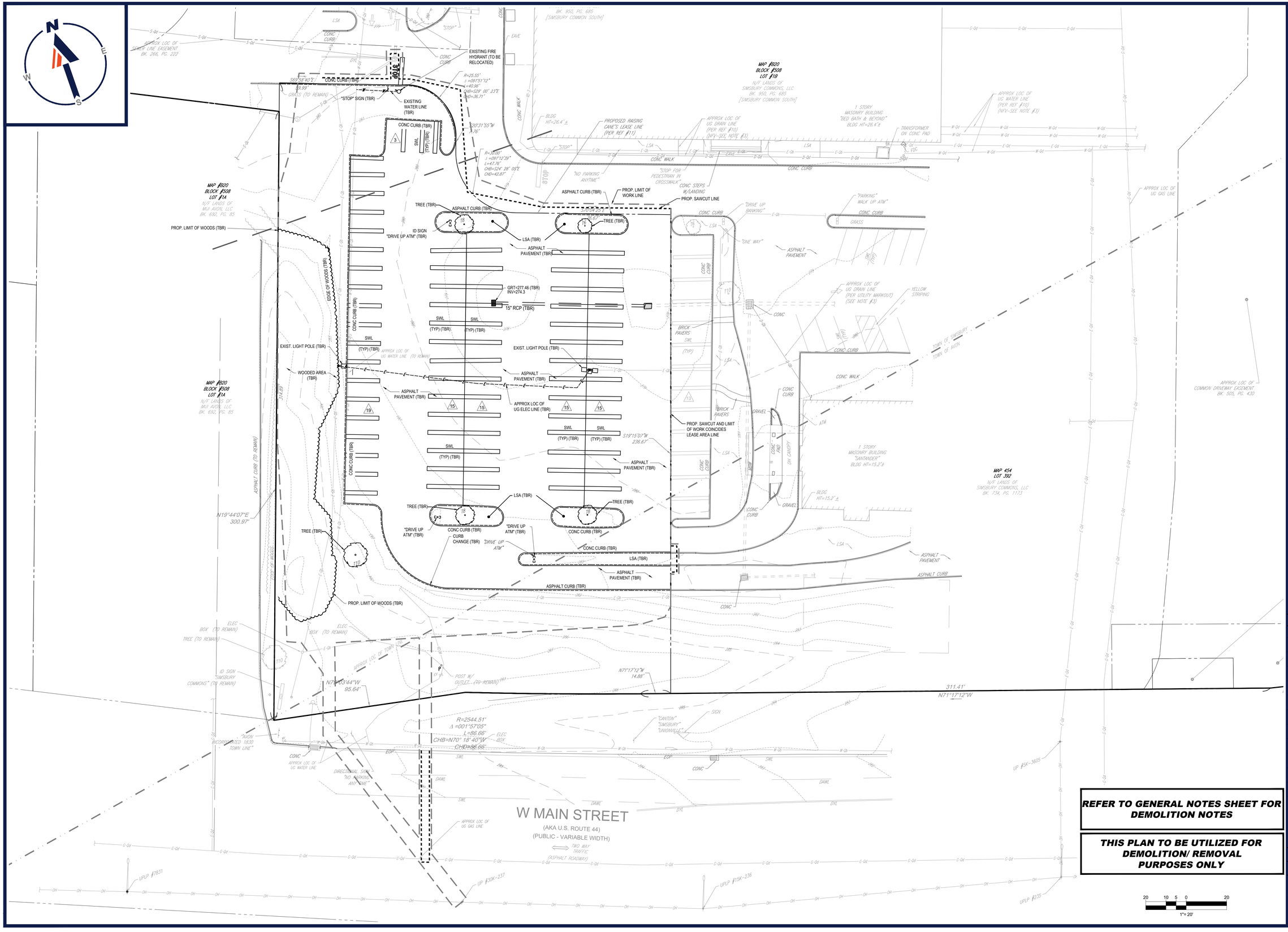
PROFESSIONAL OF RECORD:
J. G. BORD — STATE OF CONNECTICUT — PROFESSIONAL ENGINEER — LICENSE No. 30414

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE: **GENERAL NOTES SHEET**

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB
SHEET NUMBER: **C-102**



P:\2022\CTA220075.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\CTA220075.00-SPPD.3A——>LAYOUT: C-201-DEMO

Raising Cane's CHICKEN FINGERS

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PROTOTYPE ISSUE DATE: -

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PROTOTYPE UPDATE PHASE: -

UPDATE ISSUE DATE: -

PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

JOSEPH G. BORD — STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER — 29314

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
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3	07/07/2023	TOWN COMMENTS

SHEET TITLE:

DEMOLITION PLAN

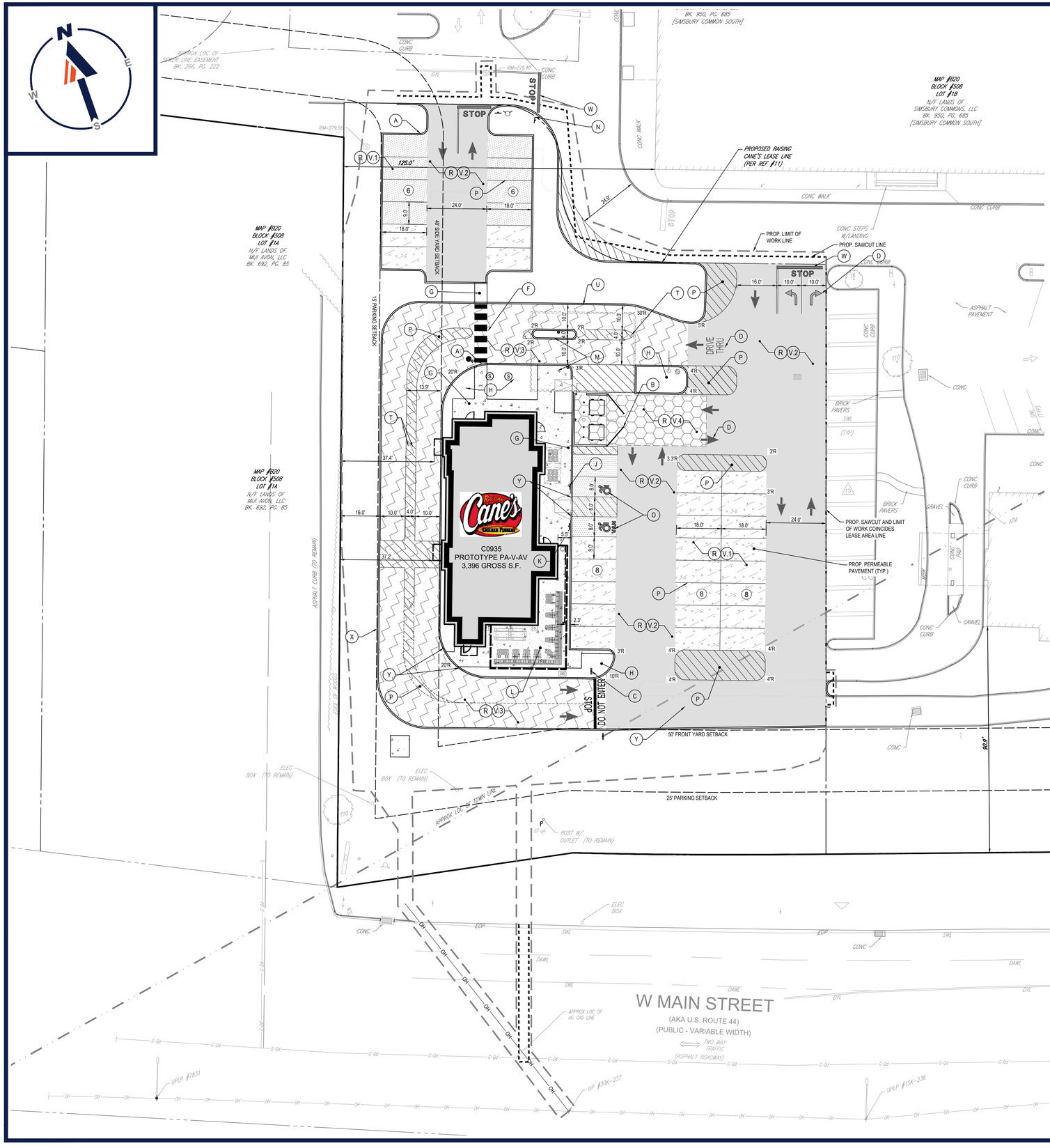
DATE: 01/23/2022

PROJECT NUMBER: CTA220075.00

DRAWN BY: KMB

SHEET NUMBER:

C-201



ZONING ANALYSIS TABLE

N/A - NOT APPLICABLE
N/S - NOT SPECIFIED
(V) - VARIANCE REQUESTED
(W) - WAIVER REQUESTED
(E) - EXIST. NON-CONFORMANCE

ZONING DISTRICT	SIMSBURY: DESIGNATED BUSINESS DEVELOPMENT (B-3)				
	AVON: COMMERCIAL RETAIL (CR)				
REQUIRED PERMIT	TBD				
ZONE CRITERIA	**SIMSBURY REQUIRED**	**AVON REQUIRED**	**EXISTING**	**PROPOSED LEASE AREA**	**PROPOSED OVERALL**
LOT AREA	N/A	N/A	N/A	52,494 SF	782,633 SF
MAX. BLDG COVERAGE	N/A	25%	0%	3,284 SF / 52,494 SF = 6.2%	188,942± SF / 782,633 SF = 24.0%
MIN. FRONT SETBACK	50 FT	75 FT	N/A	87.0 FT	46 FT (AVON)
MIN. SIDE SETBACK	40 FT	20 FT	N/A	37.2 FT | 37.4 FT (V)	9.5 FT (E)
MIN. REAR SETBACK	50 FT	25 FT	N/A	N/A	9.5 FT
MIN. PARKING SETBACK	FRONT: 25 FT SIDE: 15 FT	N/A	N/A	15 FT	15 FT
MAX. BUILDING HEIGHT	40 FT	35 FT	N/A	-	-
MAX. IMPER. COVERAGE	40%	50%	656,599 SF / 782,633 SF = 83.9%	30,263 SF / 52,494 SF = 57.6%	656,543 SF / 782,633 SF = 83.8%
PARKING SPACES	22 (1)	N/A (1)	873	36	782
ACCESS. PARKING SPACES	1 (1)	N/A (1)	22	2	24
PARKING STALL CRITERIA STANDARD: 9 FT x 18 FT COMPACT: 8 FT x 16 FT	USE/CATEGORY: RESTAURANT REQUIRED PARKING: 3.3 PARKING SPACES PER EACH 500 SF OF GFA CALCULATION: 3,295 / 500 = 6.59 x 3.3 = 22 SPACES				

(1) TABLE CALCULATED BASED ON LEASE AREA
(V) MINIMUM SIDE YARD SETBACK AS SPECIFIED IN SECTION 4.3 DIMENSIONAL REQUIREMENTS OF THE ZONING REGULATIONS. MINIMUM REQUIRED IS 40 FT WHERE 19.2 FT & 37.1 FT ARE PROPOSED.

PAVEMENT LEGEND

	V.1	STANDARD DUTY ASPHALT PAVEMENT REFERENCE PAVEMENT DETAILS
	V.2	HEAVY DUTY ASPHALT PAVEMENT REFERENCE PAVEMENT DETAILS
	V.3	MEDIUM DUTY CONCRETE PAVEMENT INTEGRAL COLOR 860 GRAPHIC (IRON OXIDE) REFERENCE PAVEMENT DETAILS
	V.4	HEAVY DUTY CONCRETE PAVEMENT (DUMPSTER ENCLOSURE) REFER TO CONSTRUCTION DETAILS DETAILS
		PROPOSED PRIVATE SIDEWALK PAVEMENT REFER TO CONSTRUCTION DETAILS
		PROPOSED PERMEABLE PAVEMENT

PAINT STRIPING LEGEND

SWSL/4" - SINGLE WHITE SOLID LINE / 4 IN. WIDE

NOTE: ALL LINE STRIPING SHALL BE EPOXY RESIN OR ANTI SLIP-RESISTANT MATERIAL TO AVOID POTENTIAL SLIP HAZARDS AT ACCESSIBLE SPACES, CROSSWALKS AND/OR CROSSINGS.

LEGEND

A	PROP. CURB
B	PROP. RECYCLING / TRASH DUMPSTER LOCATION. REFER TO ARCH PLANS FOR DETAILS OF SCREENING, GATES, BOLLARDS AND MASONRY.
C	PROP. "STOP" AND "DO NOT ENTER" SIGNS
D	PROP. DIRECTIONAL PAVEMENT MARKING
E	EXIST. CONCRETE SIDEWALK
F	PROP. CROSS WALK
G	PROP. CONC. WALK
H	PROP. LANDSCAPE AREA. REFERENCE LANDSCAPE PLANS.
I	PROP. SITE LIGHTING. REFER TO LIGHTING PLANS FOR DETAILS.
J	PROP. ACCESSIBLE PARKING SIGN.
K	PROP. VAN ACCESSIBLE PARKING SIGN.
L	PROP. CONCRETE PATIO WITH OUTDOOR SEATING.
M	PROP. DRIVE THRU ORDER BOARD, PRE-ORDER BOARD OR HEIGHT DETECTOR. REFER TO ARCH. PLANS FOR DETAILS.
N	PROP. RELOCATED STOP SIGN
O	PROP. ACCESSIBLE PARKING SPACES & STRIPING (SEE DETAIL)
P	PROP. PAVEMENT STRIPING. SEE PAINT STRIPING LEGEND ON THIS SHEET.
Q	APPROX. LOCATION OF PROP. PAD MOUNTED TRANSFORMER. REFER TO SHEET C-501 - UTILITY PLAN.
R	PROP. ASPHALT PAVEMENT
S	PROP. SAWCUT LINE
T	PROP. BOLLARD IN CURB. REFER TO ARCH. PLANS FOR DETAILS.
U	ORDER BOARD CANOPY
V	
W	PROP. "STOP" SIGN AND BAR
X	PROP. CATCH BASIN
Y	PROP. DRAINAGE MANHOLE

THIS PLAN TO BE UTILIZED FOR SITE LAYOUT PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL NOTES

20 10 5 0 20
1"= 20'

Raising Cane's Chicken Fingers
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

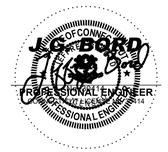
DESIGNERS INFORMATION:

BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:



SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:
SITE LAYOUT PLAN

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER:
C-301

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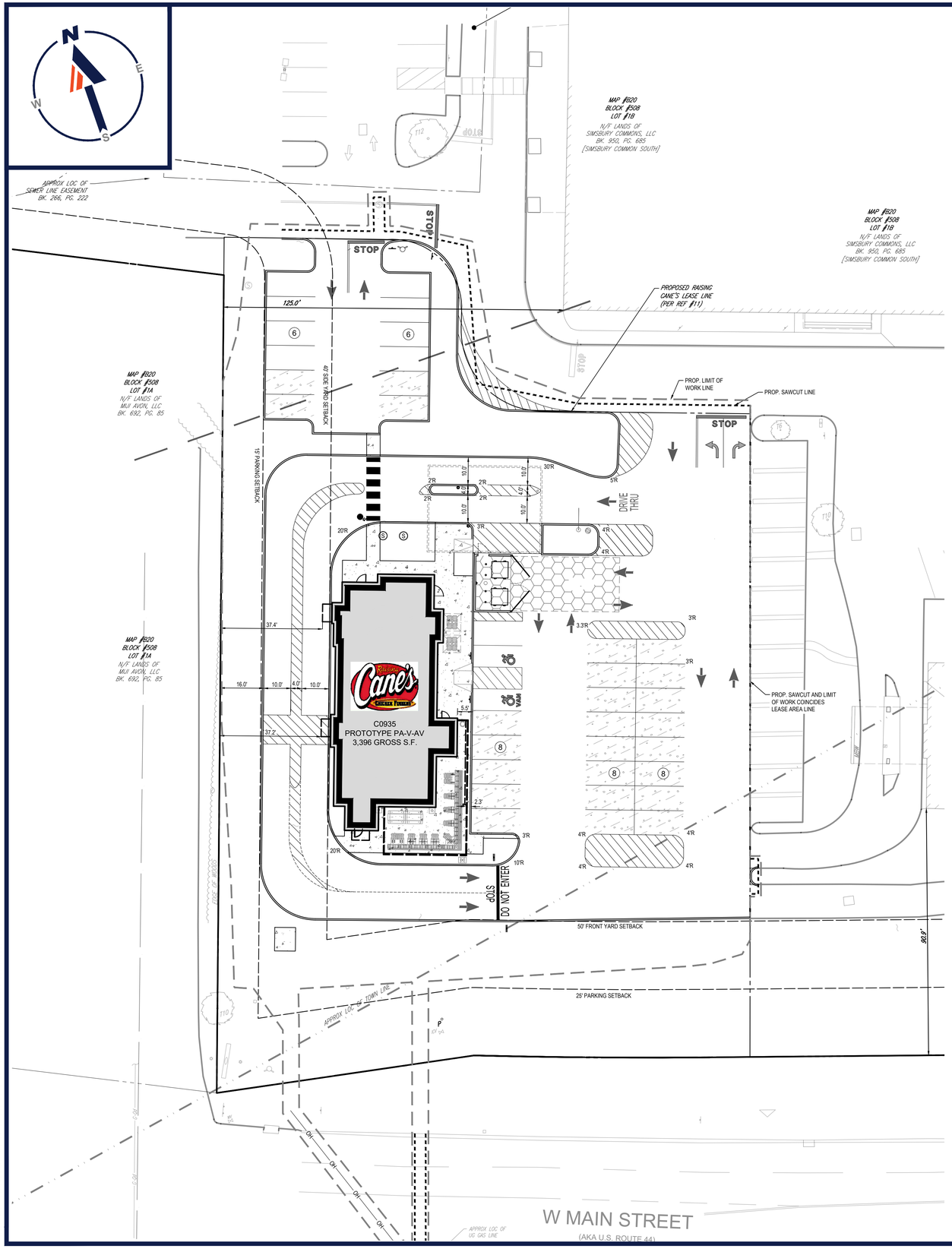

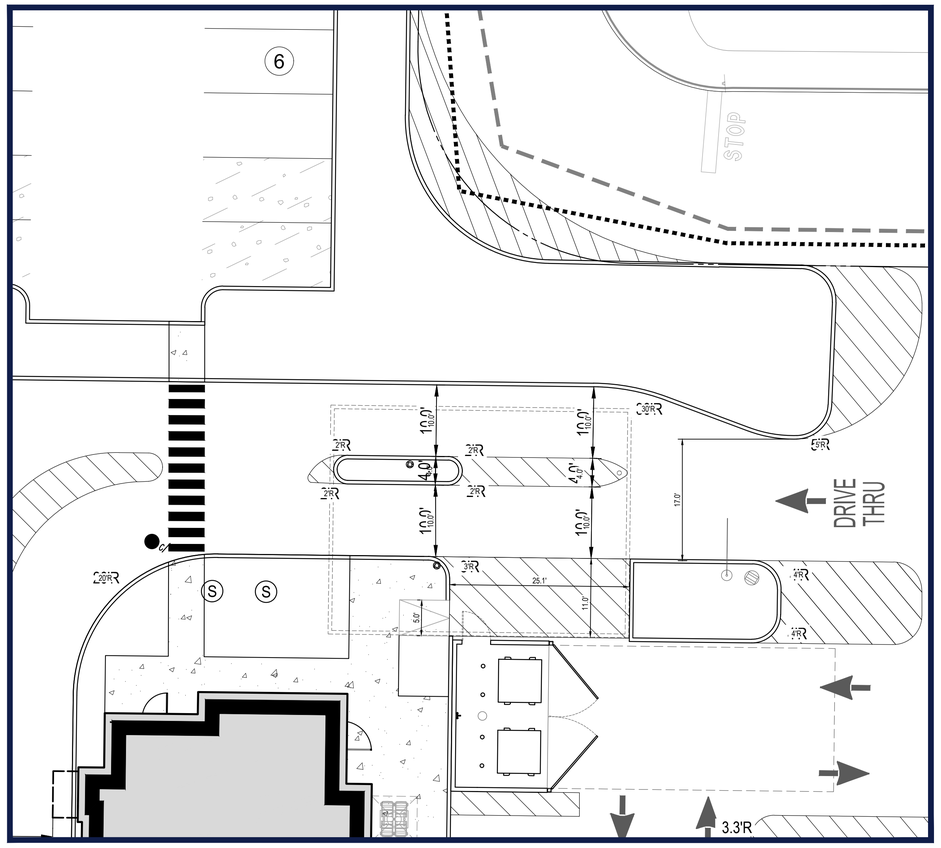

DRIVE-THRU DIMENSION INSET

SCALE: 1"=10'

REFERENCE ARCHITECTURAL PLANS FOR DETAILS AND EXACT LOCATION OF MENU BOARD, HEIGHT DETECTOR AND PRE-ORDER BOARD

DIMENSION NOTES

1. ALL CURB RADII ARE TO BE 10' AND 2' UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL CURBS SHALL BE 6" STANDARD EXCEPT WHERE OTHERWISE NOTED ON PLANS.
4. REFERENCE LANDSCAPE PLANS FOR PROPOSED BUFFERS, SCREENING AND PLANTING.

LEGEND

- PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED CONCRETE CURB
- EXISTING CURB
- (10) PROPOSED PARKING COUNT

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20 10 5 0 20
1"= 20'

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Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

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530 BUSHY HILL ROAD
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Prototype P4-V-AV
RESTAURANT #C0935

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BOHLER
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WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE:	-
UPDATE ISSUE DATE:	-
PROJECT MANAGER:	JGB

PERMIT SET

PROFESSIONAL OF RECORD:

JOSEPH G. BORD — STATE OF CONNECTICUT — PROFESSIONAL ENGINEER — 29014

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3	07/07/2023	TOWN COMMENTS

SHEET TITLE:

DIMENSION SHEET

DATE:	01/23/2022
PROJECT NUMBER:	CTA220075.00
DRAWN BY:	KMB

SHEET NUMBER:

C-302

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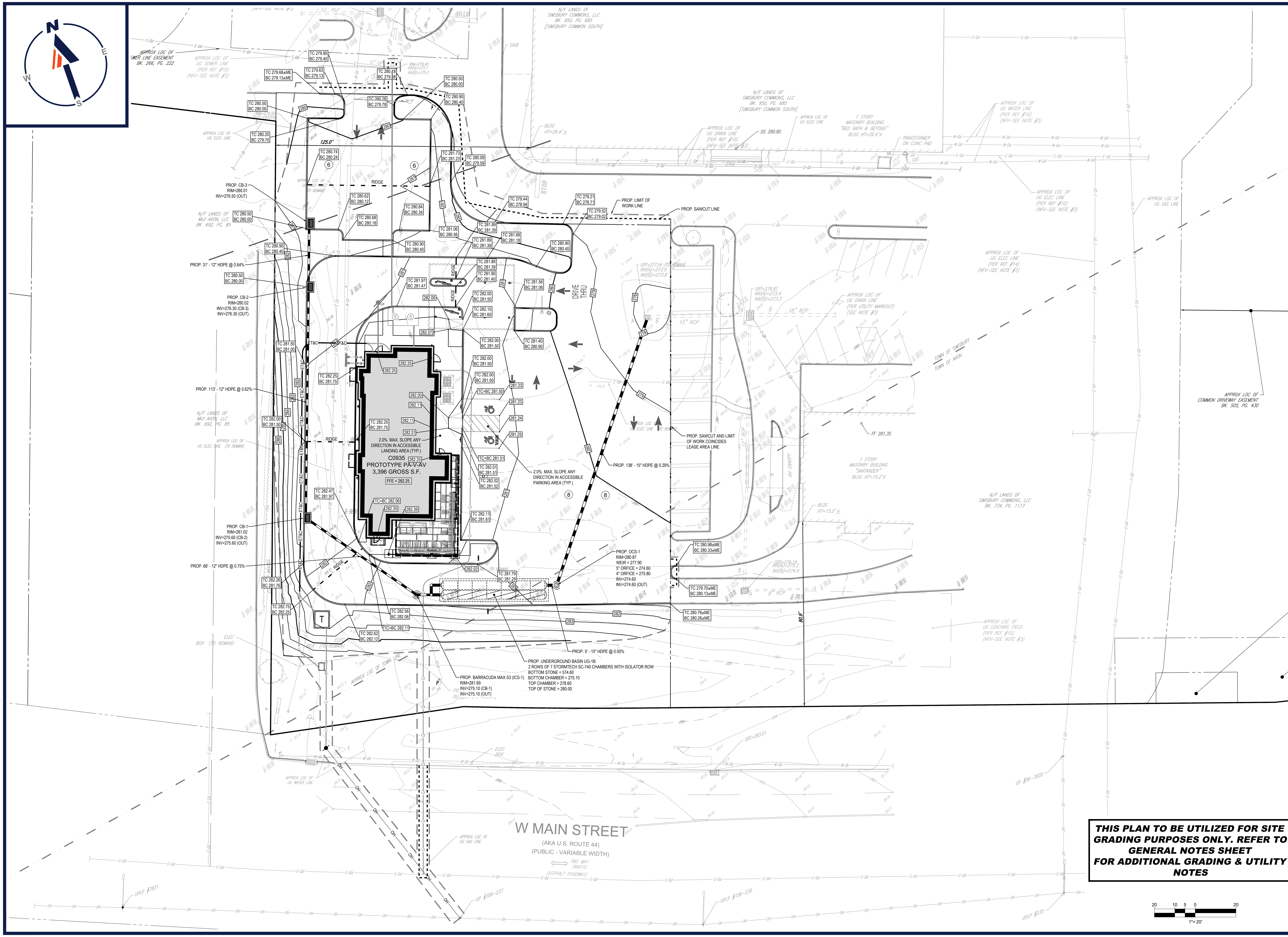

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Raising Cane's Chicken Fingers

Restaurant Support Office
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UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

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PROFESSIONAL OF RECORD:

PROFESSIONAL ENGINEER

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3	07/07/2023	TOWN COMMENTS

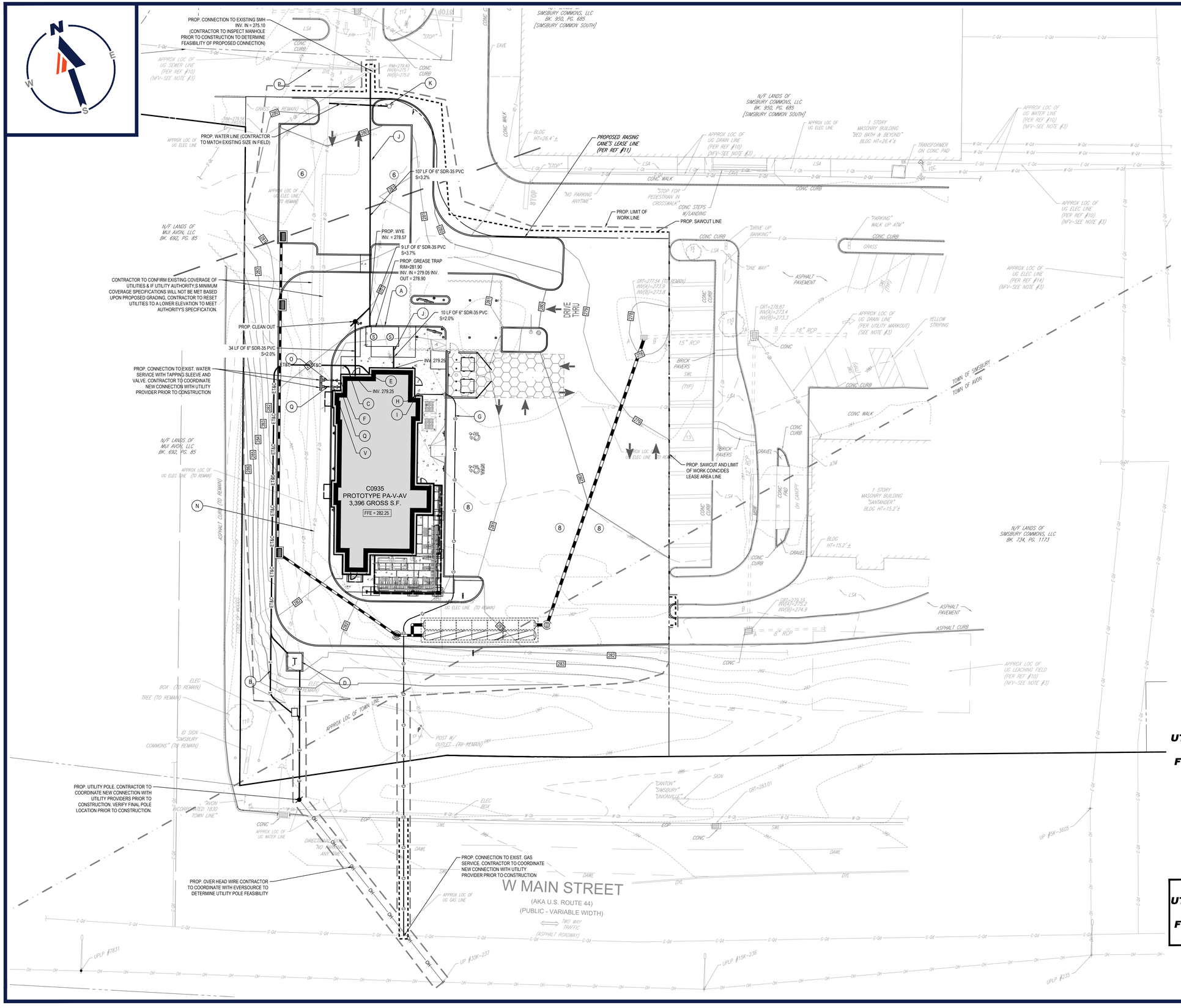
SHEET TITLE:

GRADING & DRAINAGE PLAN

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER:

C-401



LEGEND

- PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- PROPOSED UNDERGROUND SANITARY SEWER LINE
- PROPOSED UNDERGROUND WATER LINE
- PROPOSED UNDERGROUND GAS LINE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED UNDERGROUND TELEPHONE LINE
- PROPOSED STORM DRAINAGE PIPE
- EXISTING STORM DRAINAGE PIPE
- EXISTING OVERHEAD POWER LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER METER
- PROPOSED WATER VALVE
- PROPOSED TEE
- PROPOSED BEND
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SIGN

UTILITY KEYNOTE LEGEND

A	PROP. 1,500 GALLON GREASE TRAP LOCATION. REFERENCE ARCHITECTURAL / MEP PLANS.
B	INSTALL 4" PVC CONDUIT FOR TELEPHONE AND 3" PVC CONDUIT FOR INTERNET.
C	PROP. TELEPHONE AND INTERNET ENTRY. REFERENCE ARCHITECTURAL PLANS FOR CONTINUATION.
D	APPROX. LOCATION OF PROP. NEW PAD MOUNTED TRANSFORMER WITH BOLLARDS PER UTILITY PROVIDER REQUIREMENTS.
E	PROP. ELECTRIC SERVICE ENTRY WITH METER. REFERENCE ARCHITECTURAL PLANS FOR CONTINUATION.
F	PROP. 2" DOMESTIC WATER ENTRY WITH CURB STOP. REFERENCE MEP PLANS FOR CONTINUATION.
G	PROP. GAS SERVICE LINE. REFER TO MEP FOR SIZE.
H	APPROX. LOCATION OF PROP. GAS METER W/ BOLLARD
I	PROP. GAS ENTRY. REFERENCE ARCHITECTURAL PLANS FOR CONTINUATION.
J	PROP. 6" SDR-35 SANITARY SEWER PIPE.
K	PROP. RELOCATION OF EXISTING FIRE HYDRANT (TYP. OF 2).
L	PROP. 10 LF OF 4" CAST IRON PIPE AT 2% SLOPE FROM BUILDING
M	PROP. 10 LF OF 6" CAST IRON PIPE AT 2% SLOPE FROM BUILDING
N	APPROX. LOCATION OF EXISTING WATER SERVICE. FINAL LOCATION TO BE CONFIRMED PRIOR TO CONSTRUCTION.
O	PROP. 2" DIA. TYPE K COPPER WATER SERVICE
P	APPROX. LOCATION OF EXISTING SEWER PIPE (V.I.F.)
Q	PROP. 6" WATER ENTRY WITH CURB STOP. REFERENCE MEP PLANS FOR CONTINUATION.
R	PROP. 6" DIA. CLDI WATER SERVICE. GC SHALL COORDINATE CONNECTION WITH UTILITY PROVIDER PRIOR TO CONSTRUCTION.
S	PROP. 2", 1", AND 3" ELECTRICAL CONDUITS TO TRASH ENCLOSURE. REFERENCE ARCHITECTURAL PLANS FOR CONTINUATION.
T	PROP. 1" HIC WATER LINE TO TRASH ENCLOSURE. REFERENCE MEP PLANS FOR CONTINUATION.
U	PROP. ELECTRICAL SWITCHGEAR
V	PROP. FIRE DEPARTMENT CONNECTION (REFER TO ARCH PLANS)

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Raising Cane's Chicken Fingers

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PROTOTYPE UPDATE PHASE: -

UPDATE ISSUE DATE: -

PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

JOSEPH G. BORD — STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER — 29314

SHEET REVISIONS: (Sheet Specific per Designer)

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2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:

UTILITY PLAN

DATE: 01/23/2022

PROJECT NUMBER: CTA220075.00

DRAWN BY: KMB

SHEET NUMBER:

C-501

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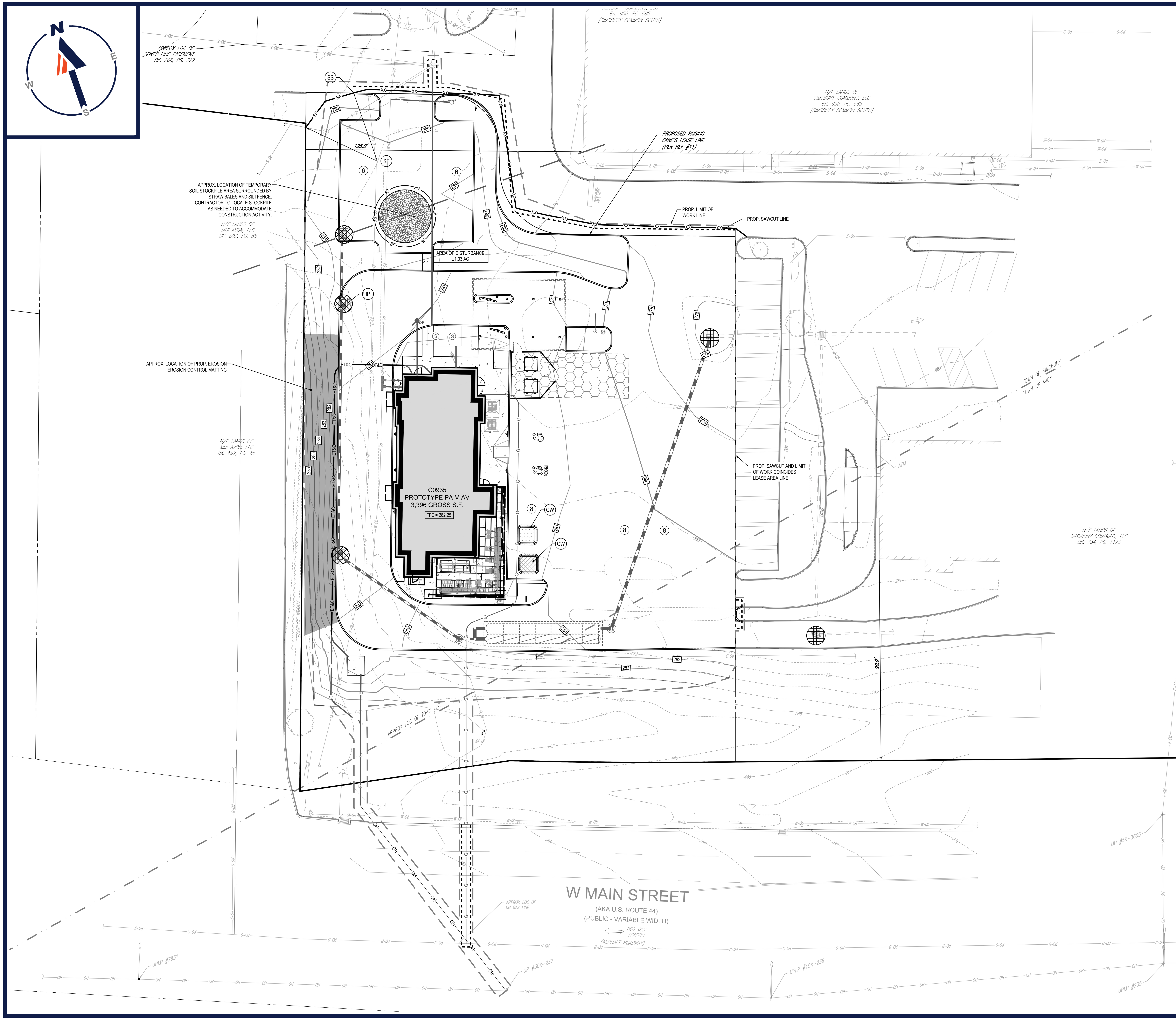

LEGEND

	PROPERTY LINE
15	EXISTING CONTOUR
	APPROXIMATE LIMIT OF DISTURBANCE
SF	SILT FENCE
SS	COMPOST FILTER SOCK
IP	PROPOSED GRATE INLET PROTECTION. SEE DETAIL SHEET.
CW	CONCRETE WASHOUT
ST	MATERIALS AND WASTE STORAGE AREA.

THIS PLAN TO BE UTILIZED FOR SITE SOIL AND EROSION CONTROL PURPOSES ONLY

REFER TO SOIL EROSION CONTROL NOTES & DETAIL SHEET FOR EROSION NOTES AND DETAILS

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REFER TO SOIL EROSION CONTROL NOTES & DETAIL SHEET FOR EROSION NOTES AND DETAILS

20 10 5 0 20

1"= 20'

Raising Cane's CHICKEN FINGERS

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6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

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RESTAURANT #C0935

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BOHLER//

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WEST HARTFORD, CT 06107
Phone: (860) 333-8900

www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -

UPDATE ISSUE DATE: -

PROJECT MANAGER: JGB

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PROFESSIONAL OF RECORD:

J.G. BORD
PROFESSIONAL ENGINEER

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:

SOIL EROSION & SEDIMENT CONTROL PLAN

DATE: 01/23/2022

PROJECT NUMBER: CTA220075.00

DRAWN BY: KMB

SHEET NUMBER:

C-601

EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE AS SET FORTH IN THE MOST CURRENT STATE SEDIMENT AND EROSION CONTROL MANUAL.
2. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
3. SEDIMENT BARRIERS (SILT FENCE, STRAW BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 8%.
4. INSTALL SILTATION BARRIER AT TOE OF SLOPE TO FILTER SILT FROM RUNOFF. SEE SILTATION BARRIER DETAILS FOR PROPER INSTALLATION. SILTATION BARRIER WILL REMAIN IN PLACE PER NOTE #5.
5. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED. FOR SEDIMENT CONTROL DEVICES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE DEVICES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
6. NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2:1) UNLESS OTHERWISE INDICATED ON THE PLANS. SLOPE PROTECTION FOR SLOPES GREATER THAN 2:1 SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.
7. IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCH (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
8. TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST TO PROTECT FROM SPRING RUNOFF PROBLEMS.
9. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL STANDARDS.
10. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
   - 10.1. SIX INCHES, OR DEPTH SPECIFIED ON THE LANDSCAPE PLAN, OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
   - 10.2. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 LB PER ACRE OR 18.4 LBS PER 1,000 SF USING 10-20-20 OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER1,000 SF).
   - 10.3. FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUE-GRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS 1.03 LBS PER 1,000 SF LAWN. QUALITY SOD MAY BE SUBSTITUTED FOR SEED WHERE SLOPES DO NOT EXCEED 2:1, SOD ON SLOPES STEEPER THAN 3:1 SHOULD BE PEGGED.
   - 10.4. STRAW MULCH AT THE RATE OF 70-90 LBS PER 1,000 SF. A HYDRO-APPLICATION OF WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER WILL BE USED ON STRAW MULCH FOR WIND CONTROL.
11. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS 70% PERMANENTLY STABILIZED. FOR EROSION CONTROL MEASURES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE MEASURES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
12. WETLANDS WILL BE PROTECTED WITH BARRIERS CONSISTING OF STRAW BALES, BIODEGRADABLE COMPOST TUBES, SILT FENCE OR A COMBINATION THEREOF.
13. TEMPORARY SEDIMENT TRAPS SHALL BE SIZED PER THE CURRENT EDITION OF THE "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" AND PROVIDE A MINIMUM STORAGE AREA OF 134 CY PER ACRE OF DRAINAGE AREA WITH A MAXIMUM TRIBUTARY AREA OF 5 ACRES, MAINTAIN A 2:1 LENGTH TO WIDTH RATIO, AND NOT EXCEED AND EMBANKMENT HEIGHT OF 5 FT. HALF OF THE STORAGE VOLUME SHALL BE IN THE FORM OF WET STORAGE TO PROVIDE A STABLE SETTLING MEDIUM. UPON SITE STABILIZATION, ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE TEMPORARY SEDIMENT TRAP EXCAVATED TO 1 FOOT BELOW THE TRAP. THE AREA SHALL THEN BE SCARIFIED TO PREVENT COMPACTION AND PROMOTE INFILTRATION AND GRADED AND STABILIZED IN ACCORDANCE WITH THE GRADING AND LANDSCAPE PLANS.
14. STOCKPILES THAT ARE NOT TO BE USED WITHIN 30 DAYS NEED TO BE SEEDED AND MULCHED IMMEDIATELY AFTER FORMATION OF THE STOCKPILE.
15. EXISTING CATCH BASIN STRUCTURES SHALL BE PROTECTED UNTIL SUCH TIME AS THEY ARE REMOVED.
16. THE CONTRACTOR MUST PERFORM DEWATERING (IF REQUIRED), IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR THE COSTS ASSOCIATED WITH ANY AND ALL NECESSARY DISCHARGE PERMITS ASSOCIATED WITH SAME.
17. THE CONTRACTOR MUST LOCATE CONSTRUCTION WASTE MATERIAL STORAGE AREAS TO MINIMIZE EXPOSURE TO STORMWATER. THE CONTRACTOR MUST IMMEDIATELY PLACE CONSTRUCTION WASTE IN ON-SITE STORAGE CONTAINERS UNTIL THAT CONSTRUCTION WASTE IS READY FOR OFF-SITE DISPOSAL. THE CONTRACTOR MUST MAINTAIN SPILL PREVENTION AND RESPONSE EQUIPMENT AND MAKE SAME CONTINUOUSLY AVAILABLE ON-SITE FOR USE BY THE CONTRACTOR'S EMPLOYEES WHO MUST BE PROPERLY TRAINED IN THE APPLICATION OF SPILL PREVENTION AND RESPONSE PROCEDURES.
18. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.
19. WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT THE AMOUNT OF AREA OPEN AT ONE TIME IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE AND IN CONFORMANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN SUCH THAT ADEQUATE PROVISIONS ARE EMPLOYED TO CONTROL STORMWATER RUNOFF.
20. CONTINUATION OF EARTHWORK OPERATION ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.
21. AN AREA SHALL BE CONSIDERED TO HAVE BEEN TEMPORARILY STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR STRAW AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE.
22. FOR AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR A PERIOD EXCEEDING 14 DAYS BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED. IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 200-300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED AS APPLICABLE. SLOPES SHALL NOT BE LEFT UNSTABILIZED OVER THE WINTER OR IN AREAS WHERE WORK HAS CEASED FOR MORE THAN 14 DAYS UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF SEDIMENT BARRIERS OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
23. MULCHING REQUIREMENTS:
   - 23.1. BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING OR WOOD CELLULOSE FIBER.
   - 23.2. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPE EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
   - 23.3. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
24. ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE STORMWATER PREVENTION PLAN.
25. DURING THE WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

EROSION CONTROL NARRATIVE

1. PURPOSE
   - 1.1. THE PROPOSED WORK WILL CONSIST OF CONSTRUCTION NECESSARY TO BUILD A RESTAURANT WITH DRIVE THRU WITH ALL ASSOCIATED PARKING, LANDSCAPING, UTILITIES, AND ACCESSORY STRUCTURES.
2. DISTURBANCE
   - 2.1. THE PROPOSED PROJECT WILL DISTURB APPROXIMATELY 1.04 ACRES OF LAND.
3. SITE SPECIFIC CONCERNS
4. PREVENTION OF POLLUTION AND SEDIMENT ENTERING DOWNSTREAM WATERCOURSE(S) BY MEANS OF STORMWATER QUALITY UNIT BEFORE ENTERING THE ROW SYSTEM
5. CONSTRUCTION PHASING SHALL BE COMPLETED IN ONE PHASE AS INDICATED IN THE SEQUENCE BELOW (6.1)
6. CONSTRUCTION SCHEDULE (SUBJECT TO CHANGE DEPENDING ON MARKETS, FINANCING, PERMIT APPROVALS AND WEATHER CONDITIONS)
   - 6.1. THE ANTICIPATED CONSTRUCTION START IS SPRING OF 2025, WITH COMPLETION ANTICIPATED 12 TO 18 MONTHS AFTER THE START DATE.
7. CONSTRUCTION SEQUENCE
   - 7.1. THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:
     - 7.1.1. INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE/EXIT (SEE SHEET C-601)
     - 7.1.2. INSTALLATION OF EROSION CONTROL PERIMETER CONTROLS (STRAWBALES, SILT FENCE, COMPOST FILTER SOCK, TREE PROTECTION FENCE) WITHIN THE LIMIT OF DISTURBANCE AS INDICATED ON THE PLANS (SEE SHEET C-601)
     - 7.1.3. INSTALLATION OF INLET PROTECTION (FILTER SACKS OR STRAW BALES) IN STREET AND EXISTING INLETS (SEE SHEET C-601)
     - 7.1.4. DEMOLITION OF EXISTING SITE STRUCTURES, PAVEMENT, AND AMENITIES (SEE SHEET C-201)
     - 7.1.5. CLEARING AND GRUBBING IN AREAS DESIGNATED AS BEING REMOVED AS NECESSARY TO INSTALL TEMPORARY SWALES, SEDIMENT TRAPS AND/OR BASINS (SEE SHEET C-601)
     - 7.1.6. INITIATE THE NECESSARY EARTHWORK TO REACH GRADES INDICATED ON THE PLANS. (SEE SHEET C-401). TEMPORARY STABILIZE ANY AREAS WITH SEEDING OR MULCH AS DETAILED IN THESE PLANS WITHIN 7 DAYS AFTER THE SUSPENSION OF GRADING WORK IN DISTURBED AREAS WHERE THE SUSPENSION OF WORK IS EXPECTED TO BE MORE THAN 30 DAYS BUT LESS THAN 1 YEAR.
     - 7.1.7. INSTALLATION OF BUILDING FOUNDATION AND CONSTRUCTION OF BUILDING. BUILDING CONSTRUCTION MAY COMMENCE UPON ACCEPTANCE OF BUILDING PAD BY THE OWNER. CONCRETE WASHOUT MUST BE INSTALLED PRIOR TO ANY CONCRETE BEING POURED ON SITE.
     - 7.1.8. INSTALLATION OF UTILITIES INCLUDING BUT NOT LIMITED TO STORMWATER, GAS, SANITARY, ELECTRIC, AND WATER. STORMWATER AND SANITARY UTILITIES SHOULD BE INSTALLED IN A DOWNSTREAM TO UPSTREAM MANNER. (SEE SHEET C-401 AND C-501)
     - 7.1.9. CONSTRUCTION OF ALL CURBING AND LANDSCAPE ISLANDS AS INDICTED ON THE PLANS ALONG WITH STONE BASE COURSE IN THE DRIVEWAY AND PARKING AREAS (SEE SHEET C-301)
     - 7.1.10. INITIATE FINAL GRADING AND PLACEMENT OF TOPSOIL IN ALL LANDSCAPED AND SLOPES AREAS. AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE THEY MUST BE STABILIZED AS DETAILED ON THE EROSION CONTROL AND/OR LANDSCAPE PLAN DEPENDING ON THE SEASON (SEE SHEET C-601, C-602, C-701).
     - 7.1.11. INSTALL BITUMINOUS PAVEMENT AND CONCRETE INCLUDING SIDEWALKS
     - 7.1.12. INSTALL ANY FINAL LANDSCAPE PLANTING WHICH HAVE NOT BEEN PREVIOUSLY INSTALLED. (SEE SHEET C-701)
     - 7.1.13. CLEAR SITE OF DEBRIS IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. REMOVE EROSION CONTROLS AS DISTURBED AREAS BECOME STABILIZED TO 70% STABILIZATION OR GREATER
8. OTHER POSSIBLE LOCAL, STATE AND FEDERAL PERMITS REQUIRED PERMITS
   - 8.1. NONE REQUIRED
9. CONSERVATION PRACTICES
   - 9.1. CONSERVATION PRACTICES INCLUDE LIMITING THE SCOPE OF THE PROJECT TO MINIMIZE ACTIVITIES WHICH REQUIRES BARE SOILS TO BE EXPOSED. XX.XXX ACRES OF LAND DISTURBANCE IS PROPOSED FOR THIS PROJECT.
10. SUPPORT DOCUMENTS
   - 10.1. NO SUPPORTING DOCUMENTS OR (DRAINAGE REPORT, BORING LOGS, TEST PIT LOGS, SOILS REPORTS, ETC.).
11. PERSON RESPONSIBLE FOR MAINTENANCE DURING CONSTRUCTION OF PROJECT

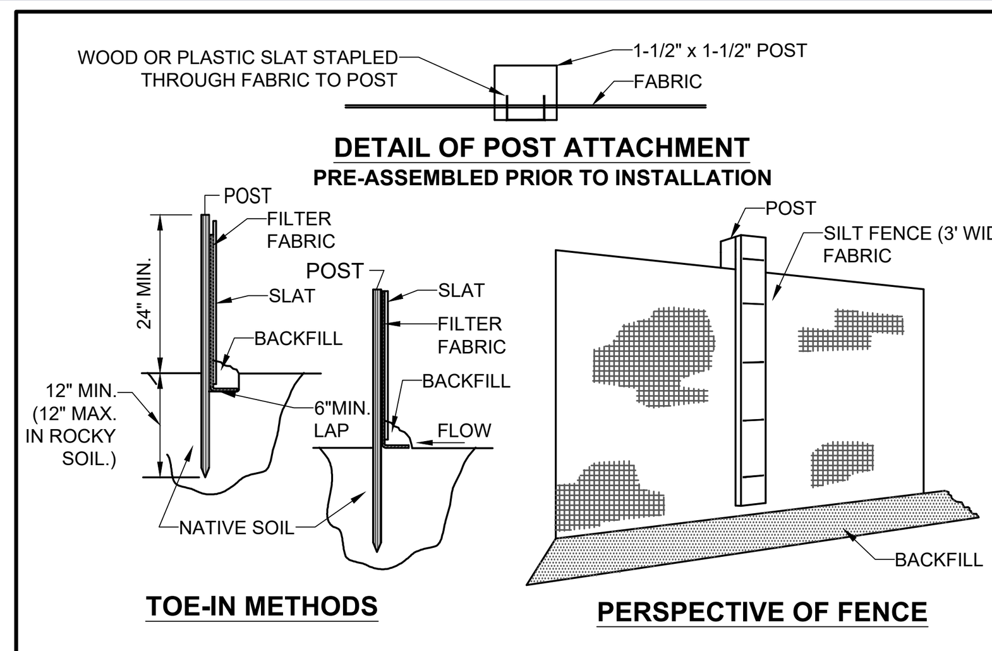
CONTRACTOR OR PERSON SHALL BE NAMED AT PRECONSTRUCTION MEETING

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. EROSION CONTROL MEASURES MUST CONFORM TO THE STATE, LOCAL, AND FEDERAL GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL UNLESS OTHERWISE NOTED, OR UNLESS ENGINEER CLEARLY AND SPECIFICALLY, IN WRITING, DIRECTS OTHERWISE. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES.
3. THE DISTURBED LAND AREA OF THIS SITE IS APPROXIMATELY XX.XXX ACRES.
4. THE FOLLOWING EROSION CONTROL MEASURES ARE PROPOSED FOR THIS SITE:
   - 4.1. STABILIZED CONSTRUCTION ENTRANCE/ EXIT - A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT IS TO BE INSTALLED AT THE DESIGNATED LOCATION SHOWN ON THE PLAN. THIS AREA MUST BE GRADED SO THAT RUNOFF WATER WILL BE RETAINED ON-SITE.
   - 4.2. SEDIMENT FENCE - INSTALL SILT FENCE(S) AND/OR SILT SOCK AROUND ALL OF THE DOWNSLOPE PERIMETERS OF THE SITE, TEMPORARY FILL AND SOIL STOCKPILES.
   - 4.3. INSTALL FILTER FABRIC DROP INLET PROTECTION AROUND EACH DRAINAGE INLET AS DRAINAGE STRUCTURES ARE INSTALLED TO REDUCE THE QUANTITY OF SEDIMENT. INSTALL TEMPORARY INLET PROTECTION ON INLETS DOWNSLOPE FROM DISTURBANCE, WHICH MAY BE BEYOND THE LIMITS OF DISTURBED AREA.
5. INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY. THE CONTRACTOR MUST REMOVE ANY SILT DEPOSITS GREATER THAN 6" OR HALF THE OF THE EROSION CONTROL BARRIER'S HEIGHT COLLECTED ON THE FILTER FABRIC AND/OR SILT SOCK BARRIERS AND EXCAVATE AND REMOVE ANY SILT FROM DROP INLET PROTECTION.
7. THE CONTRACTOR MUST APPLY TEMPORARY SEED AND MULCH TO ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINISHED GRADE AND VEGETATED WITHIN 7 DAYS. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON, THE CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
8. THE CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF ENGINEER SO REQUIRES, TO PREVENT ANY, INCLUDING THE INCIDENTAL, DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
9. THE CONTRACTOR MUST BE RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURF/LANDSCAPING IS ESTABLISHED. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS RESPONSIBLE FOR ALL SUCH COSTS.
10. THE CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION.
11. THE CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT VEGETATION COVER OR OTHER INSTALLING A DIFFERENT, SPECIFIED METHOD OF STABILIZATION.
12. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES, MEASURES AND STRUCTURES. ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
13. THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION, FENCE LOCATIONS AND DETAILS.
14. THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION.
15. THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF PROJECT.
16. SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.
17. THE CONTRACTOR MUST IDENTIFY, ON THE PLAN, THE LOCATION OF WASTE CONTAINERS, FUEL STORAGE TANKS, CONCRETE WASHOUT AREAS AND ANY OTHER LOCATIONS WHERE HAZARDOUS MATERIALS ARE STORED.

OPERATION AND MAINTENANCE

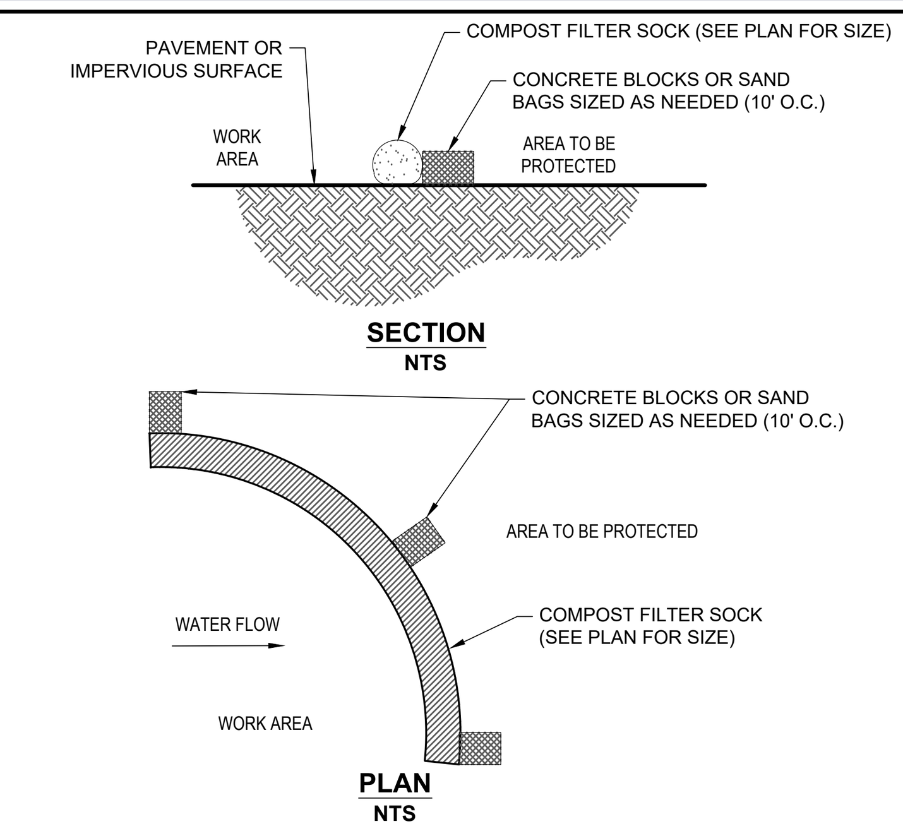
1. MAINTENANCE REQUIREMENTS OF MEASURES DURING CONSTRUCTION OF PROJECT
   - 1.1. THE SPECIFIC EROSION AND SEDIMENTATION CONTROL MEASURES, WHICH INCLUDE A BARRIER OF TRENCHED SILTATION FENCE, STAKED HAY BALES, AND INLET PROTECTION WILL, THROUGHOUT ALL PHASES OF CONSTRUCTION, SHALL BE INSPECTED (IN ADDITION TO THE INTERVALS EXPLAINED ABOVE) AT THE END OF EACH WORKDAY IF PRECIPITATION IS FORECAST AND AFTER EACH RAINFALL. AT THE END OF EACH WORKWEEK, PRIOR TO WEEKENDS, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED.
   - 1.2. THROUGHOUT THE CONSTRUCTION PROCESS, EXTRA STOCKS OF HAY BALES AND SILTATION FENCING WILL BE KEPT ON-SITE TO REPLACE THOSE THAT BECOME DAMAGED AND/OR DETERIORATED.
   - 1.3. AREAS, WHICH ARE MULCHED OR SEEDED FOR TEMPORARY VEGETATIVE COVER, WILL BE INSPECTED FOR PROPER COVER AT THE END OF EACH WORKDAY IF PRECIPITATION IS FORECAST AND ALSO PRIOR TO WEEKENDS. CONTRACTOR SHALL KEEP PAVING CLEAR AT ALL TIMES. ADDITIONAL SEEDING OR MULCH WILL BE PLACED AS NECESSARY.
   - 1.4. TEMPORARY EROSION AND SEDIMENT CONTROL SYSTEMS WILL NOT BE REMOVED UNTIL ALL STORMWATER DRAINAGE SYSTEM COMPONENTS ARE IN PLACE, CLEANED AND WORKING PROPERLY AND UNTIL PERMANENT VEGETATIVE COVER AND OTHER STABILIZATION MEASURES ARE ESTABLISHED.
2. MAINTENANCE REQUIREMENTS OF PERMANENT MEASURES AFTER PROJECT COMPLETION.
   - 2.1. POTENTIAL LONG-TERM EROSION AND SEDIMENTATION IMPACTS WILL BE CONTROLLED BY THE USE OF THE BMP'S ON-SITE. THE STORMWATER MANAGEMENT SYSTEM WAS DESIGNED TO CONTROL THE PEAK RATE OF RUNOFF AND THE OUTLETS OF THE STORMWATER COLLECTION SYSTEMS HAVE BEEN DESIGNED TO DISSIPATE AND DISPERSE THE RUNOFF AND PREVENT SCOURING OF THE RECEIVING AREA.
3. OPERATION AND MAINTENANCE PLAN:
   - 3.1. ALL STORMWATER COMPONENTS SHOULD BE CHECKED PERIODICALLY IN A MAINTENANCE LOG AND KEPT IN FULL WORKING ORDER. ULTIMATELY, THE REQUIRED FREQUENCY OF INSPECTION AND SERVICE WILL DEPEND ON RUNOFF QUANTITIES, POLLUTANT LOADING, AND CLOGGING DUE TO DEBRIS. AT A MINIMUM, WE RECOMMEND THAT ALL STORMWATER COMPONENTS BE INSPECTED AND SERVICED TWICE PER YEAR, ONCE BEFORE WINTER BEGINS AND ONCE DURING SPRING CLEANUP.
   - 3.2. SWEEPING WILL BE COMPLETED AT LEAST SEMIANNUALLY (ONCE IN THE SPRING AND ONCE IN THE FALL), OR MORE FREQUENTLY IF ACCUMULATED PARTICULATE MATTER IS OBSERVED.
   - 3.3. CATCH BASIN SUMPS WILL BE INSPECTED SEMIANNUALLY AND CLEANED WHEN SEDIMENT IS WITHIN 12 INCHES OF THE OUTLET INVERT OR HALF THE SUMP DEPTH.
   - 3.4. MANHOLES/JUNCTION BOXES SHALL BE INSPECTED AND REPAIRED ON AN ANNUAL BASIS.
   - 3.5. DRAINAGE PIPING UNLESS SYSTEM PERFORMANCE INDICATES DEGRADATION OF PIPING, COMPREHENSIVE VIDEO INSPECTION OF STORM DRAINAGE PIPING SHOULD OCCUR ONCE EVERY TEN YEARS.
   - 3.6. CONTROL STRUCTURES (ORIFICE, WEIR, ETC.) SHALL BE COMPLETELY CLEANED OF ACCUMULATED DEBRIS AND SEDIMENTS AT THE COMPLETION OF CONSTRUCTION. ANY REPAIRS SHALL BE PERFORMED. FOR THE FIRST YEAR, CONTROL STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS, THEN TWICE PER YEAR AFTER THE SECOND YEAR (ONCE IN THE SPRING AND ONCE IN THE FALL, AFTER FALL CLEANUP OF LEAVES HAS OCCURRED).
   - 3.7. GRASS SWALES WILL BE INSPECTED AT LEAST SEMIANNUALLY AND CLEANED OF SEDIMENT/DEBRIS AS NECESSARY.
   - 3.8. HYDRODYNAMIC SEPARATORS SHALL BE COMPLETELY CLEANED OF ACCUMULATED DEBRIS AND SEDIMENTS AT THE COMPLETION OF CONSTRUCTION. FOR THE FIRST YEAR, THE HYDRODYNAMIC SEPARATOR SHALL BE INSPECTED ON A QUARTERLY BASIS, THEN TWICE PER YEAR AFTER THE SECOND YEAR.
   - 3.9. DRAINAGE OUTFALLS/SPLASH PADS/SCOUR HOLES/LEVEL SPREADERS WILL BE INSPECTED ON A QUARTERLY BASIS FOR THE FIRST YEAR THEN TWICE PER YEAR AFTER THE SECOND YEAR. ANY EROSION SHALL BE REPAIRED, AND THE CAUSE OF EROSION SHALL BE IDENTIFIED AND CORRECTED.



NOTES:
1. EXCAVATE A 6"x6" TRENCH ALONG THE LINE OF EROSION CONTROL OF THE SITE.
2. UNROLL SILTATION FENCE AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM FLOW DIRECTION).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS LAYING ACROSS THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF THE FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL ALSO BE ACCOMPLISHED BY LAYING FABRIC FLAP ON UNDISTURBED GROUND AND PILING & TAMPING FILL AT THE BASE.

TYP. SILTATION FENCE

NOT TO SCALE

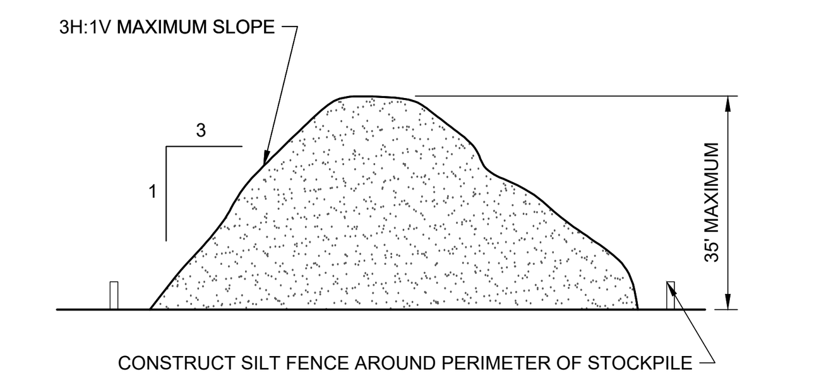


NOTES:
1. ALL MATERIAL TO MEET MANUFACTURER SPECIFICATIONS.
2. FILTER MEDIA TO MEET APPLICATION REQUIREMENTS.
3. FILTER MEDIA TO BE DISPERSED ON SITE AT COMPLETION OF CONSTRUCTION AFTER STABILIZATION IS ACHIEVED. AS DETERMINED BY ENGINEER IN OWNER.

OR APPROVED EQUIVALENT

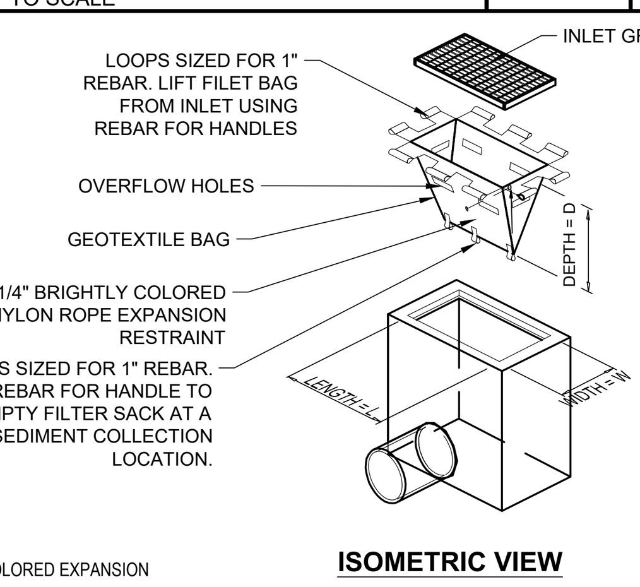
COMPOST FILTER SOCK (PAVED CONDITION)

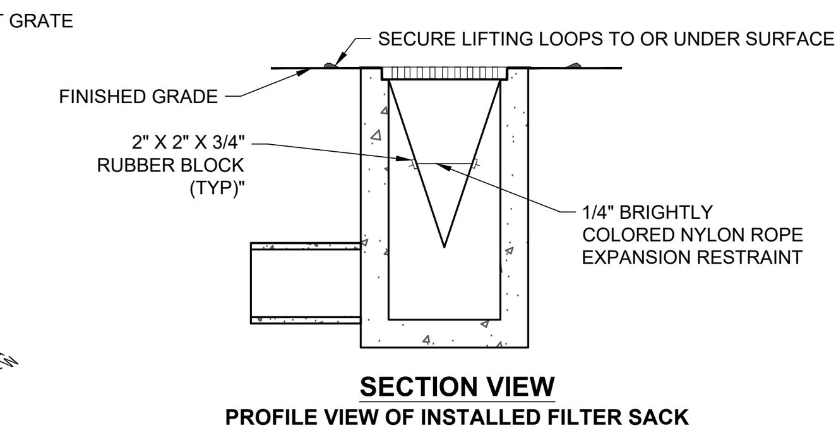
NOT TO SCALE



TEMPORARY STOCKPILE

NOT TO SCALE





NOTES:
1. REMOVE TRAPPED SEDIMENT WHEN BRIGHTLY COLORED EXPANSION RESTRAINT CAN NO LONGER BE SEEN.
2. GEOTEXTILE SHALL BE A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS REQUIREMENTS IN THE SPECIFICATIONS TABLE.
3. PLACE AN OIL ADSORBENT PAD OR PILLOW OVER INLET GRATE WHEN OIL SPILLS ARE A CONCERN.
4. INSPECT PER REGULATORY REQUIREMENTS.
5. THE WIDTH, "W", OF THE FILTER SACK SHALL MATCH THE INSIDE WIDTH OF THE GRATED INLET BOX.
6. THE DEPTH, "D", OF THE FILTER SACK SHALL BE BETWEEN 18 INCHES AND 36 INCHES.
7. THE LENGTH, "L", OF THE FILTER SACK SHALL MATCH THE INSIDE LENGTH OF THE GRATED INLET BOX.

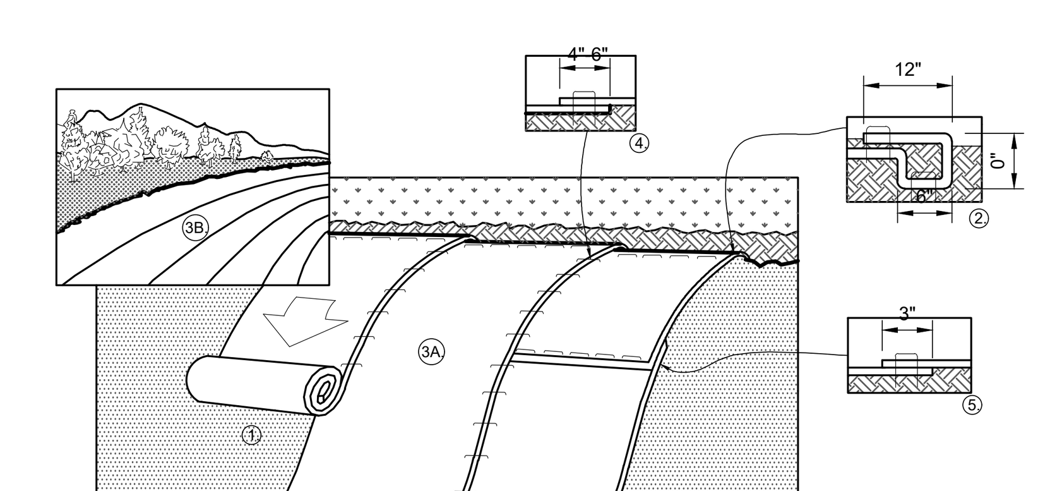
LOW TO MODERATE FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC^{-1}

MODERATE TO HIGH FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC^{-1}

OR APPROVED EQUIVALENT

INLET PROTECTION

NOT TO SCALE



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH AS SHOWN IN DETAIL 2. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS PER MANUFACTURES RECOMMENDATION.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH MINIMUM 6" OVERLAP. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
6. PLACE STAPLES/STAKES PER MANUFACTURER'S RECOMMENDATION FOR THE APPROPRIATE SLOPE BEING APPLIED.

NOTES:
1. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET

NOT TO SCALE

Raising Cane's CHICKEN FINGERS
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:
BOHLER //
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:
J.G. BORD
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 30414

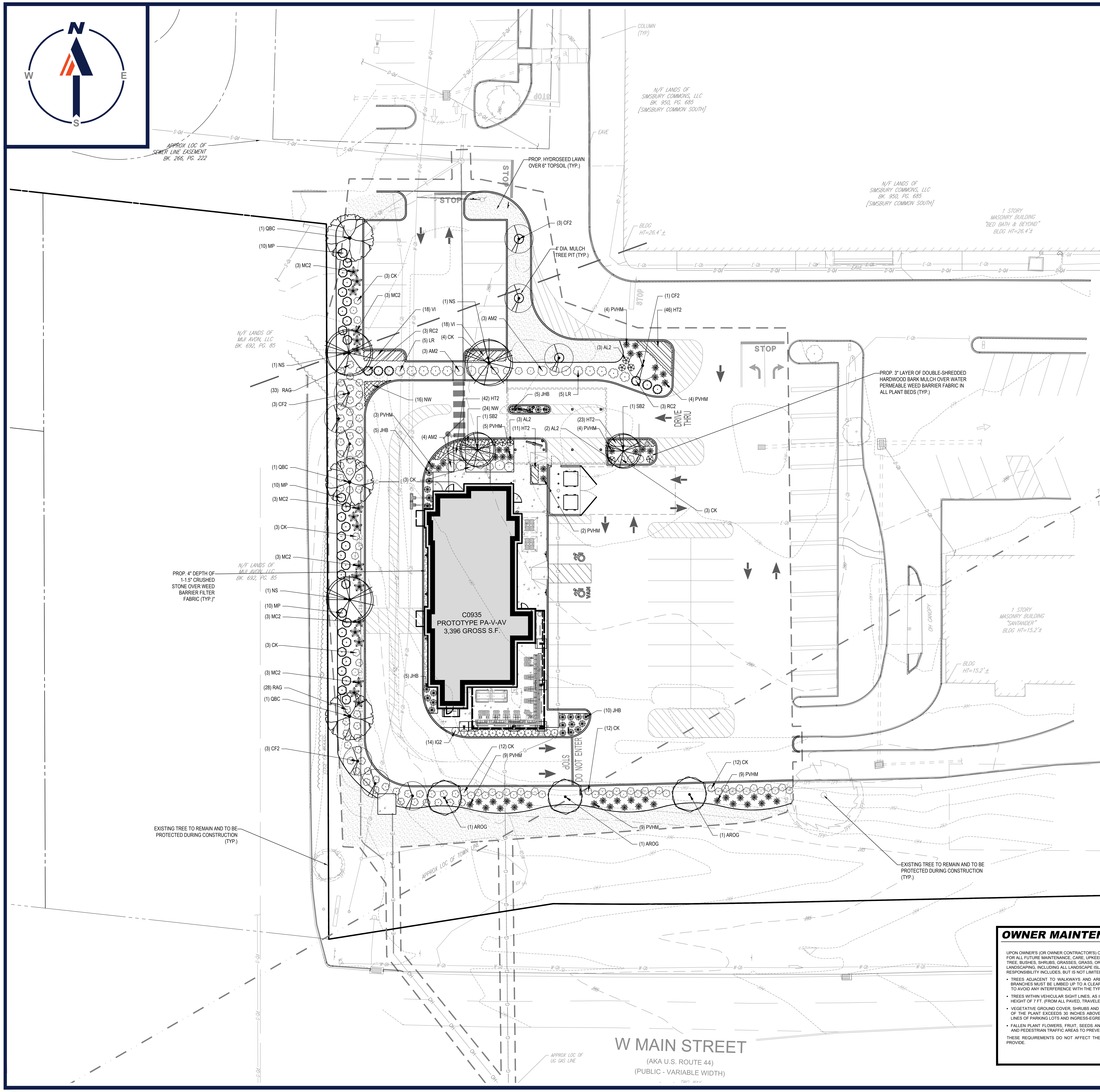
SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:
SOIL & EROSION & SEDIMENT CONTROL NOTES & DETAILS

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER:
C-602



PLANT SCHEDULE

CANOPY TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	
AROG	3	ACER RUBRUM `OCTOBER GLORY`	OCTOBER GLORY RED MAPLE	2.5" CAL.	B&B	
NS	3	NYSSA SYLVATICA	SOUR GUM	2.5" CAL.	B&B	
QBC	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.	B&B	
ORNAMENTAL TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	
CF2	10	CERCIS CANADENSIS 'FOREST PANSY'	FOREST PANSY EASTERN REDBUD	8` HT.	B&B	
SB2	2	SYRINGA RETICULATA 'BAILNCE'	SNOWDANCE™ TREE LILAC	8` HT.	B&B	
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	
AL2	8	ARONIA MELANOCARPA 'UCONNAM165'	LOW SCAPE MOUND® BLACK CHOKEBERRY	18-24" HT.	CONTAINER	
AM2	10	ARONIA MELANOCARPA 'MORTON'	IROQUOIS BEAUTY™ BLACK CHOKEBERRY	24-36" HT.	CONTAINER	
CK	55	CORNUS SERICEA 'KELSEYI'	KELSEY'S DWARF REDTWIG DOGWOOD	18-24" HT.	CONTAINER	
IG2	14	ILEX GLABRA 'SMNIGAB17'	GEM BOX® INKBERRY HOLLY	18-24" HT.	CONTAINER	
LR	10	DIERVILLA X 'G2X88544'	KODIAK® ORANGE DIERVILLA	3-4` HT.	CONTAINER	
MC2	18	MUHLENBERGIA CAPILLARIS	PINK MUHLY GRASS	18-24" HT.	CONTAINER	
MP	30	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	30-36" HT.	B&B	
RC2	6	RHODODENDRON X 'CUNNINGHAM'S WHITE'	CUNNINGHAM'S WHITE RHODODENDRON	30-36" HT.	CONTAINER	
GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	
PVHM	49	PANICUM VIRGATUM `HEAVY METAL`	BLUE SWITCH GRASS	1 GAL.	CONTAINER	
GROUNDCOVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	
JHB	25	JUNIPERUS HORIZONTALIS `BAR HARBOR`	BAR HARBOR CREEPING JUNIPER	15-18" SPRD	CONTAINER	
RAG	61	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	1 GAL.	CONTAINER	12" o.c.
VI	36	VACCINIUM ANGUSTIFOLIUM 'RUBY CARPET'	RUBY CARPET LOWBUSH BLUEBERRY	1 GAL.	CONTAINER	24" o.c.
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING
HT2	122	HELIOPSIS HELIANTHOIDES 'INHELSODOR'	TUSCAN GOLD™ FALSE SUNFLOWER	2 GAL.	CONTAINER	18" o.c.
NW	40	NEPETA X 'WALKER'S LOW'	WALKER'S LOW CATMINT	2 GAL.	CONTAINER	18" o.c.

SEED MIX KEY

PROPOSED HYDROSEED

OWNER MAINTENANCE RESPONSIBILITIES

UPON OWNER'S (OR OWNER CONTRACTOR'S) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREE, BUSHES, SHRUBS, GRASSES, GRASS, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PEDESTRIAN SURFACES) OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
- TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVELED SURFACES), OR AS OTHERWISE INDICATED ON THE PLANS.
- VEGETATIVE GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVEL SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS-EGRESS WAYS.
- FALLEN PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.

THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEES THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

REFER TO SHEET C-702 LANDSCAPE NOTES & DETAILS SHEET FOR LANDSCAPE NOTES AND DETAILS

20 10 5 0 20
1"= 20'

Raising Cane's CHICKEN FINGERS

Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:

BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

STATE OF CONNECTICUT · MATTHEW J. MIRY · LICENSED LANDSCAPE ARCHITECT · NO. 1359
REGISTERED LANDSCAPE ARCHITECT

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:
LANDSCAPE PLAN

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER:
C-701

LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:

1.1. THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS

2.1. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

2.2. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

2.3. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM 6" THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED ON THE LANDSCAPE PLAN

2.3.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.

2.3.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

2.4. MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN AND/OR LANDSCAPE PLAN NOTES /DETAILS.

2.5. FERTILIZER

2.5.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.

2.5.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

2.6. PLANT MATERIAL

2.6.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN).

2.6.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.

2.6.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.

2.6.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.

2.6.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.

2.6.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.

2.6.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.

2.6.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES

3.1. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

3.2. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS

4.1. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

4.2. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

4.3. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION

5.1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

5.2. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

5.3. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

5.4. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS

6.1. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

6.2. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

6.3. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.

6.3.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.

6.3.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.

6.3.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING

7.1. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

7.2. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

7.3. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

7.4. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING

8.1. CONTRACTOR SHALL PROVIDE A 6" THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

8.2. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

8.3. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

8.4. ALL LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY [SEE SPECIFICATION 6.A.]):

8.4.1. 20 POUNDS 'GRO-POWER' OR APPROVED SOIL CONDITIONER/FERTILIZER

8.4.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER

8.5. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING

9.1. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

9.2. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

9.3. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

9.4. ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

9.5. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

9.6. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:

9.6.1. PLANTS: MARCH 15 TO DECEMBER 15

9.6.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

9.6.3. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

9.7. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

9.8. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:

9.8.1. 1 PART PEAT MOSS

9.8.2. 1 PART COMPOSTED COW MANURE BY VOLUME

9.8.3. 3 PARTS TOPSOIL BY VOLUME

9.8.4. 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:

9.8.4.1. 2 TABLETS PER 1 GALLON PLANT

9.8.4.2. 3 TABLETS PER 5 GALLON PLANT

9.8.4.3. 4 TABLETS PER 15 GALLON PLANT

9.8.4.4. LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

9.9. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

9.10. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

9.11. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

9.12. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

9.13. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

9.14. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

9.15. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)

10.1. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

10.2. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

10.3. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

10.4. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

10.5. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

10.6. F TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING

11.1. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

11.2. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

11.3. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE

12.1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF 1 YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

12.2. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

12.3. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

12.4. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP

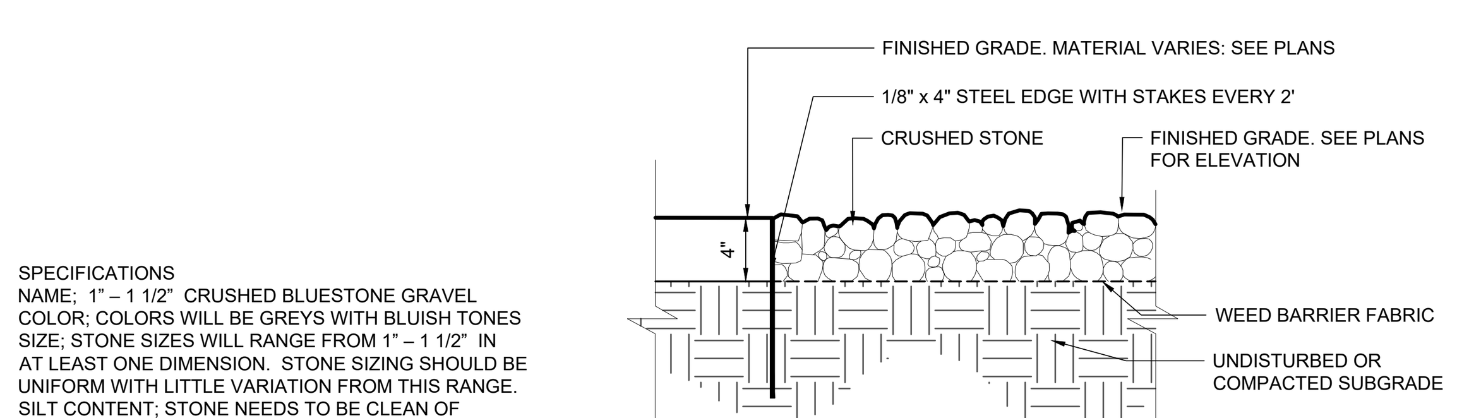
13.1. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

13.2. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

14. MAINTENANCE (ALTERNATIVE BID):

14.1. A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.

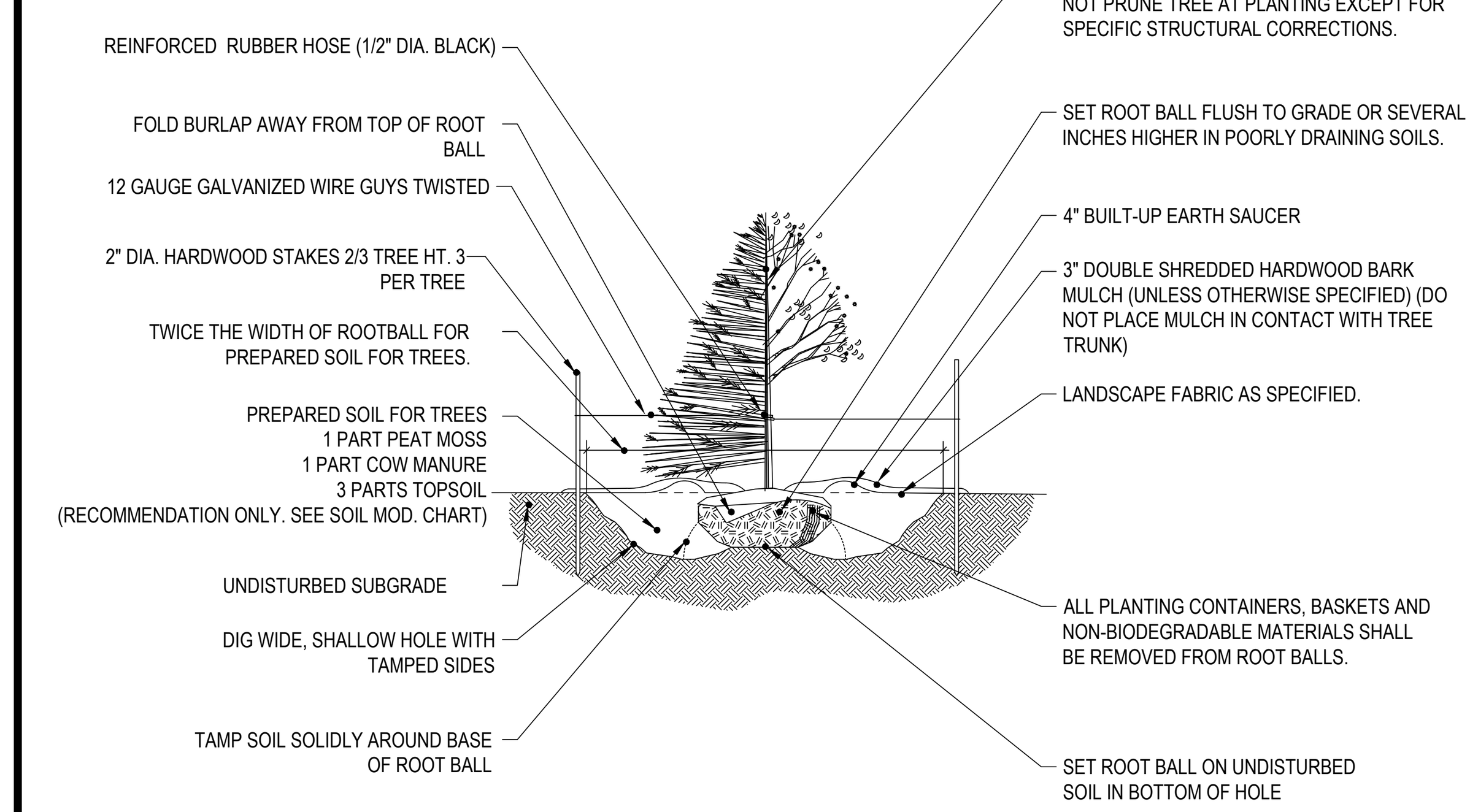
SPECIFICATIONS
NAME; 1" – 1 1/2" CRUSHED BLUESTONE GRAVEL
COLOR; COLORS WILL BE GREYS WITH BLUISH TONES
SIZE; STONE SIZES WILL RANGE FROM 1" – 1 1/2" IN AT LEAST ONE DIMENSION. STONE SIZING SHOULD BE UNIFORM WITH LITTLE VARIATION FROM THIS RANGE.
SILT CONTENT; STONE NEEDS TO BE CLEAN OF DEBRIS AND SILT AT TIME OF DELIVERY.



CRUSHED STONE DRIP EDGE

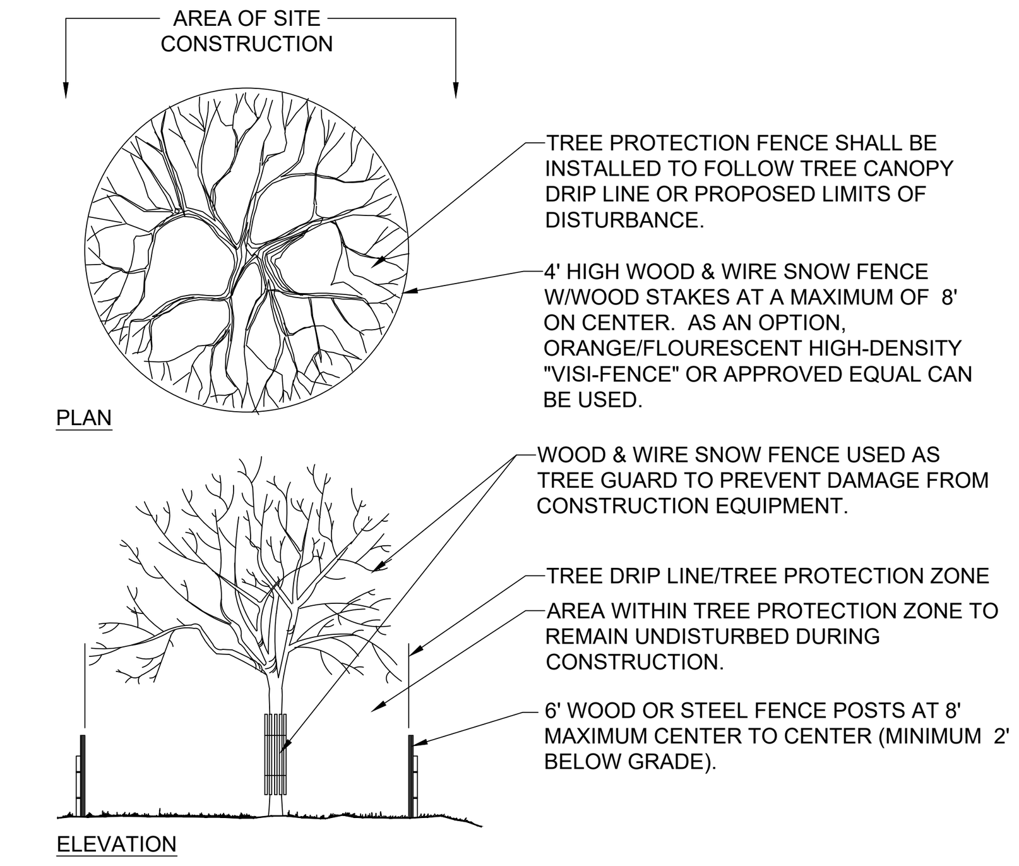
N.T.S.

NOTES:
1.) NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2.) REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK 1/3 FROM ROOT BALL.
3.) PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4.) THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH
AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5.) THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS
NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.
6.) REFER TO THE CHART "GENERAL RANGE OF SOIL MODIFICATIONS & VOLUMES FOR VARIOUS SOIL CONDITIONS" TO DETERMINE MINIMUM WIDTH OF PREPARED SOIL.
7.) SUBSTITUTE ARBORVITAE STAKING SYSTEM WHEN SPECIFIED.



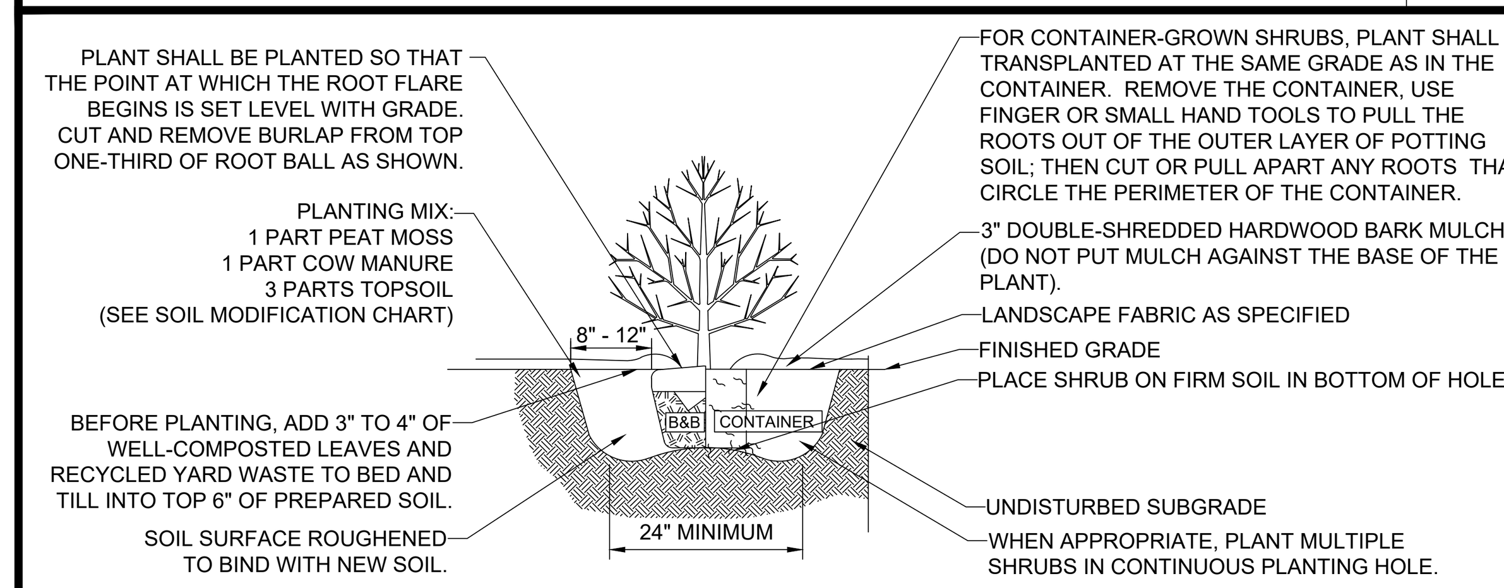
TREE PLANTING DETAIL

N.T.S.



TREE PROTECTION DURING SITE CONSTRUCTION

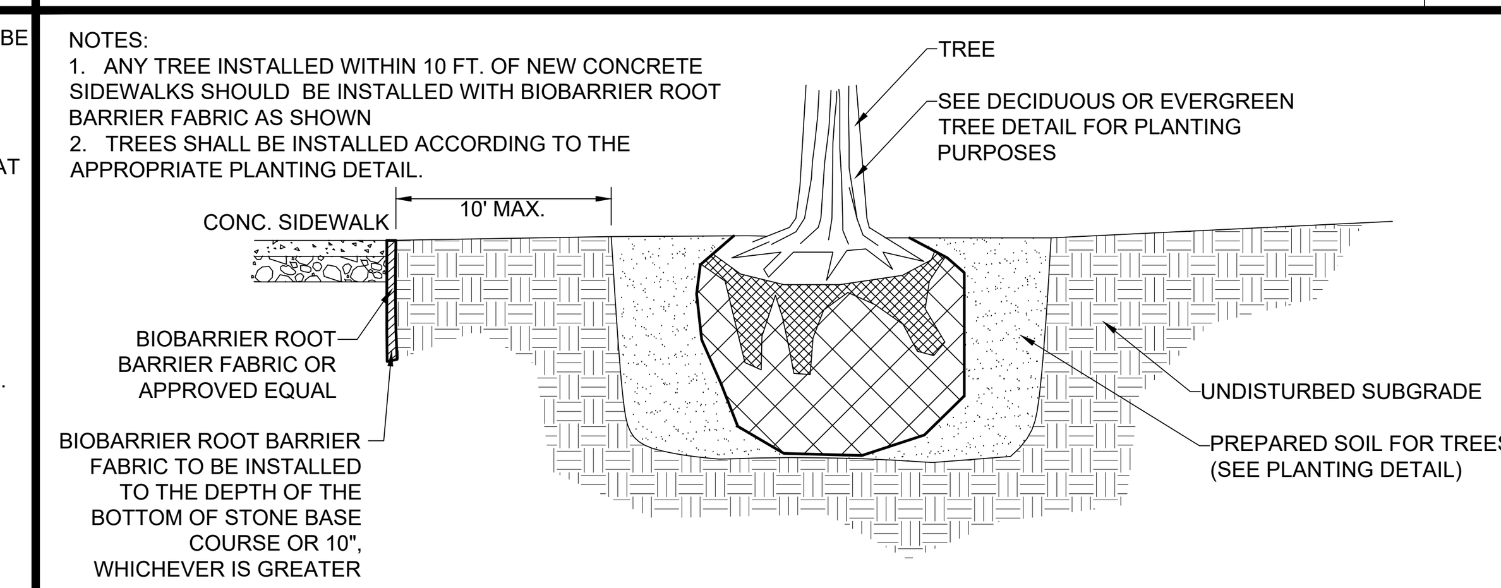
N.T.S.



SHRUB PLANTING DETAIL

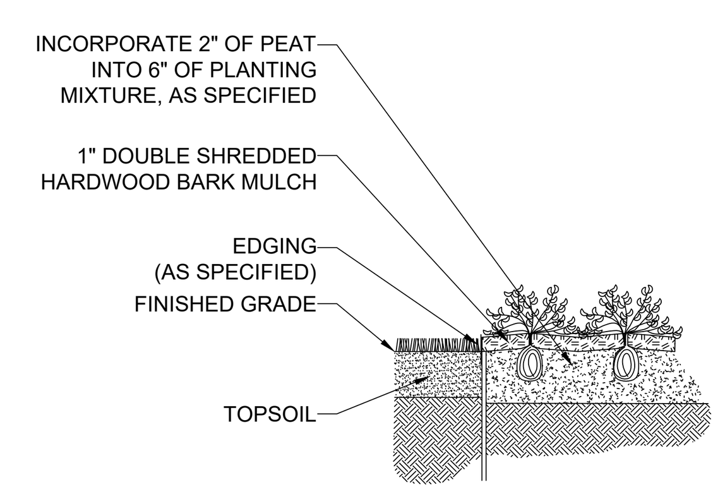
N.T.S.

NOTES:
1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.



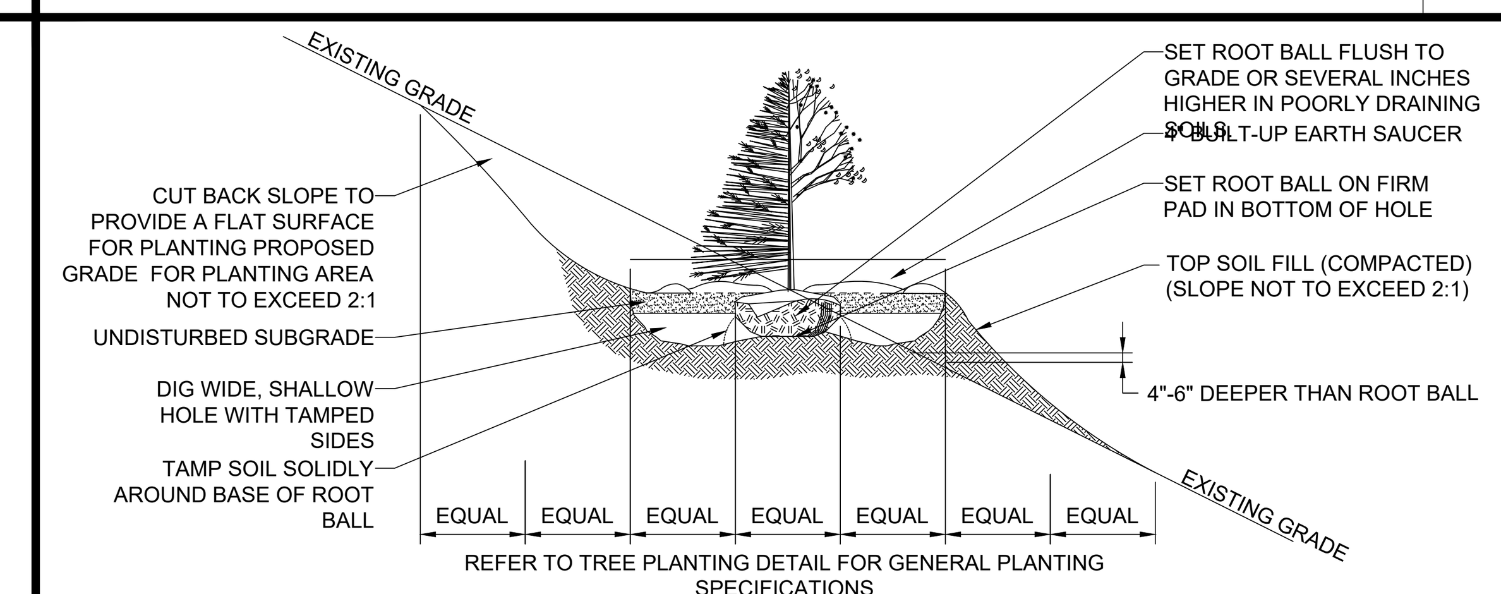
BIOBARRIER ROOT BARRIER DETAIL

N.T.S.



GROUNDCOVER PLANTING

N.T.S.



TREE PLANTING DETAIL - ON SLOPE

N.T.S.

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.

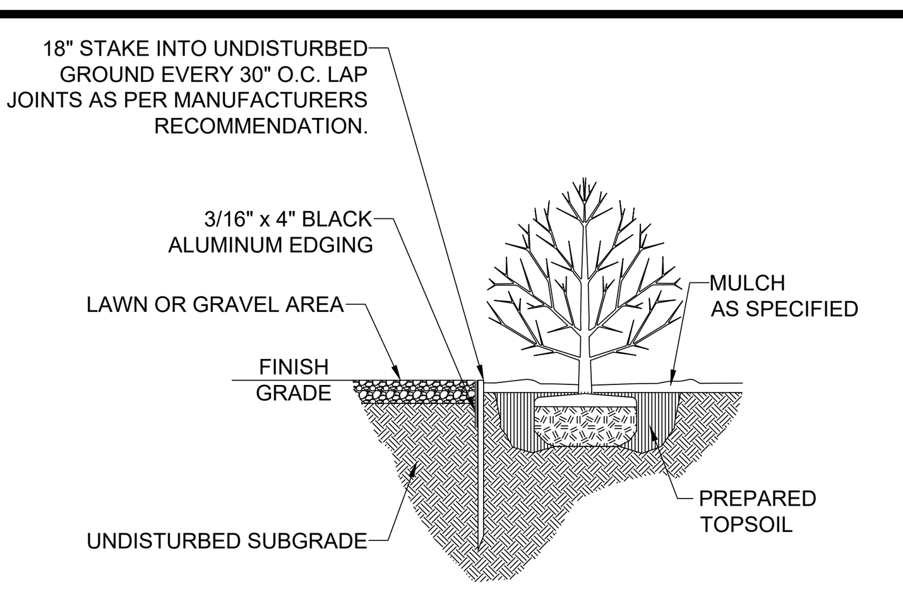
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.

3. SEEDING RATES:

• PERENNIAL RYEGRASS	1/2 LB/1000 SQ FT
• KENTUCKY BLUEGRASS	1 LB/1000 SQ FT
• RED FESCUE	1/2 LB/1000 SQ FT
• SPREADING FESCUE	1/2 LB/1000 SQ FT
• FERTILIZER (16.32.16)	2 LB/1000 SQ FT
• LIQUID LIME	1 GAL/800 GAL.
• TANK TACKIFIER	35 LB/800 GAL.
• TANK FIBER MULCH	30 LB/1000 SQ FT

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

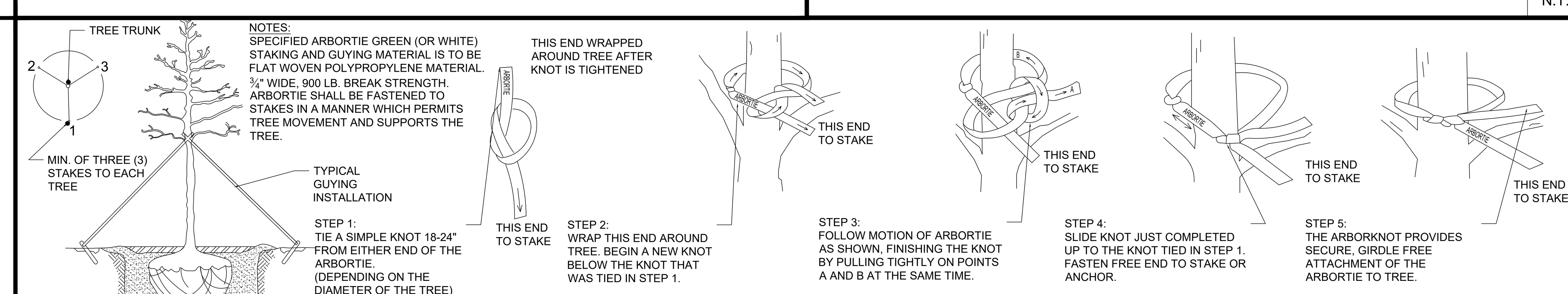
HYDROSEED SPECIFICATIONS



BLACK ALUMINUM EDGING

N.T.S.

NOTES:
SPECIFIED ARBORTIE GREEN (OR WHITE) STAKING AND GUYING MATERIAL IS TO BE FLAT WOVEN POLYPROPYLENE MATERIAL. ¾" WIDE, 900 LB. BREAK STRENGTH. ARBORTIE SHALL BE FASTENED TO STAKES IN A MANNER WHICH PERMITS TREE MOVEMENT AND SUPPORTS THE TREE.



ARBORTIE STAKING DETAIL

N.T.S.

Raising Cane's CHICKEN FINGERS
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:
BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

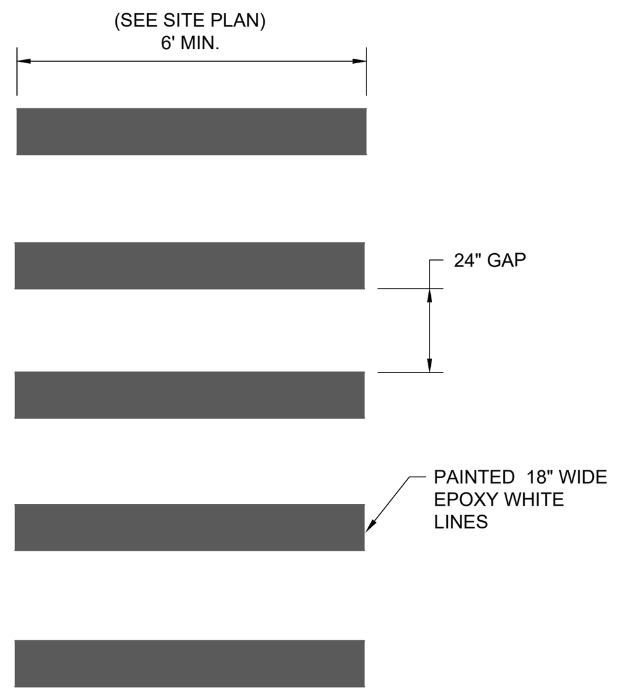
SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:
LANDSCAPE NOTES AND DETAILS

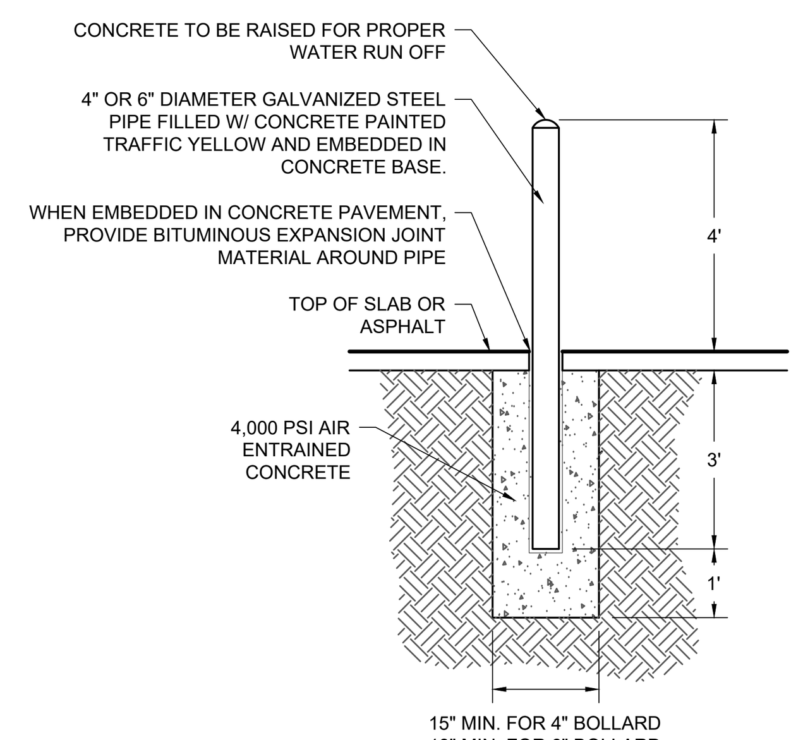
DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER: C-702



PAINTED BLOCKED CROSSWALK DETAIL

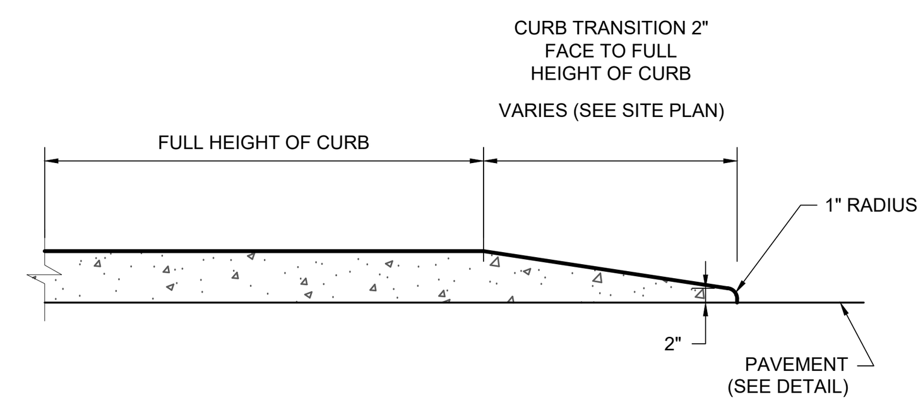
NOT TO SCALE



NOTES:
1. BOLLARDS REQUIRED AS DEPICTED ON SITE PLAN DRAWINGS.

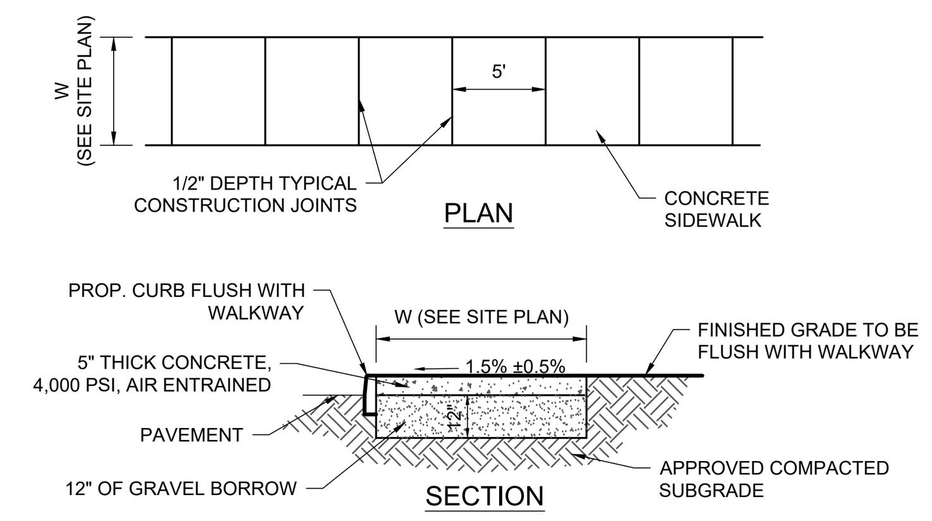
BOLLARD DETAIL

NOT TO SCALE



TRANSITION CURB DETAIL

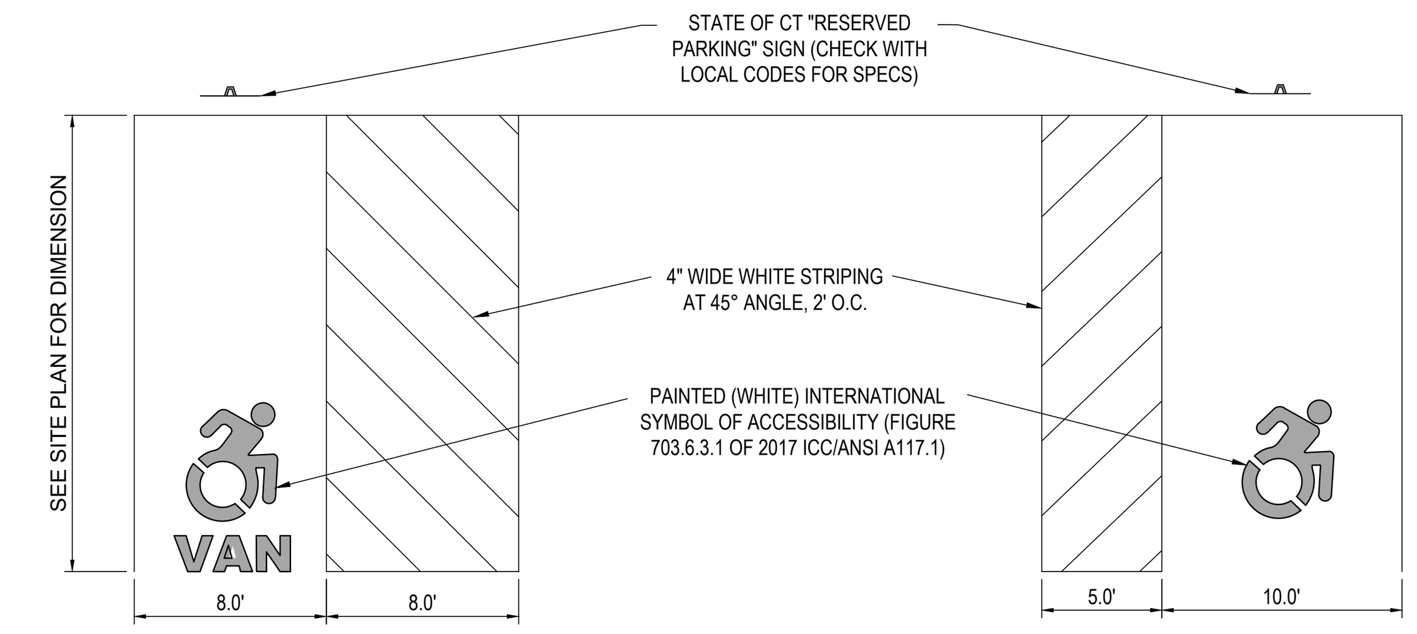
NOT TO SCALE



NOTE:
1. MAX. CROSS SLOPE ¼" PER FOOT MIN ⅛" PER FOOT PITCHED TOWARDS ROADWAY.
2. PROVIDE 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT AT 20' INTERVALS, TO BE RECESSED 1/4" - 1/2" FROM SIDEWALK SURFACE.
3. REFER TO SITE PLAN FOR SIDEWALK WIDTH (W)
4. LONGITUDINAL SLOPE AND WIDTH TO COMPLY WITH ADA BARRIER FREE REQUIREMENTS.

CONCRETE SIDEWALK DETAIL

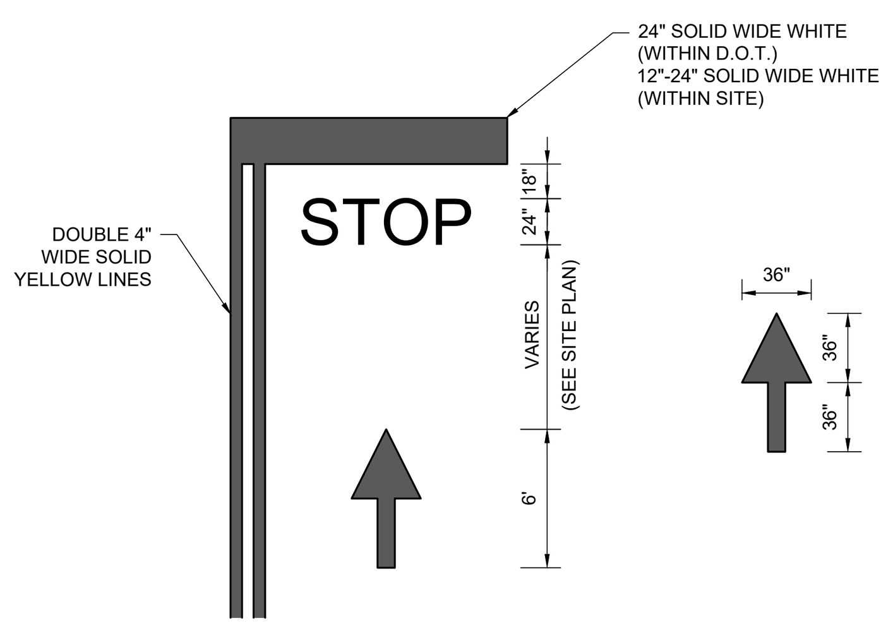
NOT TO SCALE (S-090)



NOTES:
1. ALL MINIMUM DIMENSIONS ARE FROM CENTERLINE OF STRIPE TO CENTERLINE OF STRIPE OR INSIDE FACE OF CURB.
2. ACCESS AISLE SHALL ADJOIN AN ACCESSIBLE ROUTE AND BE AT THE SAME LEVEL AS THE PARKING SPACE THEY SERVE.
3. TWO PARKING SPACES SHALL BE PERMITTED TO SHARE A COMMON ACCESS AISLE.
4. ENSURE ACCESSIBLE VAN PARKING SPACE WILL PROVIDE ACCESS AISLE ON THE PASSENGER SIDE WHEN ANGLED PARKING IS USED.
5. PARKING SPACES AND PARKING AISLE SLOPE MUST NOT EXCEED 1:48 (¼" PER FOOT OR 2%) IN ANY DIRECTION.
6. CURB RAMP SLOPE MUST NOT EXCEED 1:12 (8.3% FOR A MAXIMUM OF 6 FEET.)
7. LANDINGS MUST BE PROVIDED AT EACH END OF THE RAMPS AND MUST PROVIDE POSITIVE DRAINAGE, AND MUST NOT EXCEED 1:48 (¼" PER FOOT OR 2%) CROSS SLOPE.
8. ON-SITE A MINIMUM ACCESSIBLE ACCESS ROUTE WIDTH OF 36 INCHES MUST BE PROVIDED AND MAINTAINED. A WHEEL STOP CAN BE PROVIDED WHERE NECESSARY TO PREVENT VEHICLE OVERHANG FROM REDUCING WIDTH OF THE PATH OF TRAVEL TO LESS THAN 36".

ADA PARKING STALL MARKING DETAIL

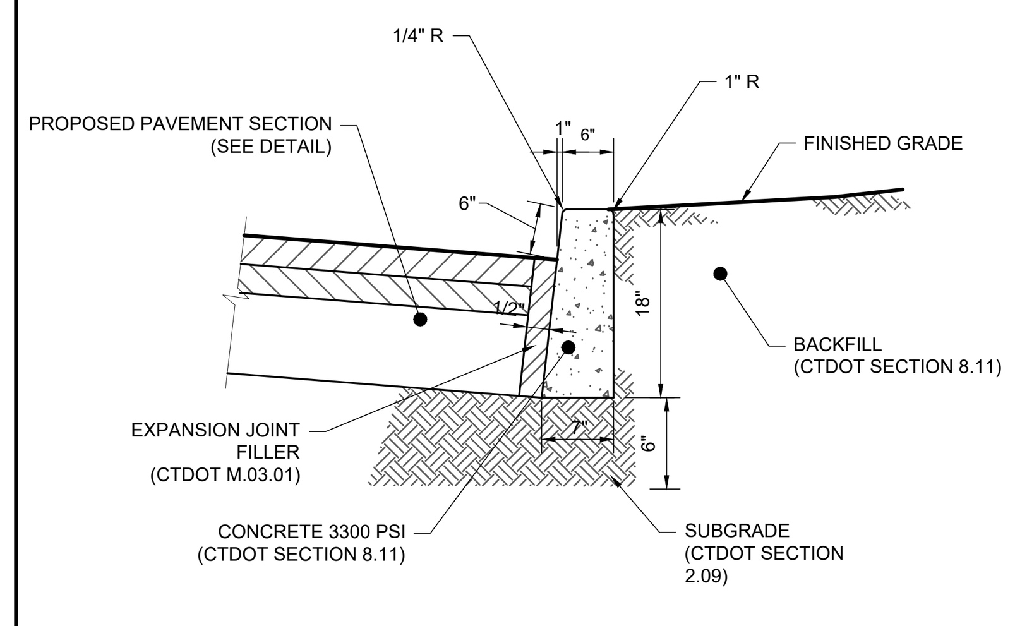
NOT TO SCALE



NOTES:
1. ARROWS AND WORDS CAN BE ARRANGED IN DIFFERENT COMBINATIONS TO ACHIEVE DESIRED RESULT.
2. STOP BAR, LETTERS, AND ARROW TO BE THERMOPLASTIC.
3. LINES TO BE EPOXY PAINT PER DOT STANDARD SPECIFICATIONS.

PAINTED MARKING DETAILS

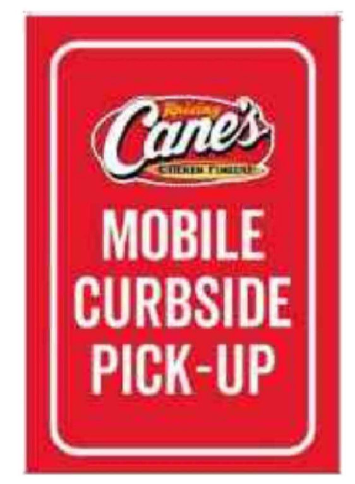
NOT TO SCALE



NOTES:
1. PREFORMED EXPANSION JOINT FILLER SHALL BE THE BITUMINOUS CELLULAR TYPE AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 213
2. CONCRETE CURBING SHALL BE CONSTRUCTED IN SECTIONS HAVING UNIFORM LENGTH OF APPROXIMATELY 10 FT, ARRANGED THAT A JOINT IN THE CURBING SHALL COME OPPOSITE A JOINT IN THE ADORING CONCRETE PAVEMENT SLAB

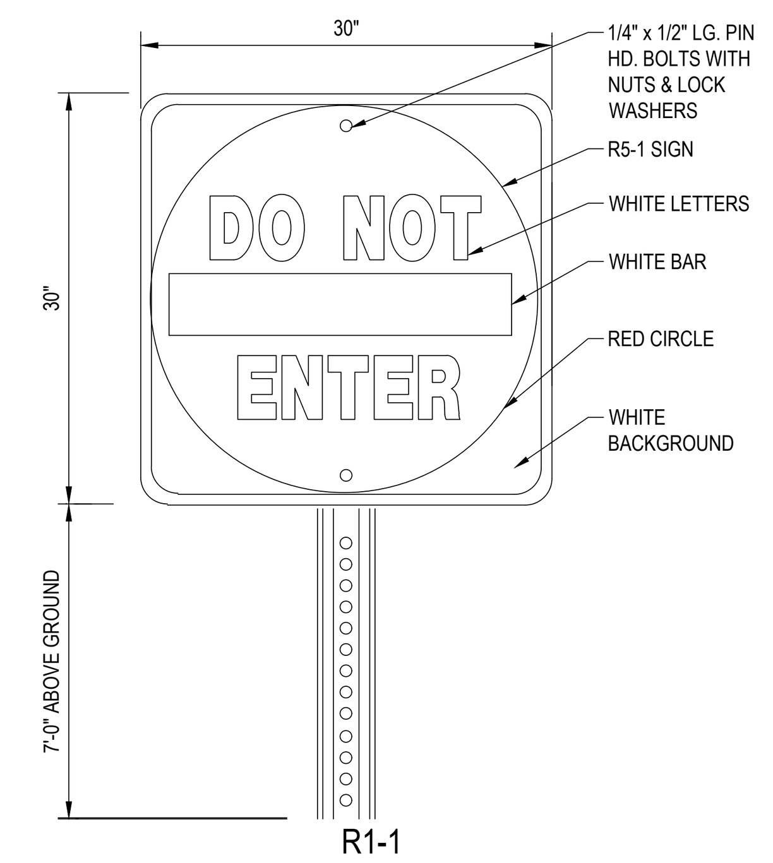
CONCRETE CURB 6" REVEAL DETAIL

NOT TO SCALE



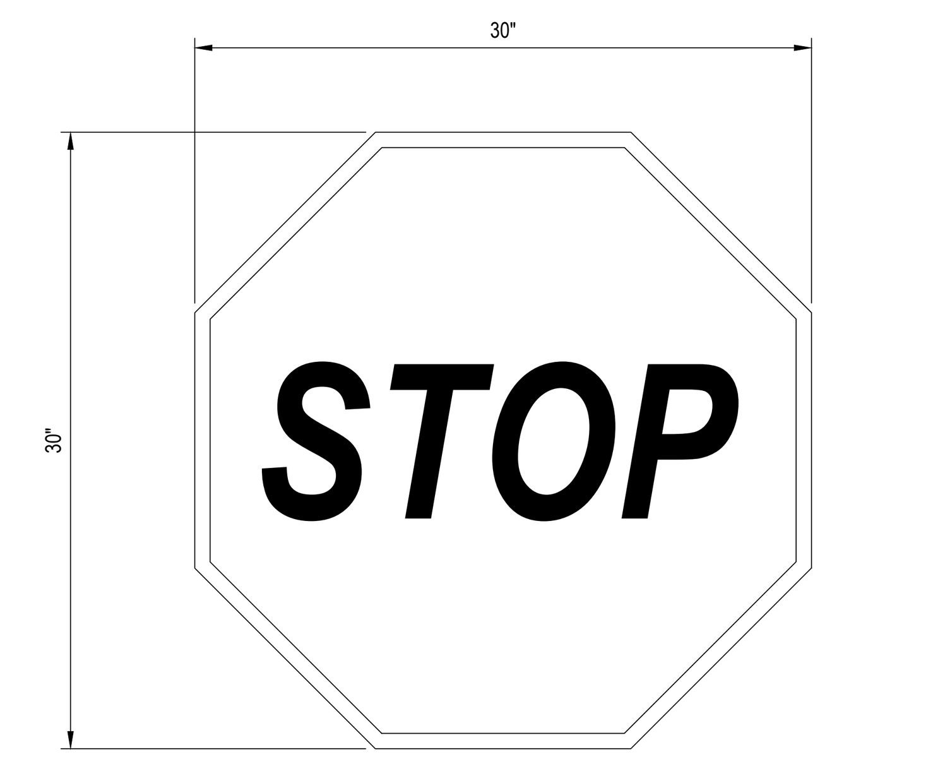
'RAISING CANE'S' MOBILE CURBSIDE PICK UP SIGN

NOT TO SCALE



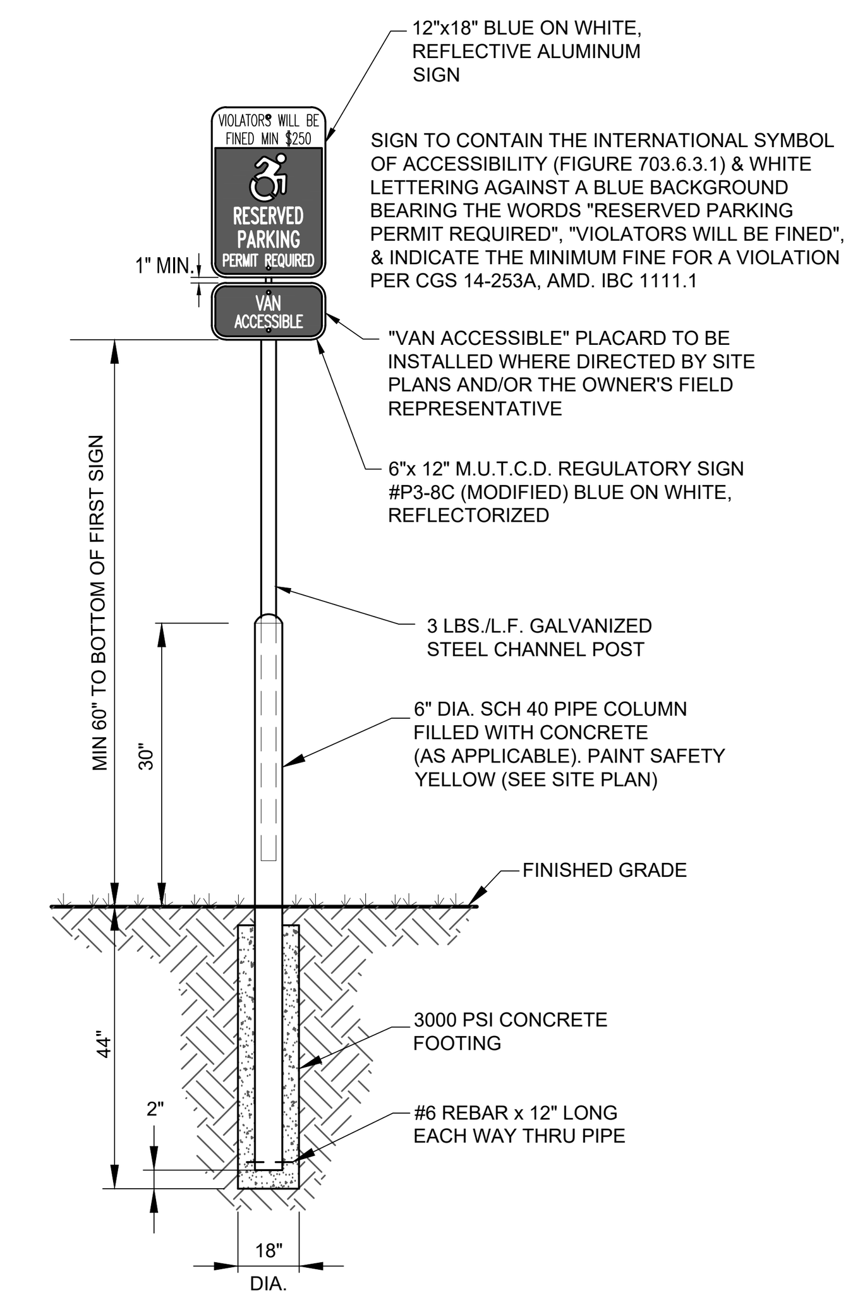
'DO NOT ENTER' SIGN

NOT TO SCALE



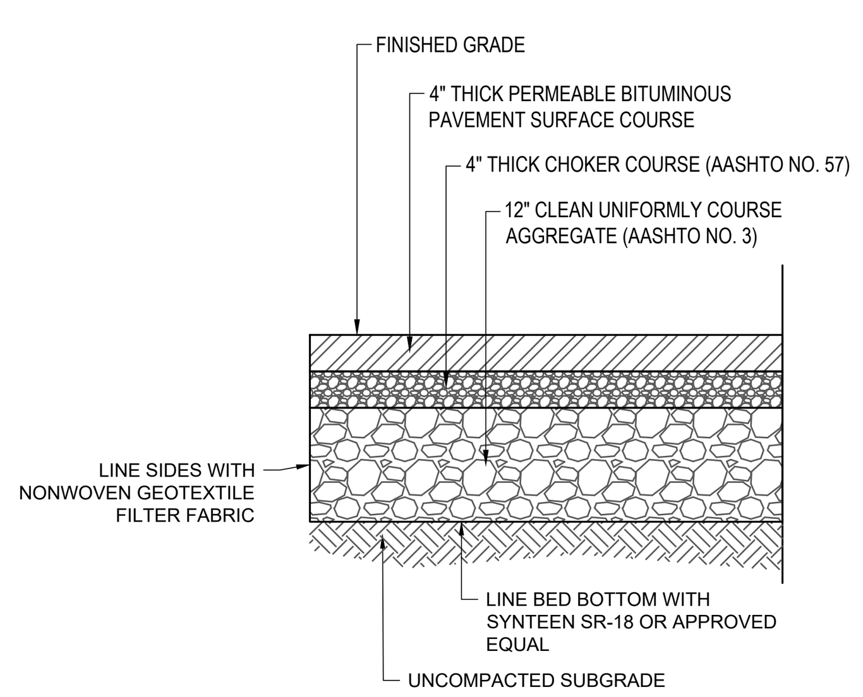
'STOP' SIGN

NOT TO SCALE



ADA PARKING SIGN ON BOLLARD DETAIL

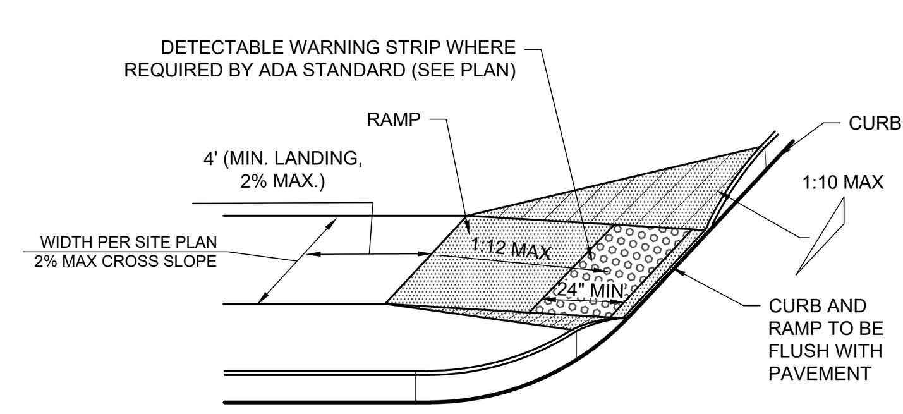
NOT TO SCALE



NOTE: UNDERDRAIN TO BE INSTALLED TO DRAINAGE PIPE

PERMEABLE BITUMINOUS CONCRETE PAVEMENT

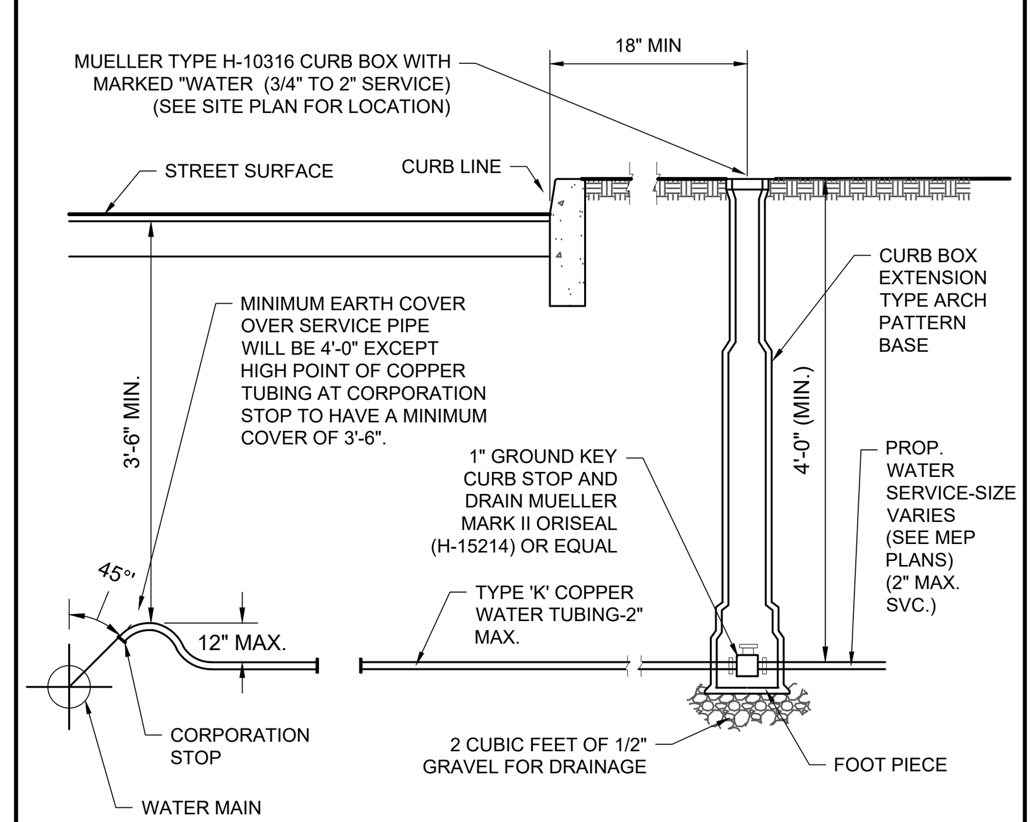
NOT TO SCALE



NOTES:
1. ADA RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST ADA STANDARDS.
2. CONTRACTOR TO CONSTRUCT DETECTABLE WARNINGS WHEN SIDEWALK IS WITHIN PUBLIC ROW AND WHERE SHOWN ON PLANS.
3. DETECTABLE WARNING SURFACES SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A BOTTOM DIAMETER OF NOMINAL 0.9 INCH, A TOP DIAMETER OF 0.4 INCH, A HEIGHT OF NOMINAL 0.2 INCH, A CENTER TO CENTER SPACING OF NOMINAL 2.35 INCH, AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT ON DARK OR DARK ON LIGHT. (SEE DETAIL)
4. TOP OF CURB TO HAVE SAME SLOPE AS ADJACENT CURB RAMP.

ADA CURB RAMP DETAIL

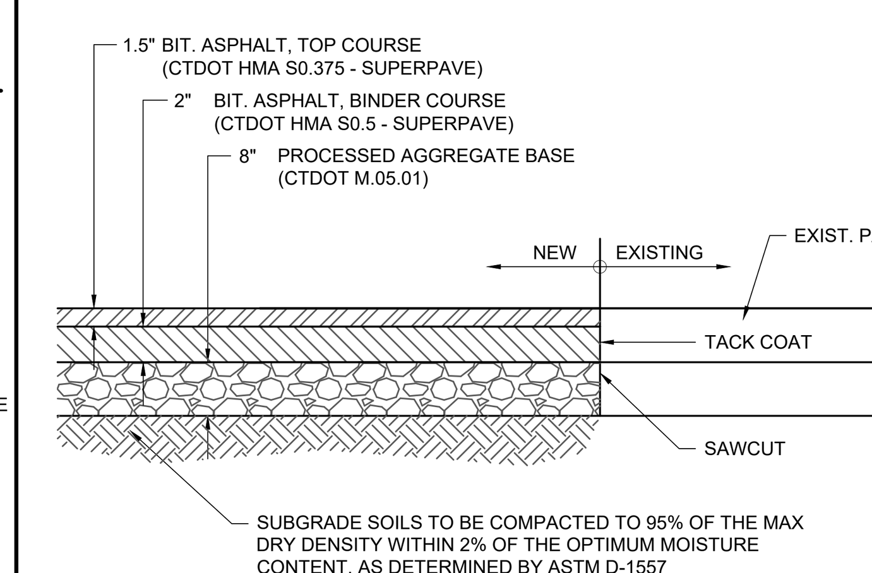
NOT TO SCALE



NOTE:
CONTRACTOR TO CONFIRM SERVICE CONNECTION REQUIREMENTS WITH WATER PURVEYOR PRIOR TO START OF CONSTRUCTION.

1" TO 2" WATER SERVICE CONNECTION DETAIL

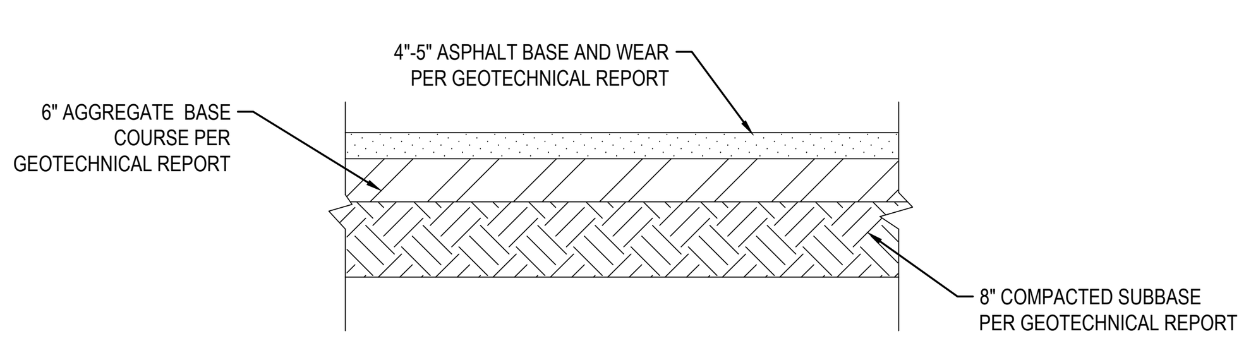
NOT TO SCALE (U049902-01/2013)



NOTES:
1. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.
2. USE PRECAST FLAT SLAB TOP FOR SHALLOW INVERT APPLICATIONS

STANDARD PAVING DETAIL

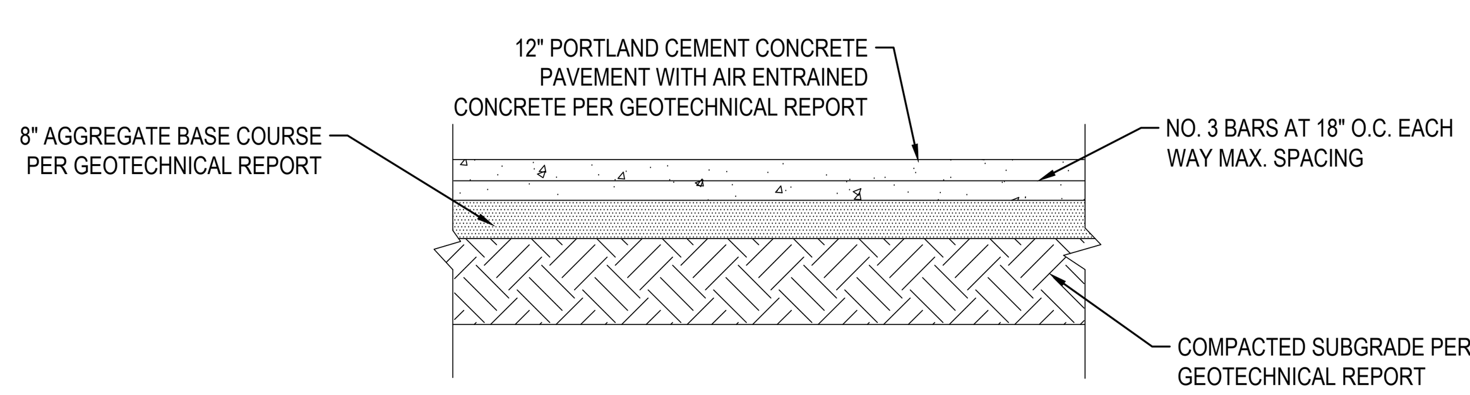
NOT TO SCALE



NOTE:
PAVEMENT BASE AND SUBBASE COURSES TO CONFORM TO ALL STATE DOT HIGHWAY DIVISION SPECIFICATIONS. GC TO REFER TO GEOTECHNICAL REPORT PREPARED BY TERRACON CONSULTANTS, INC. FOR PAVEMENT SPECIFICATIONS.
CONTRACTOR TO INSTALL ANY PAVEMENT BASE DRAINAGE RECOMMENDATIONS FROM GEOTECH REPORT.

HEAVY DUTY ASPHALT PAVEMENT SECTION

NOT TO SCALE



NOTE:
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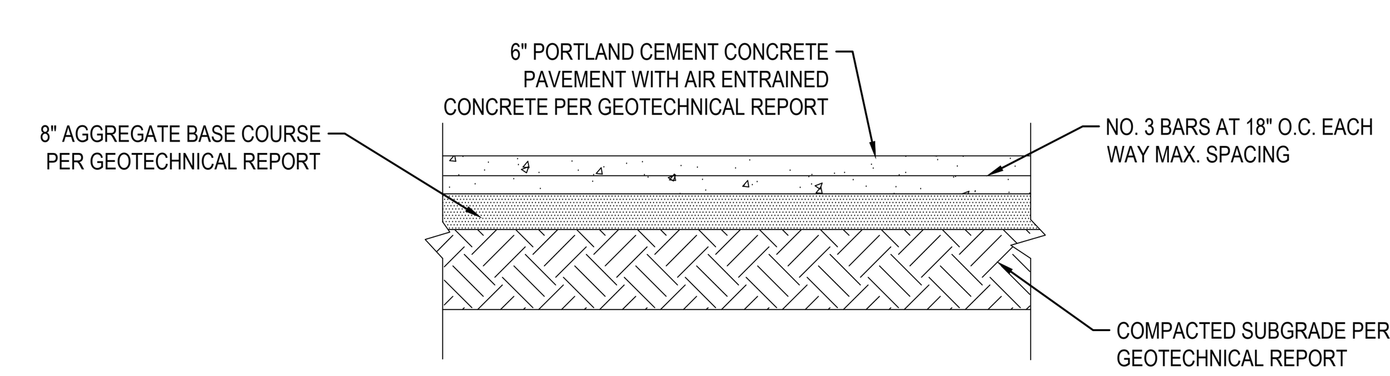
CONTRACTOR TO INSTALL ANY PAVEMENT BASE DRAINAGE RECOMMENDATIONS FROM GEOTECH REPORT.

HEAVY DUTY (DUMPSTER PAD) CONCRETE PAVEMENT SECTION

NOT TO SCALE



NOTE:
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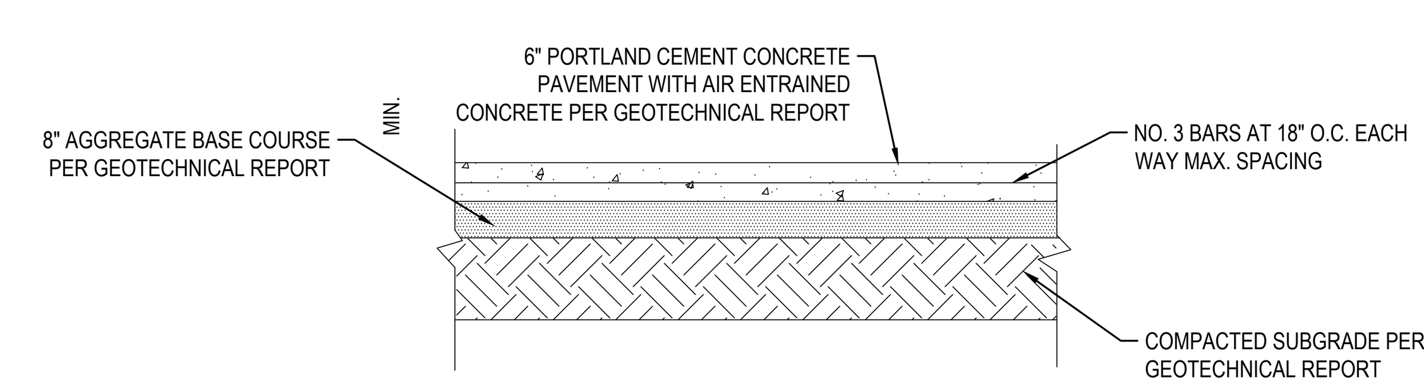
CONTRACTOR TO INSTALL ANY PAVEMENT BASE DRAINAGE RECOMMENDATIONS FROM GEOTECH REPORT.

MEDIUM DUTY CONCRETE PAVEMENT SECTION

NOT TO SCALE



NOTE:
PAVEMENT BASE AND SUBBASE COURSES TO CONFORM TO ALL STATE DOT HIGHWAY DIVISION SPECIFICATIONS. GC TO REFER TO GEOTECHNICAL REPORT PREPARED BY TERRACON CONSULTANTS, INC. FOR PAVEMENT SPECIFICATIONS.
CONTRACTOR TO INSTALL ANY PAVEMENT BASE DRAINAGE RECOMMENDATIONS FROM GEOTECH REPORT.

STANDARD DUTY CONCRETE PAVEMENT SECTION

NOT TO SCALE

Raising Cane's Chicken Fingers
Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:
BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:
PROFESSIONAL ENGINEER

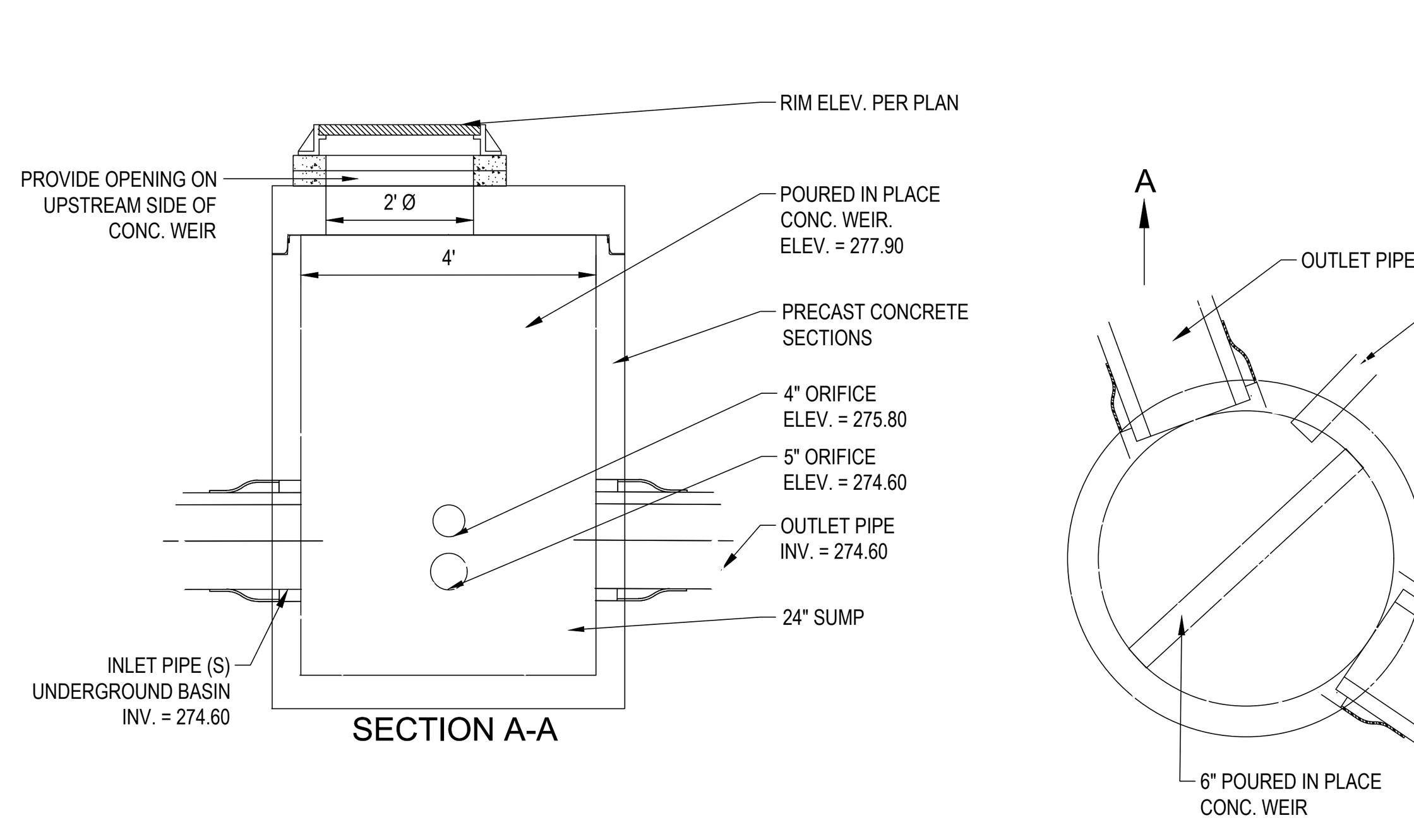
SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:
DETAIL SHEET

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

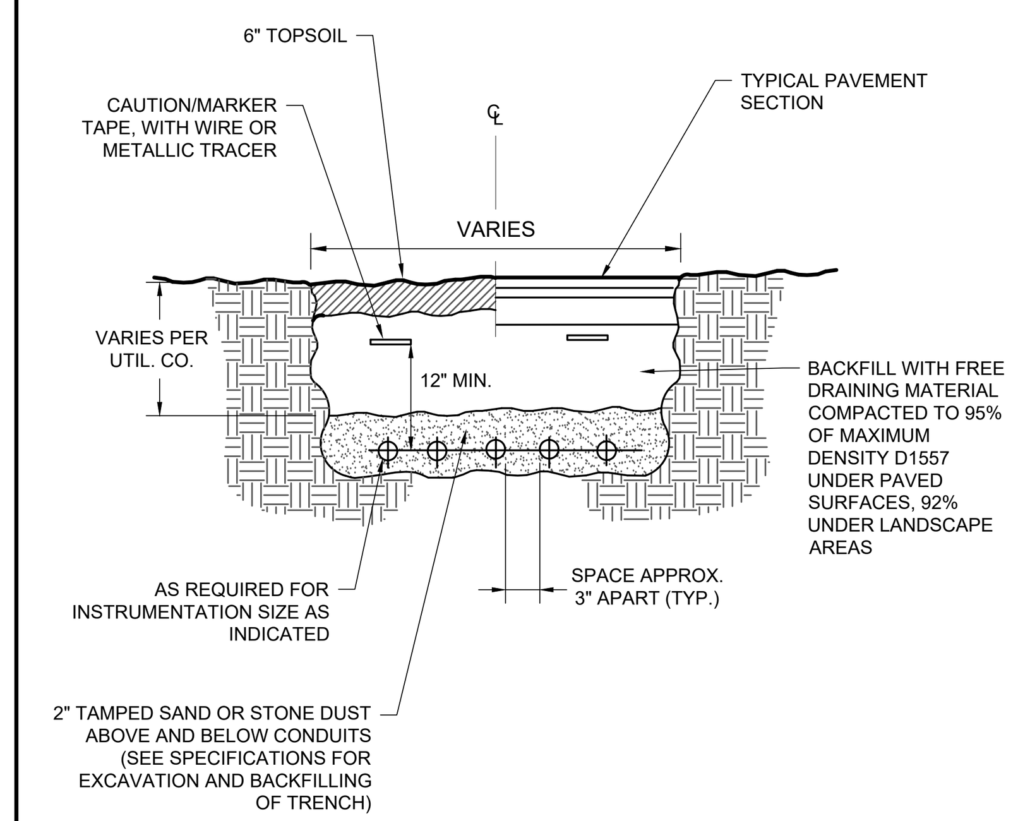
SHEET NUMBER:
C-901



NOTE:
1. SEE DRAINAGE PLAN FOR ALL ELEVATIONS AND PIPE SIZES.
2. IN LOCATIONS WHERE DRAINAGE STRUCTURES AND DRAINAGE PIPE ARE PLACED IN PEAT/ORGANIC MATERIALS, A MIN OF 12" CRUSHED STONE UNDERLAIN BY MIRAFI 140N FILTER FABRIC SHALL BE PLACED BELOW TO STABILIZE THE SUBGRADE.

OUTLET CONTROL STRUCTURE (OCS-1)

NOT TO SCALE

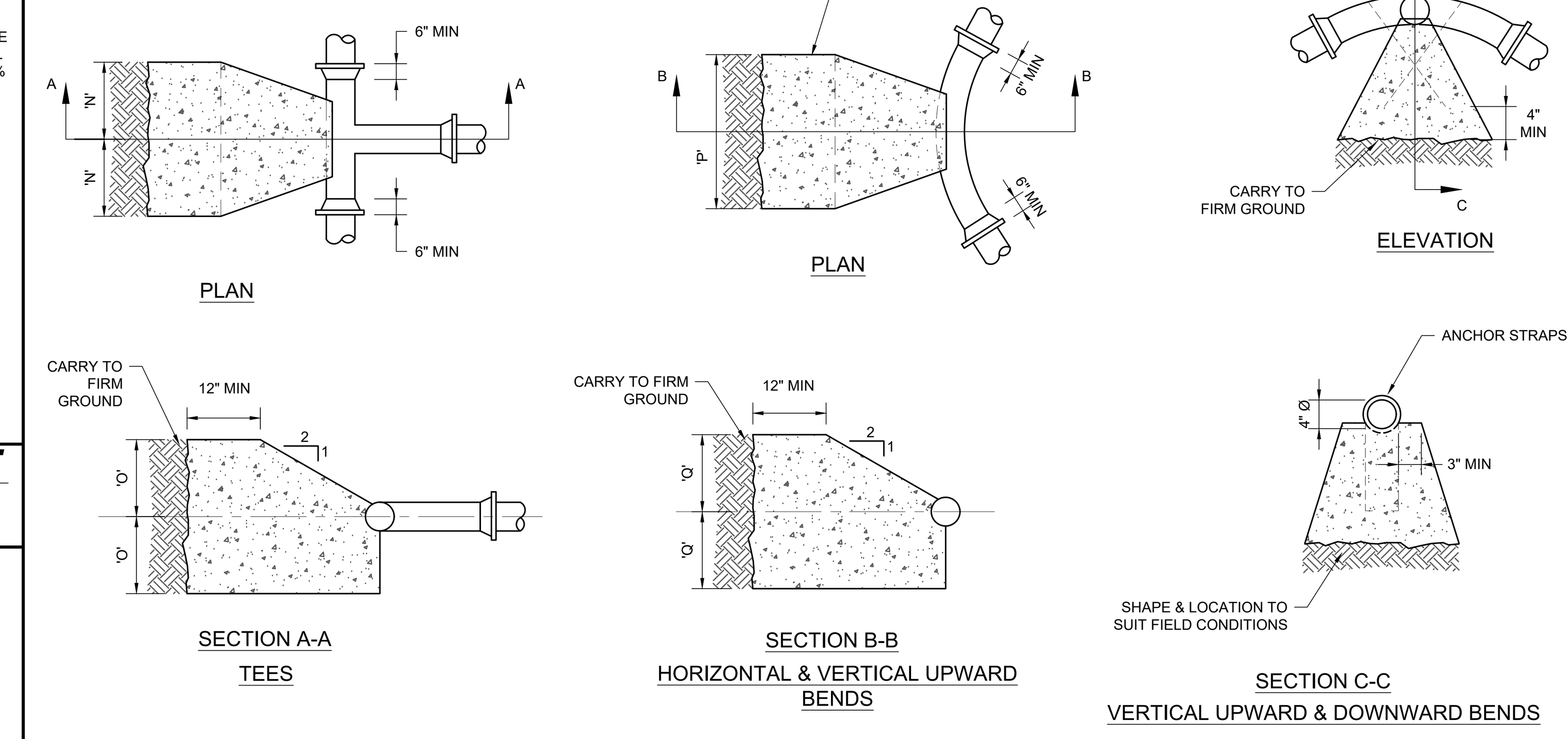


UNDERGROUND UTILITY CONDUIT DETAIL

NOT TO SCALE (U039903-01/2013)

NOTES:

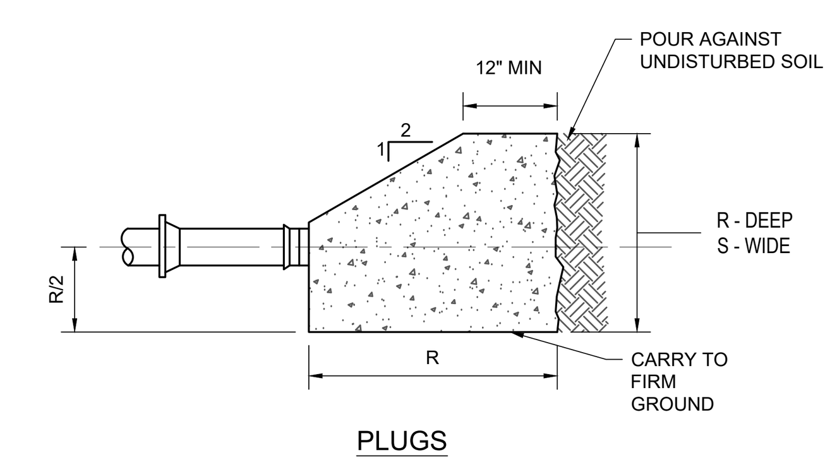
1. THRUST BLOCK DESIGNED FOR 150 LB. PER SQ. IN TEST PRESSURE & 2000 LB. PER SQ. FT. SOIL PRESSURE.
2. 4,000 PSI CONC. @ 28 DAYS (MIN.)
3. ANCHOR STRAPS (#5 BAR) REQUIRED ON ALL MAINS 8" OR LARGER.
4. FITTING AND BOLTS ARE TO BE PROTECTED FROM ACTUAL CONTACT WITH CONCRETE.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SUFFICIENT RESTRAINT IN ACCORDANCE WITH THE ABOVE REQUIREMENTS. ALTERNATE MEANS OF RESTRAINT MAY BE USED IS PRE-APPROVED IN WRITING, BY THE WATER SYSTEM PURVEYOR.



THRUST BLOCK FOR TEES, HORIZONTAL & VERTICAL BENDS & PLUGS

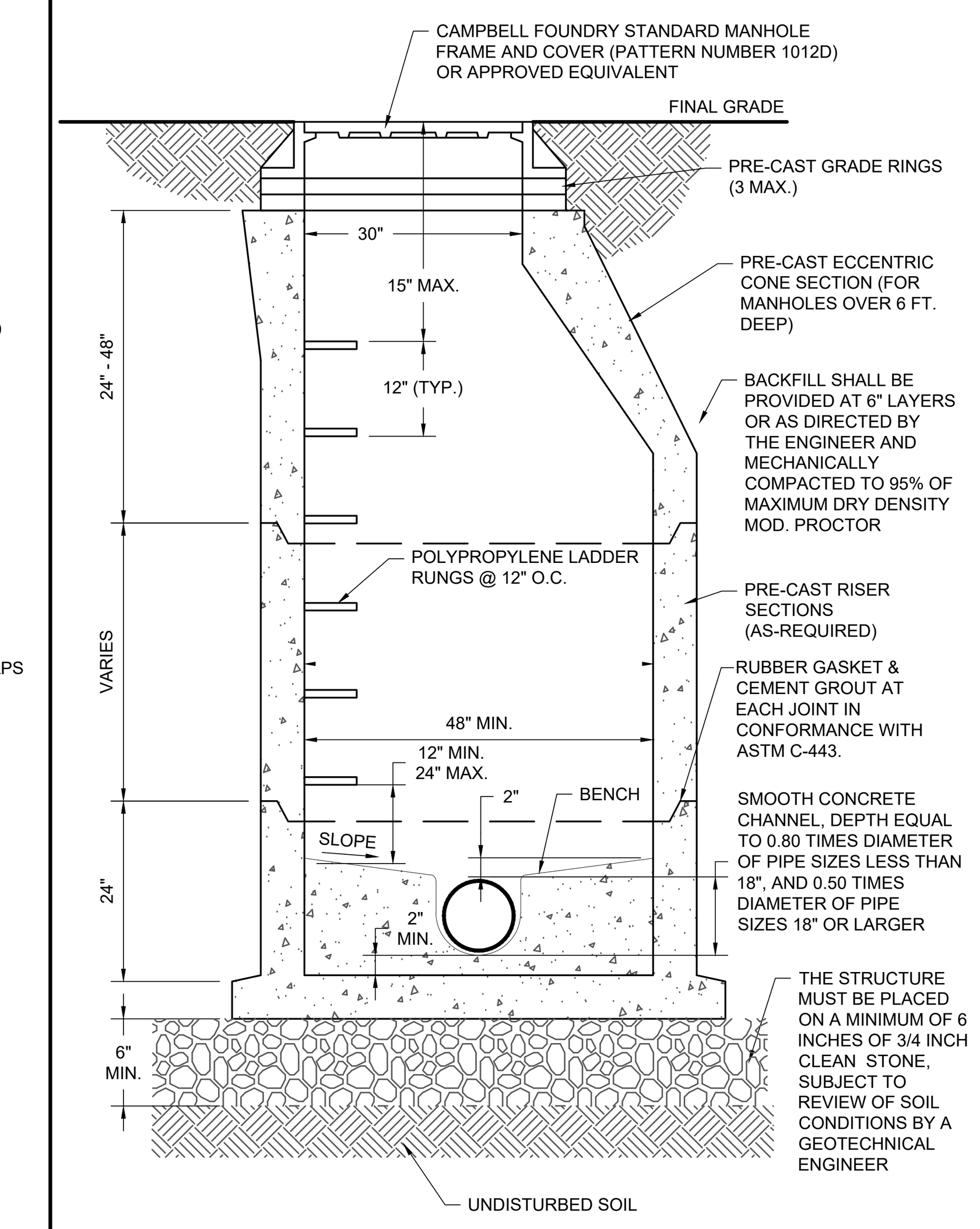
	DESCRIPTION	DIMENSION	8"Ø	12"Ø
	TEES	N	1' 2"	1' 8"
		O	1' 2"	1' 8"
HORZ. & VERT. UPWARD	90° BENDS	P	1' 4"	1' 11"
		Q	1' 4"	1' 11"
	45° BENDS	P	1' 0"	1' 5"
		Q	1' 0"	1' 5"
	22 1/2° BENDS	P	0' 9"	1' 0"
		Q	0' 9"	1' 0"
	11 1/4° BENDS	P	0' 6"	0' 9"
		Q	0' 6"	0' 9"
VERTICAL DOWNWARD	45° BENDS	MIN. CONCRETE* ANCHORAGE	1.9 CY	3.9 CY
	22 1/2° BENDS	MIN. CONCRETE* ANCHORAGE	1.0 CY	2.0 CY
	11 1/4° BENDS	MIN. CONCRETE* ANCHORAGE	0.5 CY	1.0 CY
	PLUGS	R	2' - 4"	3' - 4"
		S	2' - 4"	3' - 4"

*MINIMUM CONCRETE ANCHORAGE WITHOUT BACKFILL AND NO GROUND WATER CONDITION



THRUST BLOCK DETAILS

NOT TO SCALE (U049905-01/2017)



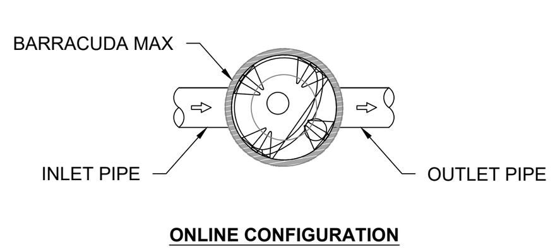
NOTES:
1. THE STORM MANHOLE CONCRETE STRUCTURE MUST BE PRECAST CONCRETE TO MEET A MINIMUM OF HS-25 LOADING. ALL UNITS SHALL BE CONSTRUCTED AND REINFORCED IN ACCORDANCE WITH THE APPROPRIATE ASTM, ACI, AND AASHTO STANDARDS. ALL PRECAST SECTIONS SHALL BE JOINED USING A GASKET AND CEMENT GROUT TO PRODUCE A LEAK-PROOF JOINT.
2. THE INLET FRAME AND GRATE/COVER SHALL BE CAMPBELL FOUNDRY PATTERN NO. 1012D, OR APPROVED EQUAL.
3. ALL PIPES SHALL EXTEND NO MORE THAN 1 INCH INTO THE STRUCTURE.
4. SUITABLE EXCAVATED SOIL MAY BE USED AS BACKFILL IN NON-STRUCTURALLY SUPPORTING AREAS OR AS DIRECTED BY THE MUNICIPAL ENGINEER. AREAS SUPPORTING ANY STRUCTURE SHALL BE BACKFILLED USING DENSE GRADED AGGREGATE OR AS DIRECTED BY THE ENGINEER.
5. THE INSIDE DIAMETER IS A MINIMUM DIMENSION. INSIDE DIAMETER TO BE ADJUSTED AS NECESSARY TO ACCOMMODATE STORM PIPE SIZES AND ALIGNMENT.

STORM MANHOLE DETAIL

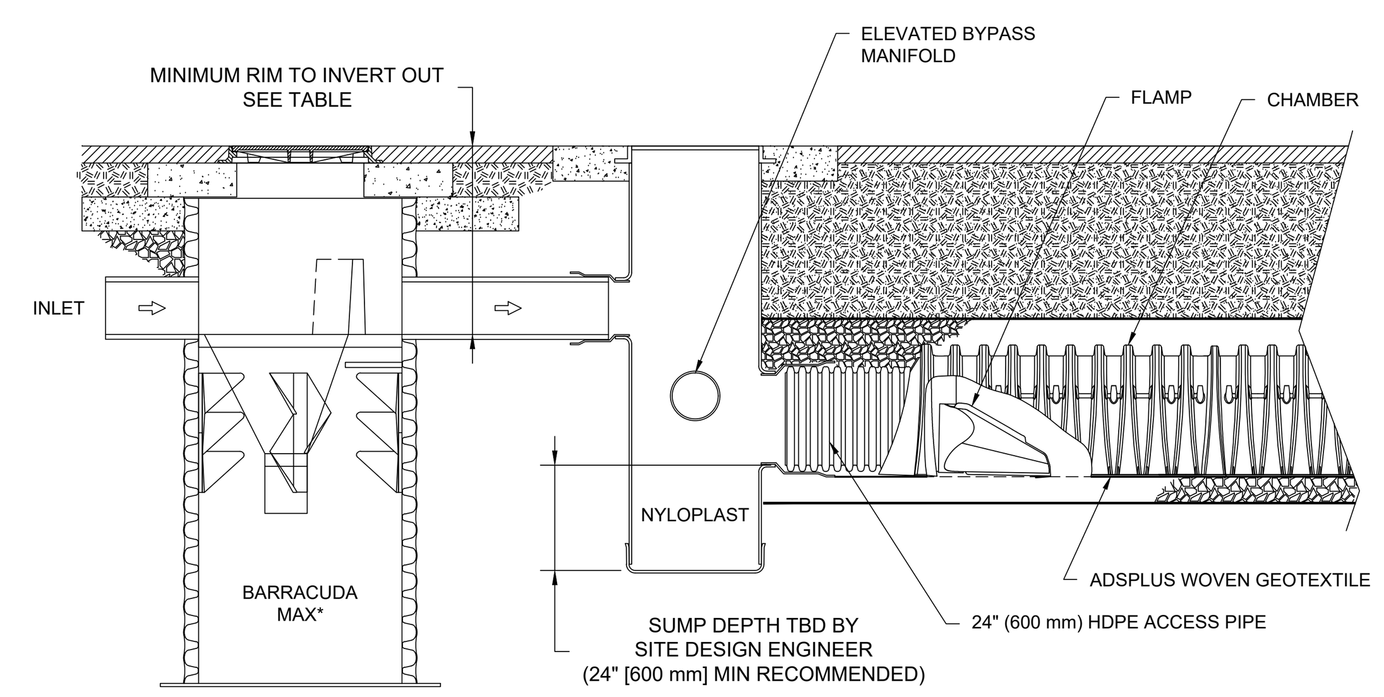
NOT TO SCALE (G020407-04/2019)

BARRACUDA MAX MINIMUM RIM TO INVERT OUT	
MODEL	INCH (MM)
S3	36 (914)
S4	36 (914)
S6	39 (991)
S8	41 (1041)

THE S3, S4, S6, AND S8 CAN BE INSTALLED IN A STANDARD 36" (900 mm), 48" (1200 mm), 72" (1800 mm), AND 96" (2400 mm) PRECAST MANHOLE, RESPECTIVELY. THE S3 AND S4 CAN BE PROVIDED FACTORY INSTALLED WITHIN A 36" (900 mm) AND 48" (1200 mm) ADS HP MANHOLE AND DELIVERED TO THE JOBSITE.



ONLINE CONFIGURATION



BARRACUDA MAX & ISOLATOR ROW PLUS CROSS SECTION/PROFILE

NTS

KEY BENEFITS OF THE BARRACUDA MAX

- SINGLE MANHOLE DESIGN
- VARIABLE INLET/OUTLET ANGLE CONFIGURATIONS (NOT JUST 180 DEGREE ORIENTATION)
- INTERNAL BYPASS FOR INLINE INSTALLATION (WHERE APPLICABLE)
- ALL UNITS CAN BE INSTALLED INTO A STANDARD PRECAST MANHOLE
- 3' & 4' UNITS CAN BE FACTORY FABRICATED IN HP MANHOLES FOR QUICK DELIVERY WITH A LIGHT, EASY TO INSTALL STRUCTURE
- IN-STOCK COMPONENTS FOR QUICK DELIVERY
- NO ELEVATION LOSS BETWEEN THE INLET AND OUTLET
- SURFACE INSPECTION AND MAINTENANCE WITH NO CONFINED SPACE ENTRY
- DESIGNED FOR EASY MAINTENANCE USING A VACUUM TRUCK OR SIMILAR EQUIPMENT
- FIELD ENGINEERS AND INTERNAL ENGINEERING SERVICES DEPARTMENT TO ASSIST ENGINEERING WITH SIZING/DETAILS

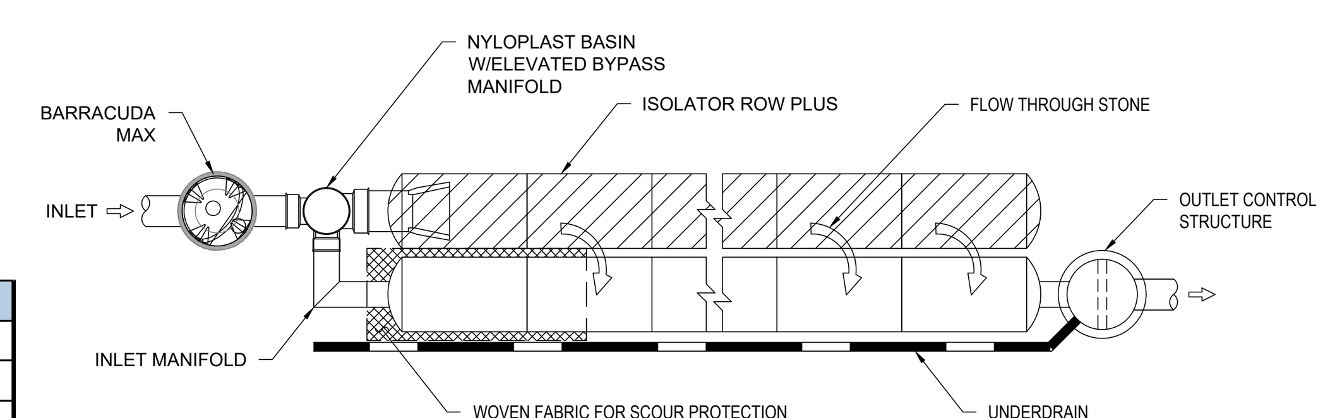
BARRACUDA DESIGN TOOL
https://www.ads-pipe.com/water-quality-design-tool

BARRACUDA MAX TREATMENT FLOW (80% TSS)	
MODEL	CFS (L/s)
S3	0.85 (24.1)
S4	1.52 (43.0)
S6	3.40 (96.3)
S8	6.08 (172.2)

BARRACUDA MAX CAN BE CONFIGURED WITH AN OIL POUCH OR TRASH GUARD FOR ENHANCED TREATMENT.

KEY BENEFITS OF A BARRACUDA MAX & ISOLATOR PLUS DESIGN

- ENHANCED SEDIMENT REMOVAL BY COMBINING TWO INDUSTRY PROVEN DEVICES
- EXTENDED MAINTENANCE CYCLES
- EASY TO INSTALL AND CONFIGURE TO SPECIFIC SITE CONSTRAINTS
- ONLINE DESIGN TOOLS ALLOW DESIGNERS TO EASILY CREATE LAYOUTS AND DETAILS



Detention Area Table	
Inv. In	275.10
Bottom of Stone	274.60
Inv. In	274.60
Bottom of Chamber	275.00
Top of Chamber	277.50
2 YR Water Elev.	274.60
10 YR Water Elev.	274.63
25 YR Water Elev.	274.66
100 YR Water Elev.	274.80

BARRACUDA MAX & ISOLATOR ROW PLUS SCHEMATIC

NTS

KEY BENEFITS OF STORMTECH CHAMBERS

- LARGE FAMILY OF CHAMBERS TO FIT YOUR SITE
- EASILY CONFIGURABLE FOR IRREGULAR SHAPED BEDS
- MEETS PRODUCT REQUIREMENTS OF ASTM F2418 AND ASTM F2922 AND DESIGN REQUIREMENTS OF ASTM F2787
- EXCEED AASHTO LRFD DESIGN SPECIFICATIONS FOR HS-20 LIVE LOADS & DEEP BURIAL EARTH LOADS
- PATENTED ISOLATOR ROW PLUS FOR LESS FREQUENT MAINTENANCE, WATER QUALITY AND LONG-TERM PERFORMANCE
- THIRD PARTY VERIFIED PERFORMANCE
- FIELD ENGINEERS AND INTERNAL ENGINEERING SERVICES DEPARTMENT TO ASSIST ENGINEERING WITH LAYOUTS

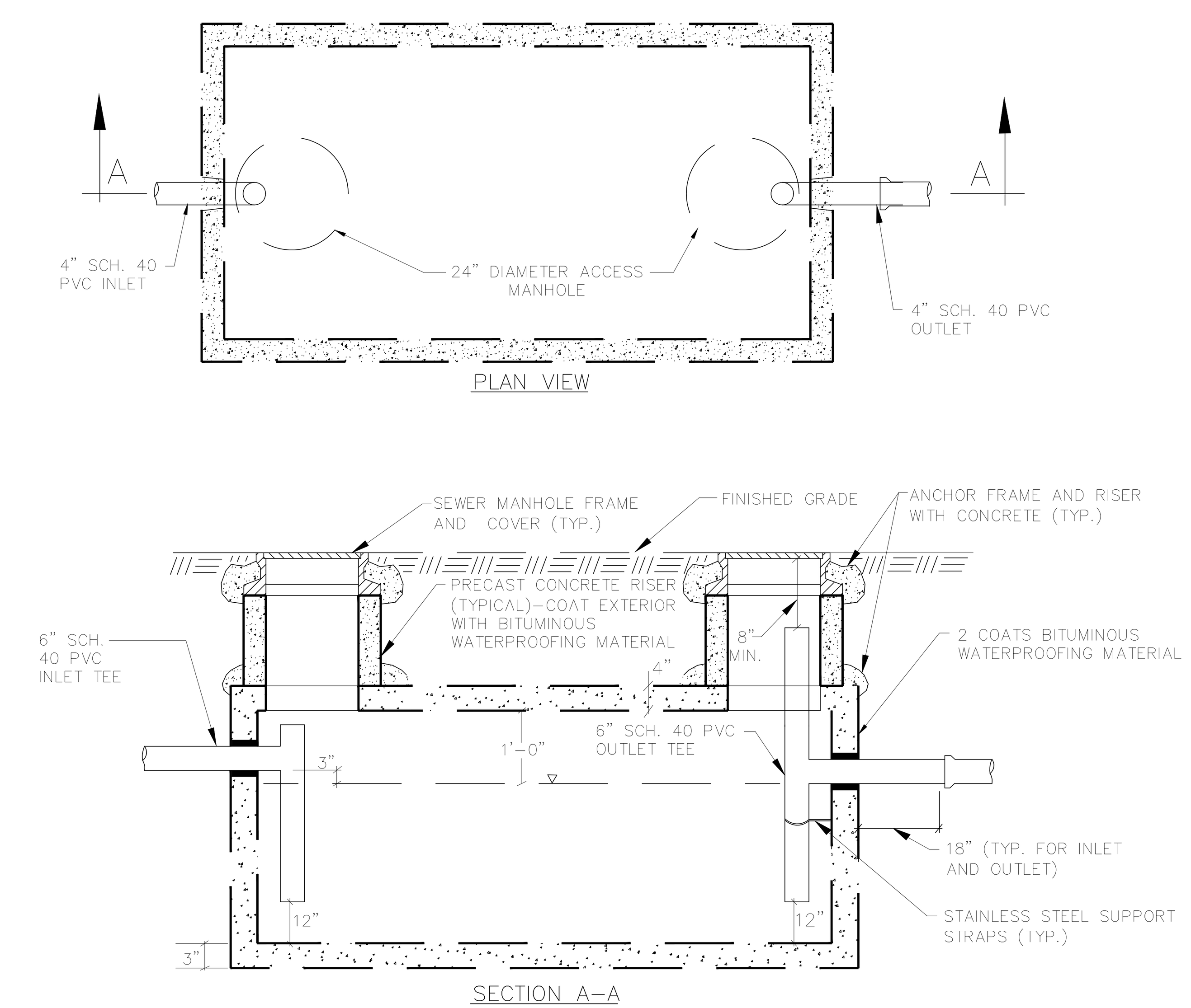
STORMTECH DESIGN TOOL
https://designtool.ads-pipe.com/

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET C-902 OF #

BARRACUDA MAX S3 (ICS-1) & STROMTECH SC-740 (UG-1B)

NOT TO SCALE



NOTES:
1. GREASE TRAPS SHALL HAVE A MINIMUM 1,000 GALLON CAPACITY (AS SHOWN ABOVE).
2. CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 4,000 P.S.I. AT 28 DAYS.
3. REINFORCEMENT SHALL BE ASTM A615 (REBAR) GRADE 60 REINFORCEMENT AND ASTM A185 (WWF) WITH FY=60,000 PSI.
4. CONSTRUCTION JOINTS SHALL BE SEALED WITH 1" DIA. BUTYL RUBBER OR EQUAL.
5. DESIGN LOADING FOR STRUCTURE SHALL MEET AASHTO HS20-44.

1,500 GALLON GREASE TRAP DETAIL

NOT TO SCALE

NOTE:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 , "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.

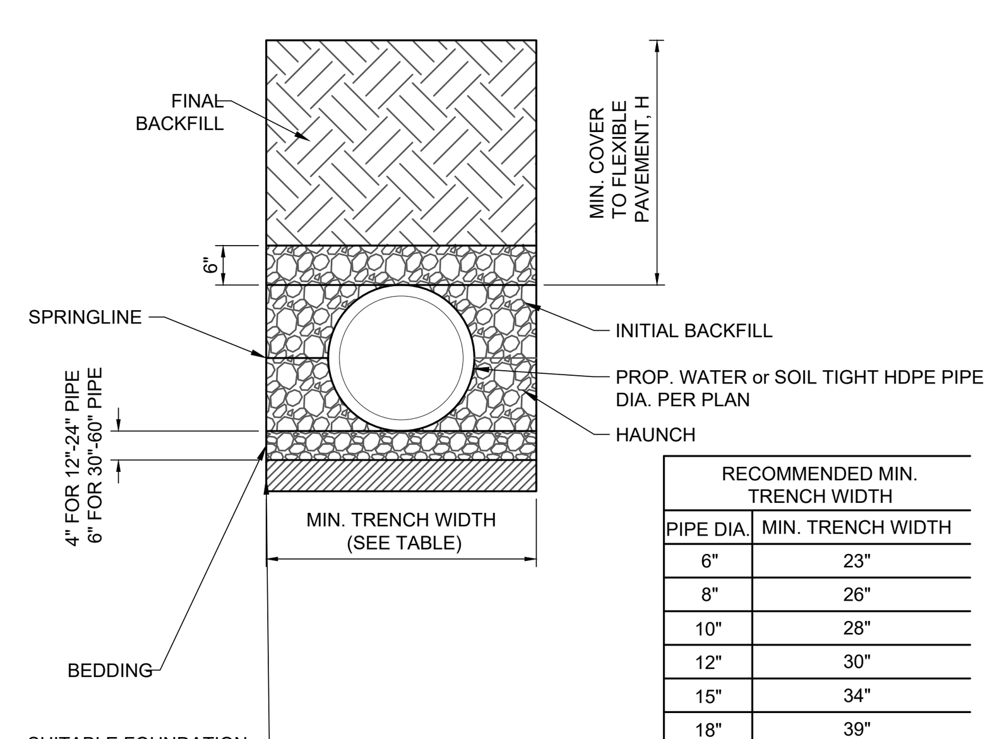
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (7S0mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

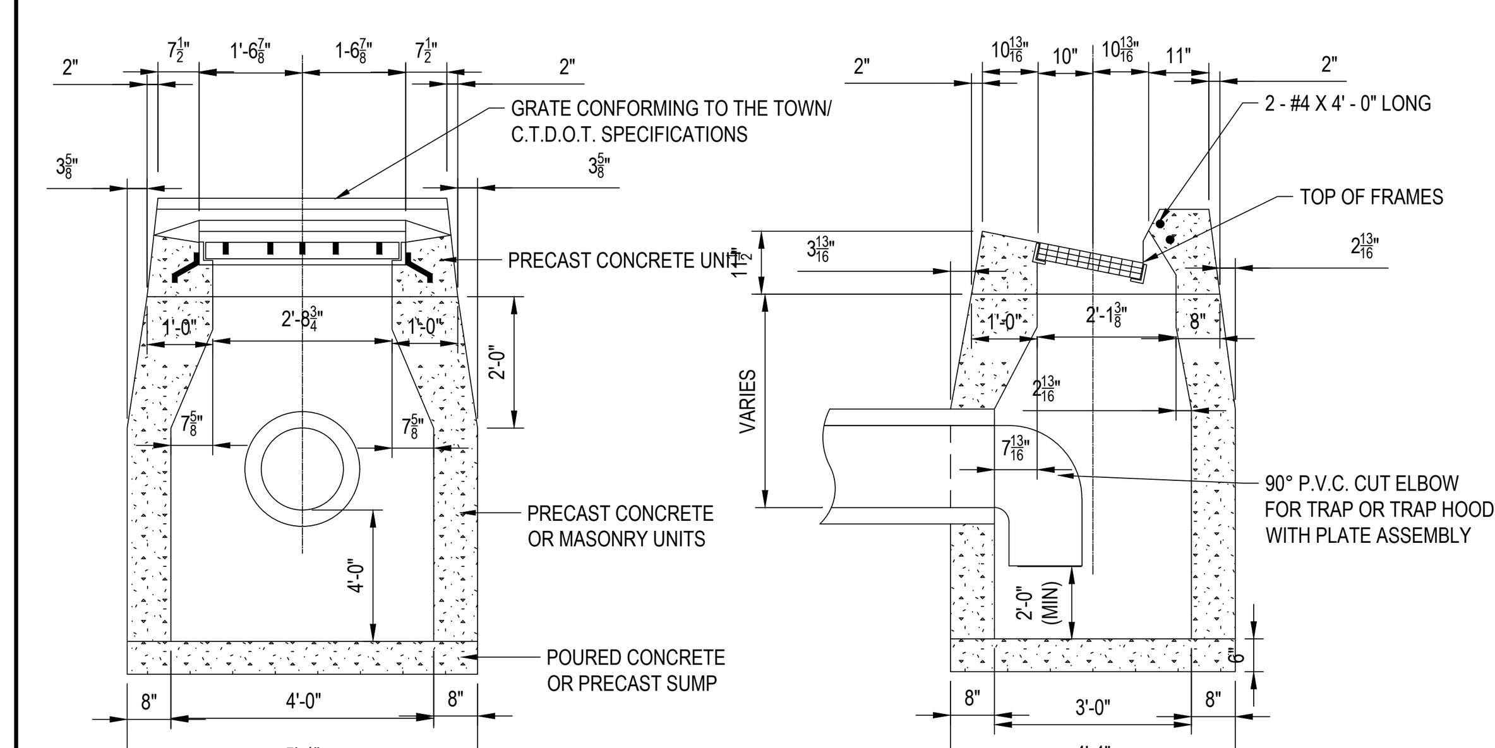
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.



RECOMMENDED MIN. TRENCH WIDTH	
PIPE DIA.	MIN. TRENCH WIDTH
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
48"	80"
60"	96"

HDPE STORM DRAINAGE TRENCH

NOT TO SCALE



CATCH BASIN TYPE C

NOT TO SCALE

Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:
RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:
BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -
UPDATE ISSUE DATE: -
PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:
1	05/16/2023	ZBA COMMENTS
2	06/08/2023	P & Z SUBMISSION
3	07/07/2023	TOWN COMMENTS

SHEET TITLE:
DETAIL SHEET

DATE: 01/23/2022
PROJECT NUMBER: CTA220075.00
DRAWN BY: KMB

SHEET NUMBER:
C-902

LEGAL DESCRIPTION

SIMSBURY COMMONS SOUTH

ALL THAT CERTAIN PIECE OR PARCEL OF LAND TOGETHER WITH THE BUILDINGS AND IMPROVEMENTS THEREON SITUATED IN THE TOWNS OF AVON AND SIMSBURY, COUNTY OF HARTFORD AND STATE OF CONNECTICUT, AND BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT AT THE SOUTHEAST CORNER OF THE PARCEL HEREIN DESCRIBED WHICH POINT IS ALSO THE SOUTHWEST CORNER OF LAND NOW OR FORMERLY OF WALDMAN ASSOCIATES, INC. PARTNER AND WHICH POINT IS IN THE NORTHERLY STREET LINE OF WEST MAIN STREET, ALSO KNOWN AS U.S. ROUTE 44, IN THE TOWN OF AVON, COUNTY OF HARTFORD, CONNECTICUT, SAID POINT OF BEGINNING IS LOCATED 72.06 FEET WHEN MEASURED N77°01'08"W FROM AN EXISTING CONNECTICUT HIGHWAY DEPARTMENT MERESTONE, SAID POINT ALSO BEING 28.45 FEET FROM A CONNECTICUT HIGHWAY DEPARTMENT MONUMENT POINT (NOT FOUND) WHEN MEASURED S77°01'08"E IN THE NORTHERLY STREET LINE OF WEST MAIN STREET;

THENCE, N77°01'08"W A DISTANCE OF 28.45 FEET TO A POINT;

THENCE, N71°18'45"W A DISTANCE OF 311.41 FEET TO A POINT OF CURVATURE;

THENCE, ALONG A CURVE TO THE RIGHT WHICH HAS A RADIUS OF 2,544.51 FEET AND A CENTRAL ANGLE OF 01°57'04" AN ARC LENGTH OF 86.66 FEET TO A POINT MARKED BY A CONNECTICUT HIGHWAY DEPARTMENT MERESTONE, SAID POINT ALSO LIES N70°20'14" W A DISTANCE OF 86.65 FEET FROM THE LAST COURSE HEREIN DESCRIBED;

THENCE, N79°05'17"W A DISTANCE OF 95.64 FEET TO A POINT AT THE SOUTHEAST CORNER OF LAND NOW OR FORMERLY OF MICHAEL A. FINE AND JAMES L. FINE, THE LAST FOUR COURSES BEING ALONG THE NORTHERLY STREET LINE OF WEST MAIN STREET;

THENCE, N19°42134"E A DISTANCE OF 300.97 FEET TO A POINT AT THE NORTHEAST CORNER OF LAND NOW OR FORMERLY OF MICHAEL A. AND JAMES L. FINE;

THENCE, N63°50'59"\V A DISTANCE OF 300.10 FEET ALONG LAND NOW OR FORMERLY OF MICHAEL A. AND JAMES L. FINE AND LAND NOW OR FORMERLY OF THE SHELL OIL COMPANY, PARTLY BY EACH TO THE POINT AT THE SOUTHWEST CORNER OF THE PARCEL HEREIN DESCRIBED, SAID POINT ALSO LYING IN THE EASTERLY STREET LINE OF BUSHY HILL ROAD (CONNECTICUT ROUTE 167);

THENCE, N19°38'02"E A DISTANCE OF 379.21 FEET TO A CONNECTICUT HIGHWAY DEPARTMENT MERESTONE; THENCE, S70°23'12"E A DISTANCE OF 17.06 FEET TO A CONNECTICUT HIGHWAY DEPARTMENT MERESTONE; THENCE, N19°3754"E A DISTANCE OF 49.11 FEET TO A CONNECTICUT HIGHWAY DEPARTMENT MERESTONE MARKING A POINT OF CURVATURE;

THENCE, ALONG A CURVE TO THE RIGHT WHICH HAS A RADIUS OF 1,382.69 FEET AND A CENTRAL ANGLE OF 10°28'50" AN ARC LENGTH OF 252.92 FEET TO A POINT, SAID POINT BEING N24°52'31"E A DISTANCE OF 252.57 FEET FROM THE POINT OF CURVATURE, SAID POINT ALSO BEING THE NORTHWEST CORNER OF THE PARCEL HEREIN DESCRIBED, THE LAST FOUR COURSES BEING ALONG THE EASTERLY STREET LINE OF BUSHY HILL ROAD;

THENCE, S70°07'37"E A DISTANCE OF 209.61 FEET ALONG THE SOUTHERLY LINE OF THE SIMSBURY COMMONS NORTH PARCEL DESCRIBED IN THAT CERTAIN WARRANTY DEED GIVEN BY SIMSBURY COMMONS NORTH (E&A), LLC TO E&A / I&G SIMSBURY COMMONS LIMITED PARTNERSHIP, DATED THE DATE HEREOF AND RECORDED WITH THE SIMSBURY LAND RECORDS AND WITH THE AVON LAND RECORDS ON OR ABOUT THE DATE HEREOF (THE "SIMSBURY NORTH PARCEL") TO A POINT;

THENCE, N19°52'23"E A DISTANCE OF 62.08 FEET TO A POINT. THENCE, S70°12'53" E A DISTANCE OF 72.00 FEET TO A POINT. THENCE, 819°47'07"W A DISTANCE OF 46.00 FEE TO A POINT.
THENCE, S70°12'53"E A DISTANCE OF 630.46 FEET TO A POINT IN THE WESTERLY LINE OF LAND NOW OR FORMERLY OF STEVEN J. AND JULIE M. PETERSON. THE LAST FIVE COURSES BEING ALONG THE SOUTHERLY LINE OF THE SIMSBURY COMMONS NORTH PARCEL.

THENCE, S20°14'47"W ALONG LAND NOW OR FORMERLY OF STEVEN J. AND JULIE M. PETERSON A DISTANCE OF 280.08 FEET TO A POINT IN THE NORTHERLY LINE OF LAND NOW OR FORMERLY OF WALDMAN ASSOCIATES, INC. PARTNER;

THENCE, N73°48'27"W A DISTANCE OF 100.00 FEET TO A POINT;

THENCE, S 19°50'27"W A DISTANCE OF 472.39 FEET TO A POINT; THENCE, N70°09'33"W A DISTANCE OF 36.00 FEET TO A POINT;

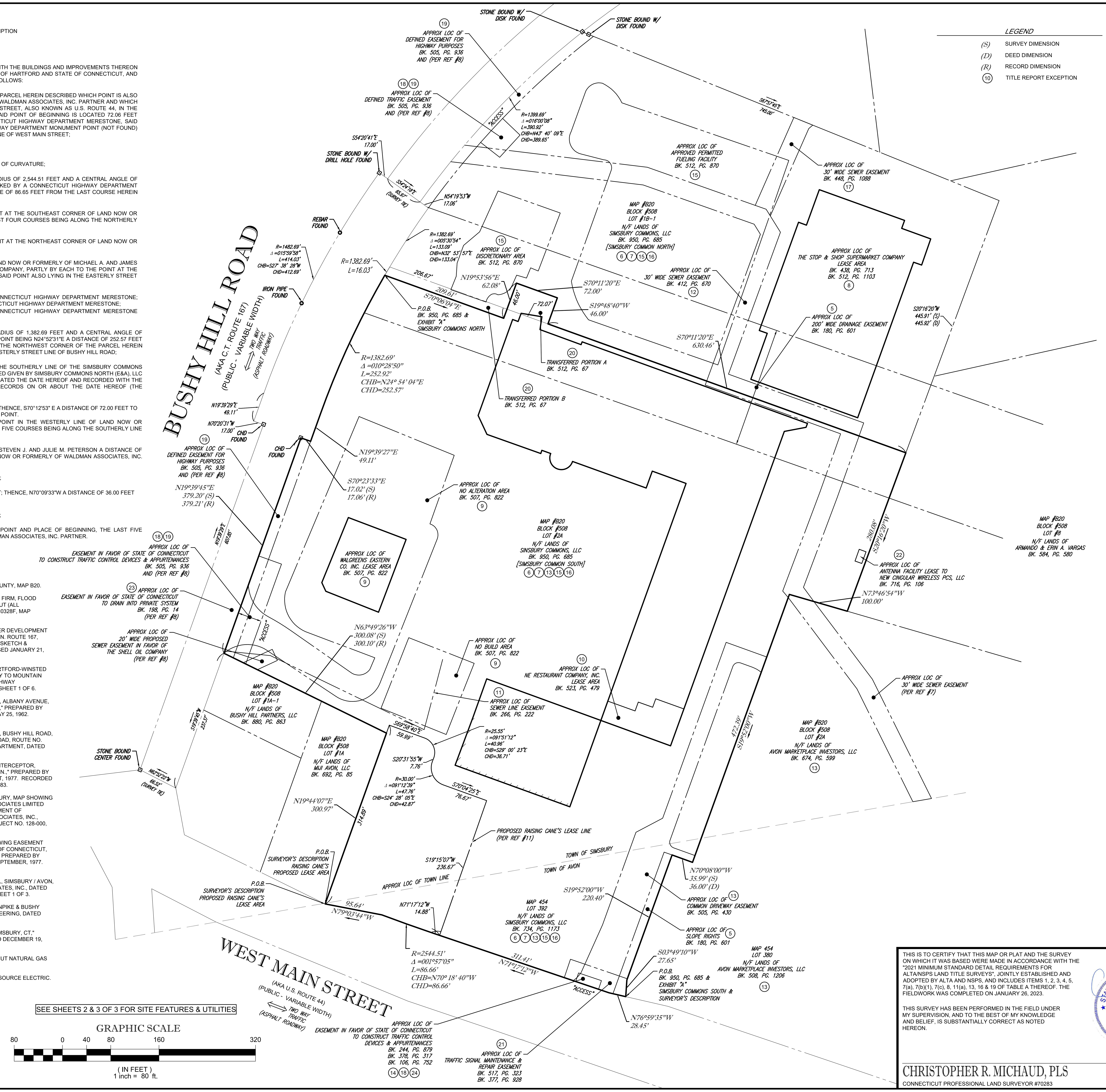
THENCE, S19°50'27"W A DISTANCE OF 220.40 FEET TO A POINT;

THENCE, S03°47'37"W A DISTANCE OF 27.65 FEET TO THE POINT AND PLACE OF BEGINNING, THE LAST FIVE COURSES BEING ALONG LAND NOW OR FORMERLY OF WALDMAN ASSOCIATES, INC. PARTNER.

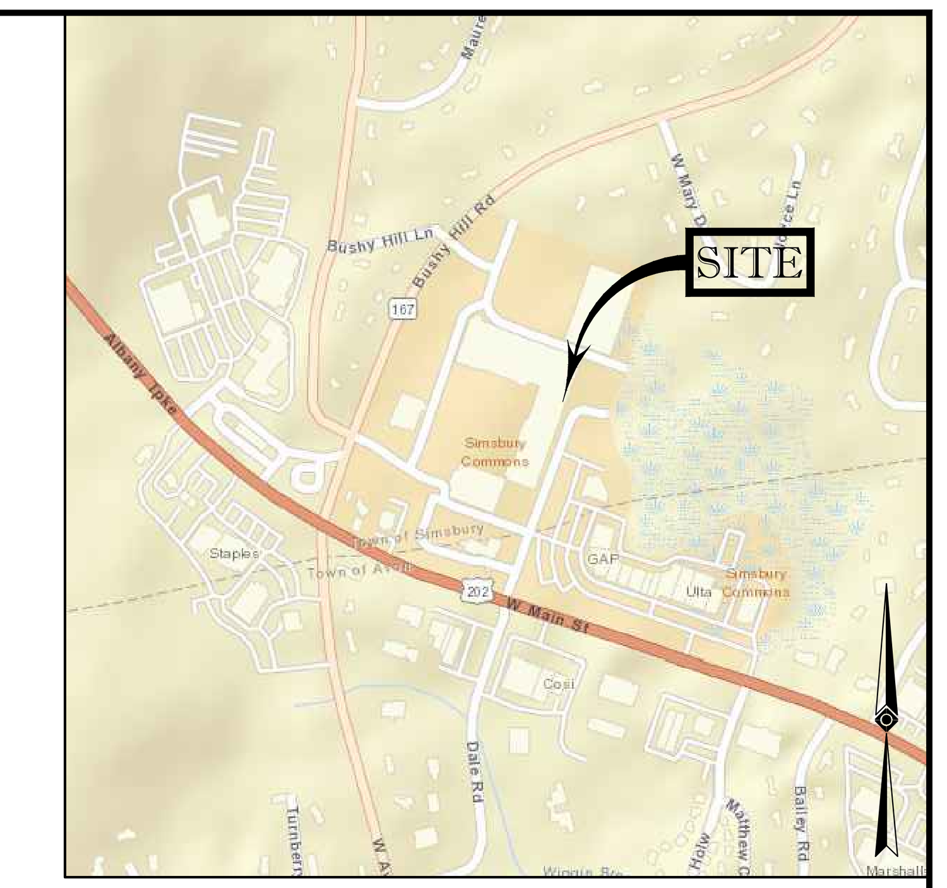
REFERENCES:

1. THE TAX ASSESSOR'S MAP OF SIMSBURY, HARTFORD COUNTY, MAP B20.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, HARTFORD COUNTY, CONNECTICUT (ALL JURISDICTIONS) PANEL 328 OF 675," MAP NUMBER 09003C0328F, MAP EFFECTIVE DATE: SEPTEMBER 26, 2008.
3. MAP ENTITLED "BOUNDARY MAP PREPARED FOR KONOVER DEVELOPMENT CORP., FARMINGTON VALLEY MALL, US ROUTE 44 AT CONN. ROUTE 167, SIMSBURY / AVON, CONNECTICUT," PREPARED BY F.A. HESKETCH & ASSOCIATES, INC., DATED JANUARY 25, 1991. LAST REVISED JANUARY 21, 1993. ONE SHEET.
4. MAP ENTITLED "RIGHT OF WAY MAP, TOWN OF AVON, HARTFORD-WINSTED ROAD, FROM THE SIMBSURY TOWN LINE SOUTHEASTERLY TO MOUNTAIN VIEW AVE," PREPARED BY THE CONNECTICUT STATE HIGHWAY DEPARTMENT, DATED JUNE 12, 1962. PROJECT NO. 4-04, SHEET 1 OF 6.
5. MAP ENTITLED "RIGHT OF WAY MAP, TOWN OF SIMSBURY, ALBANY AVENUE, FROM THE CANTON TOWN LINE TO THE AVON TOWN LINE," PREPARED BY CONNECTICUT STATE HIGHWAY DEPARTMENT, DATED MAY 25, 1962. PROJECT NO. 128-13, SHEET 1 OF 1.
6. MAP ENTITLED "RIGHT OF WAY MAP, TOWN OF SIMSBURY, BUSHY HILL ROAD, FROM ROUTE U.S. 44 NORTHEASTERLY TO WILDWOOD ROAD, ROUTE NO. 167," PREPARED BY CONNECTICUT STATE HIGHWAY DEPARTMENT, DATED JANUARY 10, 1950. PROJECT NO. 128-15, SHEET 1 OF 4.
7. MAP ENTITLED "EASEMENT PLAN, CROWLEY'S CORNER INTERCEPTOR, SANITARY SEWER, SEWER COMMISSION, SIMSBURY, CONN.," PREPARED BY TIGHE & BOND CONSULTING ENGINEERS, DATED AUGUST, 1977. RECORDED WITH THE SIMSBURY LAND RECORDS OFFICE AS MAP #1983.
8. MAP ENTITLED "RIGHT OF WAY SURVEY, TOWN OF SIMSBURY, MAP SHOWING EASEMENT ACQUIRED FROM AVON SIMSBURY MALL ASSOCIATES LIMITED PARTNERSHIP BY THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION," PREPARED BY F.A. HESKETCH & ASSOCIATES, INC., DATED MAY, 1999. LAST REVISED OCTOBER 7, 1999. PROJECT NO. 128-000, SERIAL NO. 74, SHEET 1 OF 1.
9. MAP ENTITLED "TOWNS OF AVON & SIMSBURY, MAP SHOWING EASEMENT ACQUIRED FROM SOCIETY FOR SAVINGS BY THE STATE OF CONNECTICUT, INTERSECTION IMPROVEMENTS OF ROUTES 167 & US 44," PREPARED BY CONNECTICUT STATE HIGHWAY DEPARTMENT, DATED SEPTEMBER, 1977. PROJECT NO. 128-100, SERIAL NO. 3, SHEET 2 OF 2.
10. MAP ENTITLED "UTILITY PLAN, FARMINGTON VALLEY MALL, SIMSBURY / AVON, CONNECTICUT," PREPARED BY F.A. HESKETCH & ASSOCIATES, INC., DATED AUGUST 27, 1998. LAST REVISED FEBRUARY 24, 1999. SHEET 1 OF 3.
11. MAP ENTITLED "CONTEXT SITE PLAN, C935 - ALBANY TURNPIKE & BUSHY HILLS RD - SIMSBURY, CT," PREPARED BY BOHLER ENGINEERING, DATED MARCH 9, 2021. TWO SHEETS.
12. MAP ENTITLED "FIELD SKETCH, 530 BUSHY HILL ROAD, SIMSBURY, CT," PREPARED BY CONTROL POINT ASSOCIATES, INC., DATED DECEMBER 19, 2022. SUE PROJECT #08-220025-00.
13. UNDERGROUND GAS MAPPING PROVIDED BY CONNECTICUT NATURAL GAS COMPANY.
14. UNDERGROUND ELECTRIC MAPPING PROVIDED BY EVERSOURCE ELECTRIC.

THE STATE OF CONNECTICUT REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.



SEE SHEETS 2 & 3 OF 3 FOR SITE FEATURES & UTILITIES



LOCUS MAP
NOT TO SCALE

NOTES:

1. THIS IS A PROPERTY SURVEY PREPARED IN ACCORDANCE WITH THE STANDARDS OF A CLASS A-2 SURVEY AS DEFINED IN THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20-300B, EFFECTIVE DATE JUNE 21, 1996, PARTIALLY AMENDED OCTOBER 26, 2018. THIS SURVEY IS ALSO PREPARED IN ACCORDANCE WITH THE MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT, ADOPTED ON AUGUST 29, 2019, BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC., THE BOUNDARY LINES SHOWN HEREON ARE BASED UPON A RESURVEY OF THE SUBJECT PROPERTY.
2. PROPERTY KNOWN AS LOT 1B AS SHOWN ON THE TOWN OF SIMSBURY, HARTFORD COUNTY, STATE OF CONNECTICUT; MAP NO. B20.

   AREA = 782,633 SQUARE FEET OR 17.967 ACRES.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.

   THE SOURCE OF UNDERGROUND UTILITIES ARE SHOWN UTILIZING A QUALITY LEVEL SYSTEM:

   QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.

   QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.

   QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.

   QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY. LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.

   ALL FOUR TYPES MAY NOT BE PRESENT ON THIS SURVEY.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITH REFERENCE TO A TITLE REPORT PREPARED BY OLD REPUBLIC NATIONAL TITLE COMPANY, HAVING A FILE NO. 2106497, WITH AN EFFECTIVE DATE OF NOVEMBER 24, 2021, WHERE THE FOLLOWING SURVEY RELATED EXCEPTIONS APPEAR IN SCHEDULE B - SECTION 2:

   GENERAL EXCEPTIONS 1 THROUGH 4 ARE NOT SURVEY RELATED AND HAVE NOT BEEN COMMENTED ON AS A PART OF THIS SURVEY. SEE SHEET 2 OF 2 FOR TITLE EXCEPTIONS.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X-UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), PER REF. #2.
7. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
8. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.
9. SURVEYOR'S DESCRIPTION PREPARED PER CLIENT REQUEST.
10. PROPERTY HAS DIRECT ACCESS TO WEST MAIN STREET & BUSHY HILL ROAD.
11. THERE IS NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.
12. MONUMENTATION NOT SET PER CONTRACTUAL AGREEMENT.

SURVEYOR'S
METES AND BOUNDS DESCRIPTION
PROPOSED RAISING CANE'S LEASE AREA
A PORTION OF MAP B20, BLOCK 508, LOT 1B
TOWN OF SIMSBURY
MAP 454, LOT 392
TOWN OF AVON
HARTFORD COUNTY, CONNECTICUT

BEGINNING AT A POINT ALONG THE NORTHERLY LINE OF WEST MAIN STREET (AKA US ROUTE 44; PUBLIC - VARIABLE WIDTH), SAID POINT BEING A CORNER IN COMMON WITH MAP B20, LOT 1A (N/F MIJI AVON, LLC), THENCE;

1. ALONG SAID DIVIDING LINE WITH LOT 1A, NORTH 19 DEGREES - 44 MINUTES - 07 SECONDS EAST, A DISTANCE OF 314.89 FEET, THENCE THROUGH THE INTERIOR OF LOT 392 THE FOLLOWING SIX (6) COURSES;
2. SOUTH 69 DEGREES - 58 MINUTES - 40 SECONDS EAST, A DISTANCE OF 59.99 FEET, THENCE;
3. ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 25.55 FEET, A CENTRAL ANGLE OF 91 DEGREES - 51 MINUTES - 12 SECONDS, AN ARC LENGTH OF 40.96 FEET, A CHORD BEARING OF SOUTH 29 DEGREES - 00 MINUTES - 23 SECONDS EAST, A CHORD LENGTH OF 36.71 FEET TO A POINT, THENCE;
4. SOUTH 20 DEGREES - 31 MINUTES - 55 SECONDS WEST, A DISTANCE OF 7.76 FEET, THENCE;
5. ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 30.00 FEET, A CENTRAL ANGLE OF 91 DEGREES - 12 MINUTES - 39 SECONDS, AN ARC LENGTH OF 47.76 FEET, A CHORD BEARING OF SOUTH 24 DEGREES - 28 MINUTES - 05 SECONDS EAST, A CHORD LENGTH OF 42.87 FEET, THENCE;
6. SOUTH 70 DEGREES - 04 MINUTES - 25 SECONDS EAST, A DISTANCE OF 76.67 FEET, THENCE;
7. SOUTH 19 DEGREES - 15 MINUTES - 07 SECONDS WEST, A DISTANCE OF 236.67 FEET TO A POINT ALONG THE NORTHERLY LINE OF WEST MAIN STREET, THENCE ALONG SAID NORTHERLY LINE THE FOLLOWING THREE (3) COURSES;
8. NORTH 71 DEGREES - 17 MINUTES - 12 SECONDS WEST, A DISTANCE OF 14.88 FEET, THENCE;
9. ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 2,544.51 FEET, A CENTRAL ANGLE OF 01 DEGREES - 57 MINUTES - 05 SECONDS, AN ARC LENGTH OF 86.66 FEET, A CHORD BEARING OF NORTH 70 DEGREES - 18 MINUTES - 40 SECONDS WEST, A CHORD LENGTH OF 86.66 FEET, THENCE;
10. NORTH 79 DEGREES - 03 MINUTES - 44 SECONDS WEST, A DISTANCE OF 95.64 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 52,526 SQUARE FEET OR 1.206 ACRES

No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
3	UPDATE PER ADDITIONAL TOPOGRAPHY	J.D.O.	J.P.M.	C.R.M.	2-3-2023
2	UPDATE PER ADDITIONAL TOPOGRAPHY & UTILITY	C.W.	J.P.M.	C.R.M.	1-23-2023
1	LEASE LINE ADDED	-	R.J.K.	C.E.L.	10-5-2022

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 7(a), 7(b)(1), 7(c), 8, 11(a), 13, 16 & 19 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JANUARY 26, 2023.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

STATE OF CONNECTICUT · CHRISTOPHER R. MICHAUD · No. 70283 · LICENSED LAND SURVEYOR

2-3-2023
DATE

CHRISTOPHER R. MICHAUD, PLS
CONNECTICUT PROFESSIONAL LAND SURVEYOR #70283

FIELD DATE: 1-26-2022
FIELD BOOK NO.: 21-16 MA
FIELD BOOK PG.: 37
FIELD CREW: B.S.B.
DRAWN: R.J.K.

ALTA/NSPS LAND TITLE SURVEY

RAISING CANE'S RESTAURANT, LLC

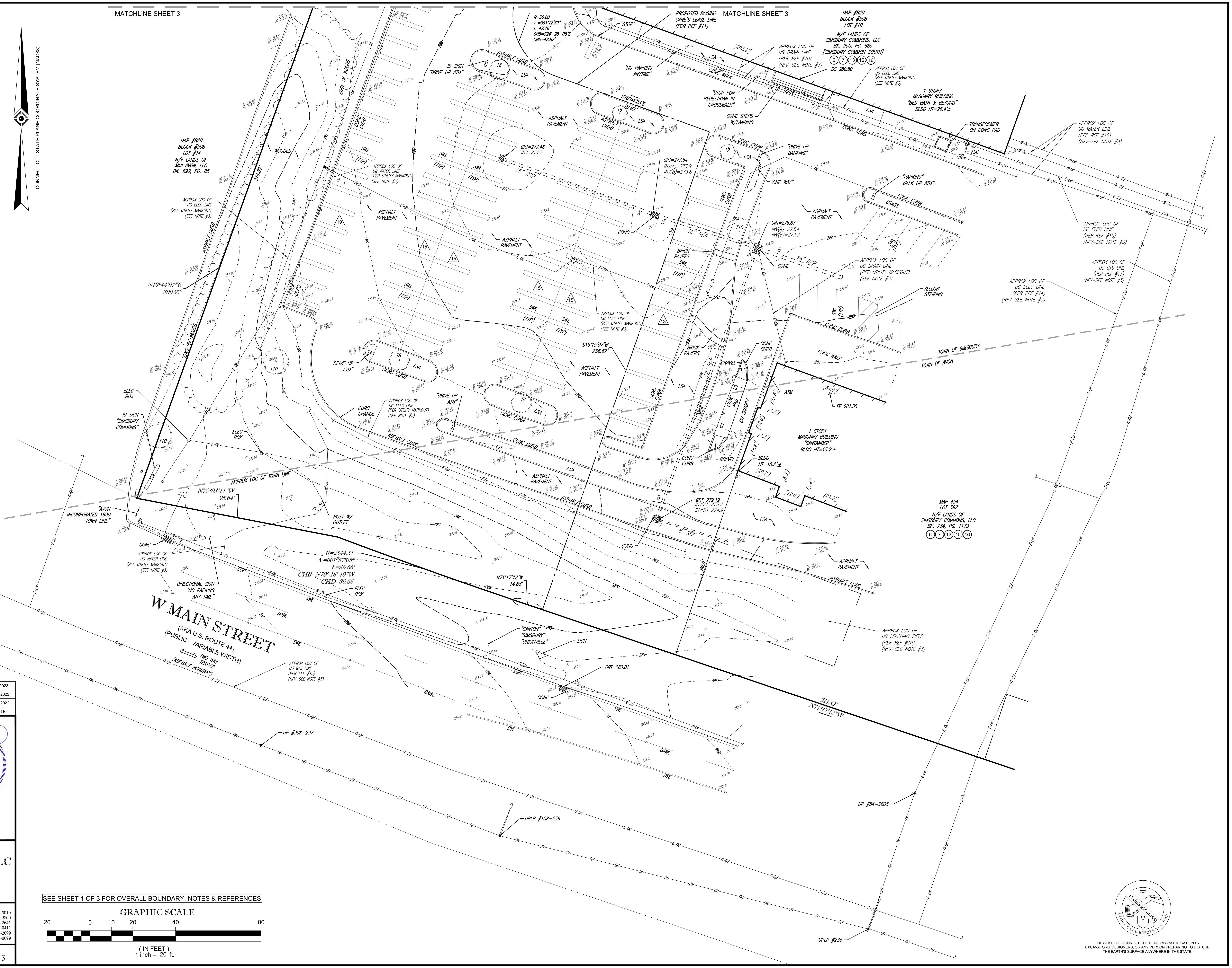
530 BUSHY HILL ROAD
MAP B20, BLOCK 508, LOT 1B
TOWN OF SIMSBURY, HARTFORD COUNTY
STATE OF CONNECTICUT

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
ALBANY, NY 518-217-5010
CHALFONT, PA 215-712-9800
HAUPPAUGE, NY 631-580-2645
MANHATTAN, NY 646-780-0411
MT LAUREL, NJ 609-857-2099
WARREN, NJ 908-668-0099

REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
C.E.L.	C.R.M.	2-23-2022	1"=80'	03-220025	1 OF 3

LEGEND

124 / 125	EXISTING CONTOUR
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXIST. TOP OF CURB ELEVATION
× BC 122.95	EXIST. BOTTOM OF CURB ELEVATION
× TW 123.45	EXIST. TOP OF WALL ELEVATION
× BW 122.95	EXIST. BOTTOM OF WALL ELEVATION
× FF 123.45	EXIST. FINISHED FLOOR ELEVATION
× DS 123.45	EXIST. DOOR SILL ELEVATION
OH	OVERHEAD WIRES
E	APPROX. LOC. UNDERGROUND ELECTRIC LINE
D	APPROX. LOC. UNDERGROUND DRAINAGE LINE
S	APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
W	APPROX. LOC. UNDERGROUND WATER LINE
Qd	QUALITY LEVEL D
Qb	QUALITY LEVEL B
(10)	TITLE REPORT EXCEPTION
UP	UTILITY POLE
UPLP	UTILITY POLE/LIGHT POLE
	HYDRANT
	FIRE DEPARTMENT CONNECTION (F.D.C.)
	ELECTRIC METER
	IRRIGATION VALVE
	UNKNOWN MANHOLE
	CATCH BASINS
	PAINTED ARROWS
	SIGN
	VACUUM
	AREA LIGHT
10	PARKING SPACE COUNT
EOP	EDGE OF PAVEMENT
LSA	LANDSCAPED AREA
MBW	MASONRY BLOCK WALL
SWL	SOLID WHITE LINE
SYL	SOLID YELLOW LINE
DYL	DOUBLE YELLOW LINE
HT	HEIGHT
DAWL	DASHED WHITE LINE
BLDG	BUILDING



SEE SHEET 1 OF 3 FOR OVERALL BOUNDARY, NOTES & REFERENCES

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CALL BEFORE YOU DIG

THE STATE OF CONNECTICUT REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.

No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
3	UPDATE PER ADDITIONAL TOPOGRAPHY	J.D.O.	J.P.M.	C.R.M.	2-3-2023
2	UPDATE PER ADDITIONAL TOPOGRAPHY & UTILITY	C.W.	J.P.M.	C.R.M.	1-23-2023
1	LEASE LINE ADDED	-	R.J.K.	C.E.L.	10-5-2022

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THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

STATE OF CONNECTICUT · CHRISTOPHER R. MICHAUD · No. 70283 · LICENSED LAND SURVEYOR

2-3-2023
DATE

CHRISTOPHER R. MICHAUD, PLS
CONNECTICUT PROFESSIONAL LAND SURVEYOR #70283

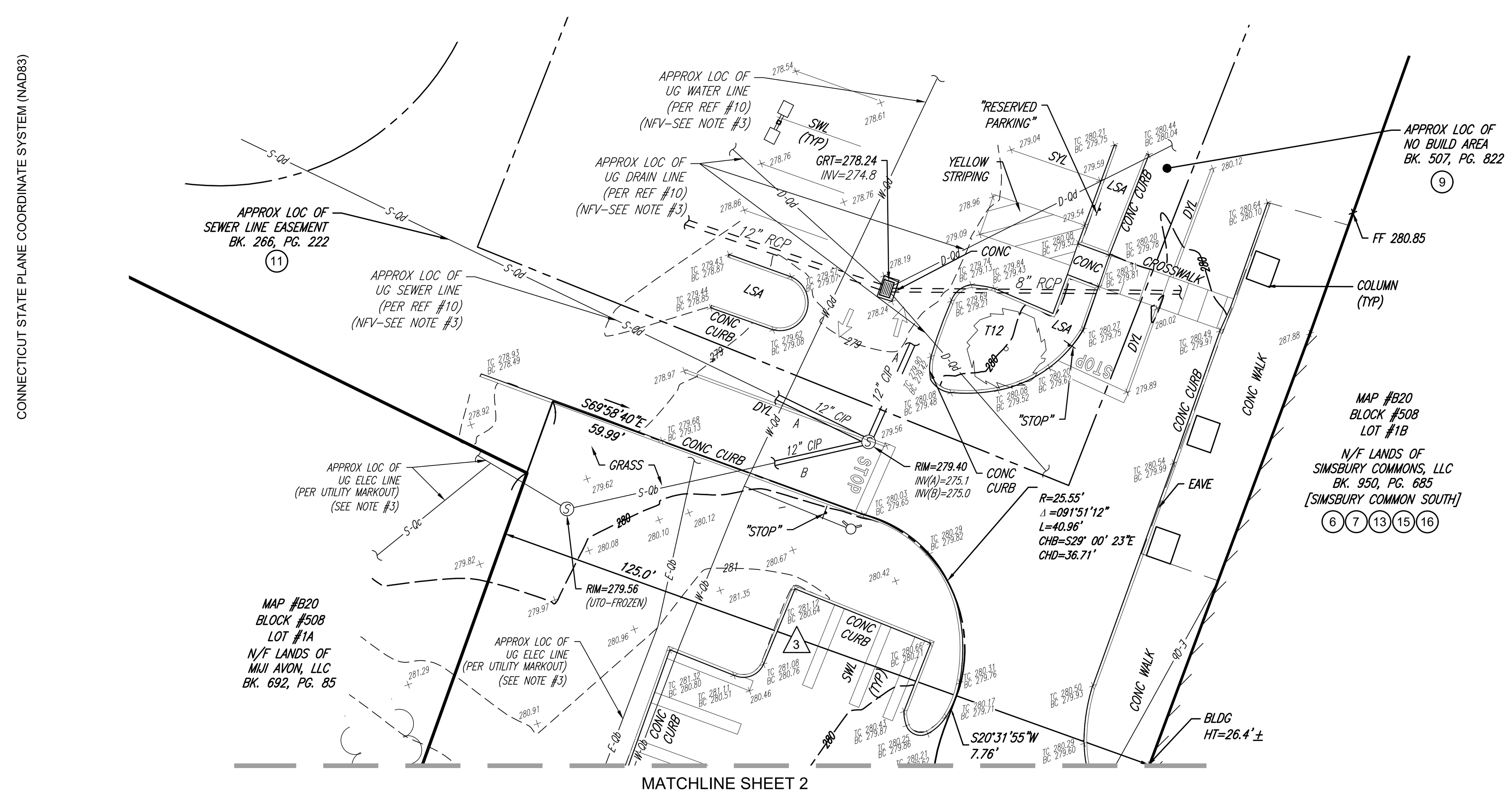
FIELD DATE	
1-26-2022	**ALTA/NSPS LAND TITLE SURVEY**
FIELD BOOK NO. 21-16 MA	**RAISING CANE'S RESTAURANT, LLC**
FIELD BOOK PG. 37	530 BUSHY HILL ROAD MAP B20, BLOCK 508, LOT 1B TOWN OF SIMSBURY, HARTFORD COUNTY STATE OF CONNECTICUT

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX

ALBANY, NY 518-217-5010
CHALFONT, PA 215-712-9800
HAUPPAUGE, NY 631-580-2645
MANHATTAN, NY 646-780-0411
MT LAUREL, NJ 609-857-2099
WARREN, NJ 908-668-0099

FIELD CREW	DRAWN:
B.S.B.	R.J.K.

REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
C.E.L.	C.R.M.	2-23-2022	1"=20'	03-220025	2 OF 3



LEGEND

- 124 / 125 — EXISTING CONTOUR
- × 123.45 — EXISTING SPOT ELEVATION
- × TC 123.45 — EXIST. TOP OF CURB ELEVATION
- × BC 122.95 — EXIST. BOTTOM OF CURB ELEVATION
- × TW 123.45 — EXIST. TOP OF WALL ELEVATION
- × BW 122.95 — EXIST. BOTTOM OF WALL ELEVATION
- × FF 123.45 — EXIST. FINISHED FLOOR ELEVATION
- × DS 123.45 — EXIST. DOOR SILL ELEVATION
- OH — OVERHEAD WIRES
- E — APPROX. LOC. UNDERGROUND ELECTRIC LINE
- D — APPROX. LOC. UNDERGROUND DRAINAGE LINE
- S — APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
- W — APPROX. LOC. UNDERGROUND WATER LINE
- Qd — QUALITY LEVEL D
- Qb — QUALITY LEVEL B
- (10) — TITLE REPORT EXCEPTION
- UP — UTILITY POLE
- UPLP — UTILITY POLE/LIGHT POLE
- HYDRANT
- FIRE DEPARTMENT CONNECTION (F.D.C.)
- ELECTRIC METER
- IRRIGATION VALVE
- UNKNOWN MANHOLE
- CATCH BASINS
- PAINTED ARROWS
- SIGN
- VACUUM
- AREA LIGHT
- (10) — PARKING SPACE COUNT
- EOP — EDGE OF PAVEMENT
- LSA — LANDSCAPED AREA
- MBW — MASONRY BLOCK WALL
- SWL — SOLID WHITE LINE
- SYL — SOLID YELLOW LINE
- DYL — DOUBLE YELLOW LINE
- HT — HEIGHT
- DAWL — DASHED WHITE LINE
- BLDG — BUILDING

SURVEYOR'S
METES AND BOUNDS DESCRIPTION
MAP B20, BLOCK 508, LOT 1B
TOWN OF SIMSBURY
MAP 454, LOT 392
TOWN OF AVON
HARTFORD COUNTY, CONNECTICUT

BEGINNING AT A POINT ALONG THE NORTHERLY LINE OF WEST MAIN STREET (AKA US ROUTE 44; PUBLIC - VARIABLE WIDTH), SAID POINT BEING A CORNER IN COMMON WITH MAP 454, LOT 380 (N/F AVON MARKETPLACE INVESTORS, LLC), THENCE RUNNING ALONG SAID NORTHERLY LINE THE FOLLOWING FOUR (4) COURSES;

1. NORTH 76 DEGREES - 59 MINUTES - 35 SECONDS WEST, A DISTANCE OF 28.45 FEET, THENCE;
2. NORTH 71 DEGREES - 17 MINUTES - 12 SECONDS WEST, A DISTANCE OF 311.41 FEET, THENCE;
3. ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 2,544.51 FEET, A CENTRAL ANGLE OF 01 DEGREES - 57 MINUTES - 05 SECONDS, AN ARC LENGTH OF 86.66 FEET, A CHORD BEARING OF NORTH 70 DEGREES - 18 MINUTES - 40 SECONDS WEST, A CHORD LENGTH OF 86.66 FEET TO A POINT OF NON-TANGENCY, THENCE;
4. NORTH 79 DEGREES - 03 MINUTES - 44 SECONDS WEST, A DISTANCE OF 95.64 FEET, THENCE DEPARTING SAID NORTHERLY LINE, RUNNING PASSING THROUGH THE SIMSBURY-AVON TOWN LINE, RUNNING ALONG THE DIVIDING LINE WITH MAP B20, BLOCK 508, LOT 1A (N/F MIJI AVON, LLC) & MAP B20, BLOCK 508, LOT 1A-1 (N/F BUSHY HILL PARTNERS, LLC) THE FOLLOWING TWO (2) COURSES;
5. NORTH 19 DEGREES - 44 MINUTES - 07 SECONDS EAST, A DISTANCE OF 300.97 FEET, THENCE;
6. NORTH 63 DEGREES - 49 MINUTES - 26 SECONDS WEST, A DISTANCE OF 300.08 FEET TO A POINT ALONG THE EASTERLY LINE OF BUSHY HILL ROAD (AKA CONN. ROUTE 167; PUBLIC - VARIABLE WIDTH), THENCE ALONG SAID EASTERLY LINE THE FOLLOWING FOUR (4) COURSES;
7. NORTH 19 DEGREES - 39 MINUTES - 45 SECONDS EAST, A DISTANCE OF 379.20 FEET TO A CONNECTICUT HIGHWAY BOUND FOUND, THENCE;
8. SOUTH 70 DEGREES - 23 MINUTES - 33 SECONDS EAST, A DISTANCE OF 17.02 FEET, THENCE;
9. NORTH 19 DEGREES - 39 MINUTES - 27 SECONDS EAST, A DISTANCE OF 49.11 FEET, THENCE;
10. ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 1,382.69 FEET, A CENTRAL ANGLE OF 10 DEGREES - 28 MINUTES - 50 SECONDS, AN ARC LENGTH OF 252.92 FEET, A CHORD BEARING OF NORTH 24 DEGREES - 54 MINUTES - 04 SECONDS EAST, A CHORD LENGTH OF 252.57 FEET, THENCE DEPARTING SAID EASTERLY LINE, RUNNING ALONG THE DIVIDING LINE WITH MAP B20, BLOCK 508, LOT 1B-1 (N/F SIMSBURY COMMONS, LLC) THE FOLLOWING FIVE (5) COURSES;
11. SOUTH 70 DEGREES - 06 MINUTES - 04 SECONDS EAST, A DISTANCE OF 209.61 FEET, THENCE;
12. NORTH 19 DEGREES - 53 MINUTES - 56 SECONDS EAST, A DISTANCE OF 62.08 FEET, THENCE;
13. SOUTH 70 DEGREES - 11 MINUTES - 20 SECONDS EAST, A DISTANCE OF 72.00 FEET, THENCE;
14. SOUTH 19 DEGREES - 48 MINUTES - 40 SECONDS WEST, A DISTANCE OF 46.00 FEET, THENCE;
15. SOUTH 70 DEGREES - 11 MINUTES - 20 SECONDS EAST, A DISTANCE OF 630.46 FEET, THENCE;
16. ALONG THE DIVIDING LINE WITH MAP B20, BLOCK 508, LOT 8 (N/F ARMANDO & ERIN A. VARGAS), SOUTH 20 DEGREES - 16 MINUTES - 20 SECONDS WEST, A DISTANCE OF 280.08 FEET, THENCE ALONG THE DIVIDING LINE WITH MAP B20, BLOCK 508, LOT 2A (N/F AVON MARKETPLACE INVESTORS, LLC) THE FOLLOWING TWO (2) COURSES;
17. NORTH 73 DEGREES - 46 MINUTES - 54 SECONDS WEST, A DISTANCE OF 100.00 FEET, THENCE;
18. SOUTH 19 DEGREES - 52 MINUTES - 00 SECONDS, A DISTANCE OF 472.39 FEET, THENCE ALONG THE DIVIDING LINE WITH SAID LOT 380 THE FOLLOWING THREE (3) COURSES;
19. NORTH 70 DEGREES - 08 MINUTES - 00 SECONDS WEST, A DISTANCE OF 35.99 FEET, THENCE;
20. SOUTH 19 DEGREES - 52 MINUTES - 00 SECONDS WEST, A DISTANCE OF 220.40 FEET, THENCE;
21. SOUTH 03 DEGREES - 49 MINUTES - 10 SECONDS WEST, A DISTANCE OF 27.65 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 782,633 SQUARE FEET OR 17.967 ACRES

(5) EASEMENTS SET FORTH IN A QUITCLAIM DEED FROM NEWTOWN MACDONALD TO ALLAN HUTENSKY, TRUSTEE DATED OCTOBER 20, 1969 AND RECORDED IN VOLUME 180, PAGE 601 OF THE SIMSBURY LAND RECORDS - **200' WIDE DRAINAGE EASEMENT SHOWN HEREON.**

(6) TERMS AND CONDITIONS CONTAINED IN THAT CERTAIN LEASE BETWEEN ALAN HUTENSKY, TRUSTEE. AS LANDLORD AND SUBURBAN STORES CORPORATION, AS TENANT DATED APRIL 14, 1970 AS SET FORTH IN NOTICE OF LEASE FROM ALLAN HUTENSKY, TRUSTEE TO SUBURBAN STORES CORPORATION DATED NOVEMBER 16, 1970 AND RECORDED IN VOLUME 187 AT PAGE 262 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 69 AT PAGE 268 OF THE AVON LAND RECORDS; AS AMENDED BY AMENDMENT DATED MAY 1, 1993 AND RECORDED IN VOLUME 411 AT PAGE 64 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 277 AT PAGE 625 OF THE AVON LAND RECORDS; AS FURTHER AMENDED BY SECOND AMENDMENT OF LEASE DATED DECEMBER 22, 1993 AND RECORDED IN VOLUME 595 AT PAGE 569 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 445 AT PAGE 32 OF THE AVON LAND RECORDS; AS THE INTEREST OF D&L STORES CORP. ("D&L" AS SUCCESSOR-IN-INTEREST TO SUBURBAN) WAS ASSIGNED TO FVM REALTY CORPORATION ("FVM REALTY") BY ASSIGNMENT OF LEASE DATED SEPTEMBER 21, 1994 AND RECORDED IN VOLUME 595 AT PAGE 572 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 445 AT PAGE 35 OF THE AVON LAND RECORDS; AS SUCH ASSIGNMENT OF LEASE WAS AMENDED PURSUANT TO AN AMENDMENT TO ASSIGNMENT OF LEASE BETWEEN D&L AND FVM REALTY DATED AS OF SEPTEMBER 1, 1997 AND RECORDED IN VOLUME 595 AT PAGE 578 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 445 AT PAGE 41 OF THE AVON LAND RECORDS; AS ASSIGNED AND ASSUMED BY ASSIGNMENT AND ASSUMPTION OF LEASE BY AND BETWEEN THREE D DEPARTMENTS, INC. AND BED BATH AND BEYOND, INC. DATED OCTOBER 28, 1999 AND RECORDED IN VOLUME 520 AT PAGE 151 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 380 AT PAGE 771 OF THE AVON LAND RECORDS; AS AMENDED AND RESTATED BY AMENDED AND RESTATED NOTICE OF LEASE DATED DECEMBER 22, 1999 AND RECORDED IN VOLUME 520 AT PAGE 157 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 380 AT PAGE 777 OF THE AVON LAND RECORDS; AS MODIFIED BY RECOGNITION AGREEMENT DATED DECEMBER 22, 1999 AND RECORDED IN VOLUME 520 AT PAGE 163 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 380 AT PAGE 783 OF THE AVON LAND RECORDS; AS AMENDED BY AMENDMENT TO AMENDED AND RESTATED NOTICE OF LEASE DATED JANUARY 2, 2000 AND RECORDED IN VOLUME 572 AT PAGE 177 OF THE SIMSBURY LAND RECORDS; AS FURTHER AMENDED BY AMENDMENT TO RECOGNITION AGREEMENT DATED JANUARY 2, 2002 AND RECORDED IN VOLUME 572 AT PAGE 181 OF THE SIMSBURY LAND RECORDS; AS ASSIGNED AND ASSUMED BY VIRTUE OF A QUIT CLAIM DEED TO SIMSBURY COMMONS SOUTH (E&A), LLC DATED NOVEMBER 15, 2002 AND RECORDED IN VOLUME 595 AT PAGE 589 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 445, PAGE 52 OF THE AVON LAND RECORDS; FVM REALTY CORPORATION TRANSFERRED ITS INTEREST BY VIRTUE OF A QUIT CLAIM DEED AND ASSIGNMENT FROM FVM REALTY CORPORATION TO SIMSBURY COMMONS SOUTH (E&A), LLC DATED NOVEMBER 15, 2002 AND RECORDED IN VOLUME 595 AT PAGE 595 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 445 AT PAGE 58 OF THE AVON LAND RECORDS; AS FURTHER ASSIGNED AND ASSUMED BY ASSIGNMENT AND ASSUMPTION OF LEASE BY SIMSBURY COMMONS SOUTH (E&A), LLC TO E&A/I&G SIMSBURY COMMONS LIMITED PARTNERSHIP DATED SEPTEMBER 4, 2004 AND RECORDED IN VOLUME 676 AT PAGE 606 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 510 AT PAGE 949 OF THE AVON LAND RECORDS; AS AMENDED BY SECOND AMENDMENT TO AMENDED AND RE-STATED NOTICE TO LEASE DATED JANUARY 27, 2012 AND RECORDED IN VOLUME 829 AT PAGE 130 OF THE SIMSBURY LAND RECORDS. (SEE SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT AGREEMENT BETWEEN HOMETOWN BANK AND BED BATH & BEYOND INC. DATED NOVEMBER 21, 2019 AND RECORDED NOVEMBER 13, 2020 IN VOLUME 952, PAGE 84 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 736, PAGE 553 OF THE AVON LAND RECORDS.) - **BLANKET IN NATURE; SIMSBURY COMMONS NORTH & SOUTH SHOWN HEREON.**

(7) NOTICE OF LEASE FROM SIMON KONOVER TO SOCIETY FOR SAVINGS DATED FEBRUARY 22, 1971 AND RECORDED IN VOLUME 188, PAGE 354 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 70, PAGE 279 OF THE AVON LAND RECORDS AND NOTICE OF COMMENCEMENT DATE OF LEASE BY AND BETWEEN SIMON KONOVER AND SOCIETY FOR SAVINGS DATED JUNE 30, 1971 AND RECORDED IN VOLUME 191, PAGE 376 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 72, PAGE 215 OF THE AVON LAND RECORDS. (SEE SUBORDINATION, NON- DISTURBANCE AND ATTORNMENT AGREEMENT BETWEEN SIMSBURY COMMONS, LLC HOMETOWN BANK AND SANTANDER BANK, N.A. DATED NOVEMBER 21, 2019 AND RECORDED JANUARY 13, 2020 IN VOLUME 952, PAGE 14 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 736, PAGE 483 OF THE AVON LAND RECORDS) - **BLANKET IN NATURE; SIMSBURY COMMONS NORTH & SOUTH SHOWN HEREON.**

(8) SHORT FORM AND NOTICE OF AMENDMENT AND RESTATEMENT OF LEASE DATED DECEMBER 15, 1992 AND RECORDED IN VOLUME 405 AT PAGE 181 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 272 AT PAGE 713 OF THE AVON LAND RECORDS; ASSIGNMENT AND ASSUMPTION OF LEASE BY AND AMONG SIMON KONOVER, FVM-NORTH LIMITED PARTNERSHIP AND THE STOP & SHOP SUPERMARKET COMPANY DATED DECEMBER 14, 1994 AND RECORDED IN VOLUME 438 AT PAGE 713 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 302 AT PAGE 829 OF THE AVON LAND RECORDS; AGREEMENT BY AND BETWEEN SIMON KONOVER, FVM-NORTH LIMITED PARTNERSHIP AND THE STOP & SHOP SUPERMARKET COMPANY DATED DECEMBER 14, 1994 AND RECORDED IN VOLUME 438 AT PAGE 719 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 302 AT PAGE 835 OF THE AVON LAND RECORDS; SUBORDINATION, RECOGNITION AND CONSENT BY THE STOP & SHOP SUPERMARKET COMPANY TO AVON SIMSBURY MALL ASSOCIATED LIMITED PARTNERSHIP, FVM-NORTH LIMITED PARTNERSHIP AND FVM-SOUTH LIMITED PARTNERSHIP DATED JULY 22, 1999 AND RECORDED IN VOLUME 512 AT PAGE 884 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 373 AT PAGE 183 OF THE AVON LAND RECORDS. SEE ALSO REAFFIRMATION AGREEMENT DATED JULY 26, 1999 AND RECORDED IN VOLUME 512 AT PAGE 1103 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 373 AT PAGE 484 OF THE AVON LAND RECORDS. (SEE SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT AGREEMENT BETWEEN HOMETOWN BANK, THE STOP & SHOP SUPERMARKET COMPANY LLC AND SIMSBURY COMMONS, LLC DATED NOVEMBER 21, 2019 AND RECORDED JANUARY 13, 2020 IN VOLUME 952, PAGE 1 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 736, PAGE 470 OF THE AVON LAND RECORDS.) - **STOP & SHOP LEASE AREA SHOWN HEREON.**

(9) MEMORANDUM OF AMENDED AND RESTATED LEASE BETWEEN FVM-SOUTH LIMITED PARTNERSHIP AND WALGREEN EASTERN CO., INC. DATED MARCH 26, 1999 AND RECORDED IN VOLUME 507 AT PAGE 822 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 368 AT PAGE 370 OF THE AVON LAND RECORDS. (CONSENT AND NON-DISTURBANCE AGREEMENT RECORDED MAY 19, 1999 IN VOLUME 509, PAGE 290 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 369, PAGE 872 OF THE AVON LAND RECORDS.) (SEE SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT AGREEMENT BETWEEN HOMETOWN BANK, SIMSBURY COMMONS, LLC AND WALGREEN EASTERN CO., INC. DATED NOVEMBER 21, 2019 AND RECORDED JANUARY 13, 2020 IN VOLUME 952, PAGE 115 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 736, PAGE 584 OF THE AVON LAND RECORDS.) - **WALGREEN'S LEASE AREA SHOWN HEREON.**

(10) NOTICE OF LEASE BETWEEN FVM-SOUTH LIMITED PARTNERSHIP (LANDLORD) AND NE RESTAURANT COMPANY, INC. (TENANT) DATED JANUARY 20, 2000 AND RECORDED IN VOLUME 523 AT PAGE 479 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 383 AT PAGE 853 OF THE AVON LAND RECORDS. TENANT'S INTEREST IN THE LEASE WAS ASSIGNED AND ASSUMED BY BRINKER CONNECTICUT CORPORATION BY VIRTUE OF THE ASSIGNMENT AND ASSUMPTION OF LEASES DATED APRIL 12, 2001 AND RECORDED IN VOLUME 542 AT PAGE 90 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 401 AT PAGE 942 OF THE AVON LAND RECORDS; ASSIGNED TO PEPPER DINING, INC. BY ASSIGNMENT RECORDED MAY 19, 2008 IN VOLUME 756, PAGE 613 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 575, PAGE 764 OF THE AVON LAND RECORDS. (SEE SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT AGREEMENT BETWEEN PEPPER DINING, INC., HOMETOWN BANK, AND SIMSBURY COMMONS LLC DATED NOVEMBER 21, 2019 AND RECORDED JANUARY 13, 2020 IN VOLUME 952, PAGE 106 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 736, PAGE 575 OF THE AVON LAND RECORDS AND IN VOLUME 197 AT PAGE 797 OF THE SIMSBURY LAND RECORDS - **LEASE AREA SHOWN HEREON.**

(11) EASEMENT FROM SIMON KONOVER TO R.H.C. ASSOCIATES AND FRANCHISE REALTY INTERSTATE CORPORATION DATED MAY 9, 1983 AND RECORDED IN VOLUME 266, PAGE 222 OF THE SIMSBURY LAND RECORDS - **SEWER LINE EASEMENT SHOWN HEREON.**

(12) SEWER LINE EASEMENT TO THE TOWN OF SIMSBURY DATED MAY 14, 1993 AND RECORDED IN VOLUME 412 AT PAGE 670 OF THE SIMSBURY LAND RECORDS - **30' WIDE SEWER EASEMENT SHOWN HEREON.**

(13) EASEMENT AND DEVELOPMENT AGREEMENT BETWEEN SIMON KONOVER AND JON T. LORENSON DATED AUGUST 3, 1990 AND RECORDED IN VOLUME 375 AT PAGE 245 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 240 AT PAGE 668 OF THE AVON LAND RECORDS; AS RE-RECORDED ON JANUARY 18, 1991 IN VOLUME 242 AT PAGE 421 OF THE AVON LAND RECORDS; AS AMENDED BY AMENDMENT DATED AUGUST 2, 1992 AND RECORDED IN VOLUME 404 AT PAGE 78 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 270 AT PAGE 923 OF THE AVON LAND RECORDS; AS FURTHER AMENDED DATED DECEMBER 13, 1993 AND RECORDED IN VOLUME 423 AT PAGE 984 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 289 AT PAGE 695 OF THE AVON LAND RECORDS (SEE CERTIFICATE RECORDED DECEMBER 30, 1993 IN VOLUME 423 AT PAGE 934 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 289 AT PAGE 655 OF THE AVON LAND RECORDS); AS FURTHER AMENDED BY THIRD AMENDMENT TO EASEMENT AND DEVELOPMENT AGREEMENT DATED MARCH 11, 1999 AND RECORDED IN VOLUME 505 AT PAGE 430 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 365 AT PAGE 935 OF THE AVON LAND RECORDS - **COMMON DRIVEWAY EASEMENT SHOWN HEREON.**

(14) ORDER BY THE STATE OF CONNECTICUT TRAFFIC COMMISSION DATED FEBRUARY 20, 1991 AND RECORDED IN VOLUME 378 AT PAGE 317 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 244 AT PAGE 877 OF THE AVON LAND RECORDS - **TRAFFIC EASEMENTS SHOWN HEREON.**

(15) LETTER AND TRAFFIC INVESTIGATION REPORT OF THE STATE OF CONNECTICUT TRAFFIC COMMISSION DATED FEBRUARY 27, 1992 AND RECORDED IN VOLUME 391 AT PAGE 754 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 259, PAGE 794 OF THE AVON LAND RECORDS. OF THE AVON LAND RECORDS AND AMENDED AND RESTATED RECIPROCAL EASEMENT AGREEMENT DATED DECEMBER 14, 1994 AND RECORDED IN VOLUME 438 AT PAGE 674 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 302 AT PAGE 787 OF THE AVON LAND RECORDS (SEE SUBORDINATION BY AVON SIMSBURY MALL ASSOCIATES LIMITED PARTNERSHIP AND FVM-SOUTH LIMITED PARTNERSHIP DATED JUNE 30, 1995 AND RECORDED IN VOLUME 444, PAGE 428 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 308, PAGE 782 OF THE AVON LAND RECORDS); AS ASSIGNED BY ASSIGNMENT AND ASSUMPTION OF LEASES AND CONSTRUCTION, OPERATION AND RECIPROCAL EASEMENT AGREEMENT BY AND BETWEEN SIMON KONOVER (ASSIGNOR) AND SIMON KONOVER AND SK COMMERCIAL CORPORATION (ASSIGNEE) DATED APRIL 13, 1995 AND RECORDED IN VOLUME 444 AT PAGE 263 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 308 AT PAGE 611 OF THE AVON LAND RECORDS; AS FURTHER ASSIGNED BY ASSIGNMENT TO AVON MALL ASSOCIATES LIMITED PARTNERSHIP DATED JUNE 30, 1995 AND RECORDED IN VOLUME 444 AT PAGE 326 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 308 AT PAGE 665 OF THE AVON LAND RECORDS; (CONSENT AND SUBORDINATION BY THE STOP AND SHOP SUPERMARKET COMPANY RECORDED IN VOLUME 448 AT PAGE 1094 OF THE SIMSBURY LAND RECORDS) AS AMENDED BY FIRST AMENDMENT TO AMENDED AND RESTATED CONSTRUCTION, OPERATION AND RECIPROCAL EASEMENT AGREEMENT DATED JULY 9, 1999 AND RECORDED IN VOLUME 512 AT PAGE 870 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 373 AT PAGE 169 OF THE AVON LAND RECORDS; AS ASSIGNED BY QUIT CLAIM DEED AND ASSIGNMENT TO SIMSBURY COMMONS SOUTH (E&A), LLC DATED NOVEMBER 15, 2002 AND RECORDED NOVEMBER 21, 2002 IN VOLUME 595, PAGE 584 AND IN VOLUME 595, PAGE 589 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 445, PAGE 5 OF THE AVON LAND RECORDS - **TRAFFIC EASEMENTS, FUELING FACILITY & SIMSBURY COMMONS NORTH & SOUTH SHOWN HEREON.**

(16) DECLARATION OF UNIFIED SITE PLAN BY SIMON KONOVER, FVM-NORTH LIMITED PARTNERSHIP AND FVM-SOUTH LIMITED PARTNERSHIP DATED DECEMBER 14, 1994 AND RECORDED IN VOLUME 438 AT PAGE 702 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 302 AT PAGE 817 OF THE AVON LAND RECORDS - **APPROVAL OF SITE PLAN MODIFICATION; SIMSBURY COMMONS NORTH & SOUTH SHOWN HEREON.**

(17) SEWER EASEMENT FROM AVON SIMSBURY MALL ASSOCIATES LIMITED PARTNERSHIP TO THE TOWN OF SIMSBURY DATED OCTOBER 18, 1995 AND RECORDED IN VOLUME 448 AT PAGE 1088 OF THE SIMSBURY LAND RECORDS; (SEE CONSENT AND SUBORDINATION BY FVM-NORTH LIMITED PARTNERSHIP RECORDED IN VOLUME 448 AT PAGE 1094 OF THE SIMSBURY LAND RECORDS. (CONSENT AND SUBORDINATION BY THE STOP AND SHOP SUPERMARKET COMPANY RECORDED IN VOLUME 448 AT PAGE 1096 OF THE SIMSBURY LAND RECORDS) - **30' WIDE SEWER EASEMENT SHOWN HEREON.**

(18) ORDER BY THE STATE OF CONNECTICUT STATE TRAFFIC COMMISSION DATED JANUARY 20, 1999 AND RECORDED APRIL 14, 1999 IN VOLUME 507, PAGE 281 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 367, PAGE 1023 OF THE AVON LAND RECORDS - **TRAFFIC EASEMENTS SHOWN HEREON.**

(19) EASEMENT FROM AVON/SIMSBURY ASSOCIATES LIMITED PARTNERSHIP, FVM-NORTH LIMITED PARTNERSHIP AND FVM-SOUTH LIMITED PARTNERSHIP TO THE STATE OF CONNECTICUT DATED MARCH 16, 1999 AND RECORDED IN VOLUME 505 AT PAGE 936 OF THE SIMSBURY LAND RECORDS - **EASEMENTS FOR HIGHWAY PURPOSES SHOWN HEREON.**

(20) BOUNDARY LINE AGREEMENT AND DECLARATION BY AND AMONG AVON SIMSBURY MALL ASSOCIATES LIMITED PARTNERSHIP, FVM-NORTH LIMITED PARTNERSHIP AND FVM-SOUTH LIMITED PARTNERSHIP DATED JULY 7, 1999 AND RECORDED IN VOLUME 512 AT PAGE 67 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 372 AT PAGE 390 OF THE AVON LAND RECORDS - **TRANSFERRED PORTIONS A & B SHOWN HEREON.**

(21) EASEMENT FROM AVON SIMSBURY MALL ASSOCIATES LIMITED PARTNERSHIP, FVM-NORTH LIMITED PARTNERSHIP AND FVM-SOUTH LIMITED PARTNERSHIP TO THE STATE OF CONNECTICUT DATED OCTOBER 18, 1999 AND RECORDED IN VOLUME 517 AT PAGE 323 OF THE SIMSBURY LAND RECORDS AND IN VOLUME 377 AT PAGE 928 OF THE AVON LAND RECORDS - **TRAFFIC SIGNAL MAINTENANCE EASEMENT SHOWN HEREON.**

(22) MEMORANDUM OF LEASE BETWEEN E&A/I&G SIMSBURY COMMONS LIMITED PARTNERSHIP AND NEW CINGULAR WIRELESS PCS, LLC DATED SEPTEMBER 23, 2005 AND RECORDED JUNE 21, 2006 IN VOLUME 716 PAGE 106 OF THE SIMSBURY LAND RECORDS - **CELL TOWER LEASE AREA SHOWN HEREON.**

(23) DRAINAGE EASEMENT FROM SOCIETY FOR SAVINGS TO THE STATE OF CONNECTICUT DATED JUNE 2, 1972 AND RECORDED IN VOLUME 198 AT PAGE 14 OF THE SIMSBURY LAND RECORDS - **DRAINAGE RIGHTS SHOWN HEREON.**

(24) EASEMENT FROM SOCIETY FOR SAVINGS TO THE STATE OF CONNECTICUT DATED JUNE 2, 1978 AND RECORDED IN VOLUME 106 AT PAGE 752 OF THE AVON LAND RECORDS AND IN VOLUME 235 AT PAGE 920 OF THE SIMSBURY LAND RECORDS - **TRAFFIC EASEMENT SHOWN HEREON.**

No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
3	UPDATE PER ADDITIONAL TOPOGRAPHY	J.D.O.	J.P.M.	C.R.M.	2-3-2023
2	UPDATE PER ADDITIONAL TOPOGRAPHY & UTILITY	C.W.	J.P.M.	C.R.M.	1-23-2023
1	LEASE LINE ADDED	-	R.J.K.	C.E.L.	10-5-2022

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 7(a), 7(b)(1), 7(c), 8, 11(a), 13, 16 & 19 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JANUARY 26, 2023.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

STATE OF CONNECTICUT — CHRISTOPHER R. MICHAUD — No. 70283 — LICENSED LAND SURVEYOR

2-3-2023
DATE

CHRISTOPHER R. MICHAUD, PLS
CONNECTICUT PROFESSIONAL LAND SURVEYOR #70283

ALTA/NSPS LAND TITLE SURVEY
RAISING CANE'S RESTAURANT, LLC

530 BUSHY HILL ROAD
MAP B20, BLOCK 508, LOT 1B
TOWN OF SIMSBURY, HARTFORD COUNTY
STATE OF CONNECTICUT

FIELD DATE	FIELD BOOK NO.	FIELD BOOK PG.	FIELD CREW	DRAWN:
1-26-2022	21-16 MA	37	B.S.B.	R.J.K.

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
ALBANY, NY 518-217-5010
CHALFONT, PA 215-712-9800
HAUPPAUGE, NY 631-580-2645
MANHATTAN, NY 646-780-0411
MT LAUREL, NJ 609-857-2099
WARREN, NJ 908-668-0099

REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
C.E.L.	C.R.M.	2-23-2022	1"=20'	03-220025	3 OF 3

SEE SHEET 1 OF 3 FOR OVERALL BOUNDARY, NOTES & REFERENCES

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

DRAINAGE REPORT

For

PROPOSED

"RESTAURANT WITH DRIVE-THRU"

530 Bushy Hill Road
Town of Simsbury, Connecticut

Prepared by:

BOHLER
65 LaSalle Road, Suite 401
West Hartford, CT 06107
(860) 333-8900 TEL.

Jeff G. Bord
Connecticut P.E. Lic. #30414

July 07, 2023
#CTA220075.00 Rev 1

BOHLER

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

APPENDIX A: PROJECT LOCATION MAPS
- USGS MAP
- FEMA FIRMETTE

APPENDIX B: SOIL AND WETLAND INFORMATION
- NCRS CUSTOM SOIL RESOURCE REPORT
- GEOTECHNICAL REPORT

APPENDIX C: EXISTING CONDITIONS HYDROLOGIC ANALYSIS
- EXISTING CONDITIONS DRAINAGE MAP
- EXISTING CONDITIONS CN CALCULATIONS
- EXISTING CONDITIONS HYDROCAD COMPUTATIONS

APPENDIX D: PROPOSED CONDITIONS HYDROLOGIC ANALYSIS
- PROPOSED CONDITIONS DRAINAGE MAP
- PROPOSED CONDITIONS CN CALCULATIONS
- PROPOSED CONDITIONS HYDROCAD CALCULATIONS

APPENDIX E: STORMWATER CALCULATIONS
- NOAA RAINFALL DATA
- POLLUTANT REDUCTION
- CONVEYANCE PROTECTION CALCULATIONS
- ISOLATOR ROW MASS CALCULATIONS

APPENDIX F: STORMWATER OPERATION & MAINTENANCE PLAN
- O & M PLAN
- STROMTECH O&M PLAN
- STORMCEPTOR O&M PLAN

I. EXECUTIVE SUMMARY

This report examines the changes in drainage that can be expected as the result of the proposed development at 530 Bushy Hill Road and provides calculations documenting the design of the proposed stormwater management system illustrated within the accompanying Proposed Site Plan Documents prepared by Bohler.

The stormwater management system for this site has been designed utilizing Best Management Practices (BMPs) to meet or exceed the stormwater management standards in accordance with Connecticut Department of Energy & Environmental Protection (CT DEEP) 2004 Connecticut Stormwater Quality Manual and the Simsbury Zoning Regulations. The proposed project will provide; pollutant reduction via treatment of the water quality flow through secondary treatment practices; peak runoff attenuation through use of a below-ground stormwater management basin; and conveyance protection. The project will also provide erosion and sedimentation controls in accordance with 2002 Connecticut Guidelines for Soil Erosion and Sediment Control during the demolition and construction periods, as well as long term stabilization of the site.

A summary of the pre- and pos-development conditions peak runoff rates for the 2-, 10-, 25-, and 100-year storms can be found in **Table 1.1** below.

Table 1.1: Design Point Peak Runoff Rate Summary

Peak Flow Discharge in cubic feet per second (cfs)												
	2-year			10-year			25-year			100-year		
	Pre-	Post-	Delta	Pre-	Post-	Delta	Pre-	Post-	Delta	Pre-	Post-	Delta
DP1	3.57	2.77	-0.80	6.12	4.88	-1.24	7.70	6.19	-1.51	10.11	8.19	-1.92
DP2	0.32	0.14	-0.18	0.61	0.25	-0.36	0.79	0.32	-0.47	1.06	0.42	-0.64
DP3	0.21	0.21	0.00	0.43	0.36	-0.07	0.56	0.45	-0.11	0.78	0.60	-0.18

**Flows are represented in cubic feet per second (cfs)*

II. EXISTING SITE CONDITIONS

Existing Site Description

The site consists of approximately 1.21 acres of land within the development with no additional offsite runoff. The site is located on the northern side of West Main Street within the Simsbury Commons Shopping Plaza. The site consists of an existing parking lot with few trees and landscape areas.

On-Site Soil Information

The site includes soils classified by the Natural Resource Conservation Service (NRCS) as Hydrologic Soil Group (HSG) "D". Refer to **Appendix B** for additional information. Reading of deep test pits and permeability sampling were completed by Terracon Consultants, Inc. in December 2022. Refer to **Appendix B** for additional information.

Existing Collection and Conveyance

The majority of the site drains to the center of the existing parking lot to an existing catch basin. A small northern portion of the site drains offsite to the northern adjacent parking lot located within Simsbury Commons. A small southern part of the site drains to the east to an existing catch basin located off the adjacent bank's property.

Existing Watersheds and Design Point Information

The majority of the site drains to the existing drainage system within the parking lot. Slopes on this site range from 2% - 19% with on-site elevations ranging from 287 located in the southwest corner of the site and 278 located in the northeast side of the site. This site was analyzed at three (3) design points to analyze pre-development condition flow rates.

DP-1 is located within the center of the existing parking lot. DP-2 is located at the southern eastern portion of the site. DP-3 is located at the northern portion of the site. Pre-development land use coverages within the analysis area include areas of pavement, woods (fair), and open space (fair).

Refer to **Table 1.1,** for the calculated pre-development conditions peak rates of runoff. For additional hydrologic information and graphical representation of the existing drainage areas, refer to **Appendix C** and the Drainage Area Maps in the appendices of this report.

III. PROPOSED SITE CONDITIONS

Proposed Development Description

The proposed project consists of the development of the existing plaza with an addition of a +/- 3,200 SF Raising Cane's. The proposed project includes associated paved parking areas, landscaping, utilities, and stormwater management. The site will be served by public water and sanitary sewer. The project will also provide erosion and sedimentation controls during the demolition and construction periods, as well as long term stabilization of the site. In addition, a Stormwater Operation and Maintenance (O&M) Plan, attached in **Appendix F**, has been developed which includes scheduled maintenance and periodic inspections of stormwater management structures.

Proposed Development Collection and Conveyance

The site has been designed with a conventional drainage system. Catch basins will capture and convey stormwater runoff, via an underground pipe system, to one stormwater basin. All rooftop runoff will be directed to stormwater basin as well. Pretreatment of stormwater runoff will be provided proprietary treatment devices.

Detention Area Table	
Bottom of Stone	274.60
Bottom of Chamber	275.00
Top of Chamber	277.50
2 YR Water Elev.	274.60
10 YR Water Elev.	274.63
25 YR Water Elev.	274.66
100 YR Water Elev.	274.80

Proposed Watersheds and Design Point Information

The project has been designed to maintain existing drainage watersheds to the greatest extent possible, with the same design points described in **Section II** above. The site was subdivided into two (2) separate sub catchment areas for the post-development conditions of DP-1, one catchment area for DP-2 and one catchment area for DP-3. Post-development land use coverages within the analysis area include areas of pavement, rooftop, woods (fair) and open space (fair).

Refer to **Table 1.1** for the calculated post-development conditions peak rates of runoff. For additional hydrologic information and graphical representation of the proposed drainage areas, refer to **Appendix D** and the Drainage Area Maps in the appendices of this report.

For permeable pavement, simulating the observed reduction in stormwater runoff volume was completed by considering a reduction in CN value using the SCS equation for the potential maximum retention.

$$S = \frac{1000}{CN} - 10 \quad \text{where S is in inches}$$

Calculate S as the available voids in the section, we can estimate the CN value by rearranging the equation as:

$$CN = \frac{1000}{S+10} \quad \text{where S is in inches}$$

S = 16 inches, Void ratio = 40% ∴ CN = 1000 / (16*40%+10) = 61)

IV. STORMWATER MANAGEMENT STANDARDS

In accordance with the 2004 Connecticut Stormwater Quality Manual and the Simsbury Zoning Regulations, the following stormwater management standards are provided.

Pollutant Reduction

The pollutant reduction criterion is designed to improve the water quality of stormwater discharges by treating a prescribed water quality volume (WQV) or associated peak flow, referred to as the water quality flow (WQF). The water quality volume (WQV) is the amount of stormwater runoff from any given storm that should be captured and treated in order to remove most stormwater pollutants on an average annual basis. The recommended WQV, which results in the capture and treatment of the entire runoff volume for 90 percent of the average annual storm events, is equivalent to the runoff associated with the first one-inch of rainfall. 80 percent TSS removal is achieved when WQV is provided in a primary stormwater treatment practice and/or when an alternate stormwater treatment practice demonstrates the ability to treat the WQV or WQF and meets the 80 percent TSS and float-ables criteria. In accordance with the 2004 Connecticut Stormwater Quality Manual, pollutant reduction is provided by treatment of the WQF. The WQF required for this development in subcatchment areas PD-1B is 0.12 cf, whereas 0.40 cf is provided

in our design. Refer to **Appendix E** of this report for calculations documenting required and provided water quality.

Groundwater Recharge Volume

The groundwater recharge volume (GRV) criterion is not being provided as the soils are not favorable for infiltration per Geotechnical Data observed in the field.

Runoff Capture Volume

The objective of the runoff capture criterion is to capture stormwater runoff to prevent the discharge of pollutants, including "unpolluted" fresh water, to sensitive coastal receiving waters and wetlands. The runoff capture criterion applies to new stormwater discharges located less than 500 feet from tidal wetlands, which are not fresh-tidal wetlands. The site is located more than 500 feet from tidal wetlands and therefore this criterion is NOT provided.

Conveyance Protection

Pipes have been designed to safely convey the 10-year storm using the rational method. The input data for rainfalls, regarding storm conveyance, with statistical recurrence frequencies of 10-years are based on NOAA and provided in the appendices of this report. Refer to **Appendix E** for more information and pipe sizing calculations.

Peak Runoff Attenuation

The pre- and post-development runoff rates discharged from the site were computed using the HydroCAD Software Solutions LLC computer program. HydroCAD is a computer model that utilizes the methodologies set forth in the Technical Release No. 55 (TR-55) manual and Technical Release No. 20 (TR-20) computer model, originally developed by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). The computer program forecasts the rate of surface water runoff based upon several factors including land use, hydrologic soil type, contributing watershed area, time of concentration, rainfall data, storage volumes, exfiltration rates, and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains, and stormwater management basins. Land use for the site under pre-

and post-development conditions were determined from field survey, town topographic maps, and aerial imagery.

The input data for rainfalls with statistical recurrence frequencies of 2-, 10-, 25- and 100- years are based on NOAA and are listed in table 4.1 below. Refer to **Appendix E** for more information.

Table 4.1: NOAA Rainfall Depths

Frequency	2-year	10-year	25-year	100-year
Rainfall* (inches)	3.44	5.55	6.87	8.90

*The rainfall depths were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 10, Precipitation Frequency Data Server (PFDS).

The proposed stormwater management as designed will provide a decrease in peak rates of runoff for the 2-, 10-, 25-, and 100-year design storm events in accordance with the 2004 Connecticut Stormwater Quality Manual and the Simsbury Zoning Regulations. The pre-development versus post-development stormwater discharge comparisons are contained in Table 1.1. Refer to **Appendix C and D** for the Existing and Proposed Hydrologic analysis.

Emergency Outlet Sizing

The emergency outlets of stormwater management facilities shall be designed to safely pass the peak discharge rate associated with the 100-year storm. The emergency outlets are sized to pass the 100-year peak runoff rate, in a controlled manner, without eroding outfalls or downstream conveyances. The peak discharges from the basin is managed via outlet control structure that feed the HDPE drainage pipe and empty to the existing drainage system. Refer to **Appendix E** for more information.

V. SUMMARY

In summary, the proposed stormwater management system illustrated on the drawings prepared by Bohler, meets, or exceeds the standards set forth in the 2004 Connecticut Stormwater Quality Manual and the Simsbury Zoning Regulations. The proposed development improves water quality, and reduces peak rates of stormwater runoff from the subject site when compared to pre-development conditions for the analyzed storm events. The pre-development versus post-

development stormwater discharge comparisons are contained in Table 1.1 above. Supporting documentation and stormwater-related computations are contained in the appendices of this report.

APPENDIX A: PROJECT LOCATION MAPS

- *USGS MAP*
- *FEMA FIRMETTE*

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

AVON QUADRANGLE
CONNECTICUT - HARTFORD COUNTY
7.5-MINUTE SERIES

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 18T

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP, July 2016 - September 2016
Roads	U.S. Census Bureau, 2016
Names	GNIS, 1979 - 2017
Hydrography	National Hydrography Dataset, 2004 - 2017
Contours	National Elevation Dataset, 2012
Boundaries	Multiple sources; see metadata file 2016 - 2017
Wetlands	FWS National Wetlands Inventory 2010

MN
GN
13°35′
241 MILS
1°28′
26 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
XM
Grid Zone Designation
18T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

CONNECTICUT
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 New Hartford
2 Tariffville
3 Windsor Locks
4 Collinsville
5 Hartford North
6 Bristol
7 New Britain
8 Hartford South

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

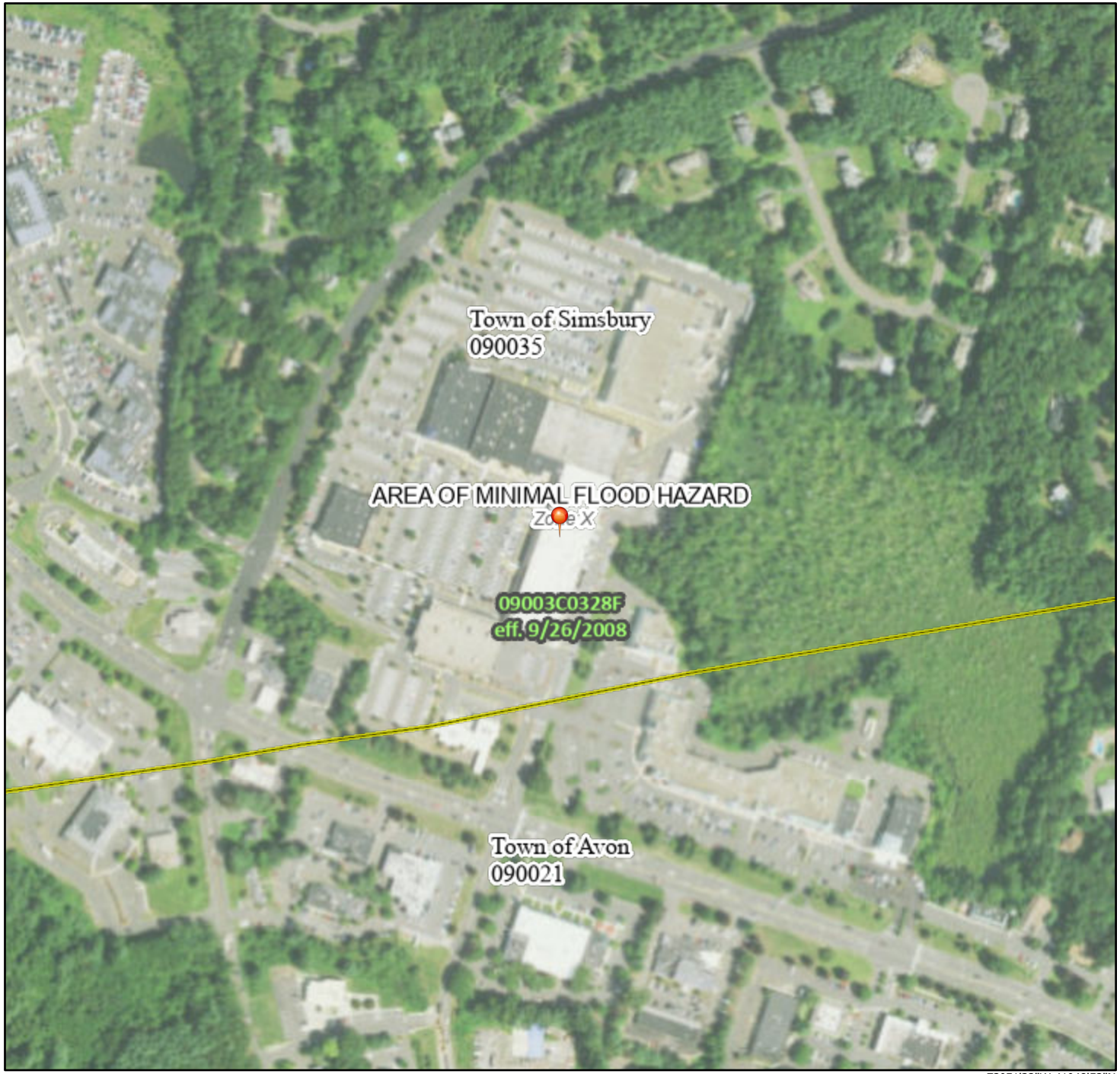
AVON, CT
2021

NSN 7643016360091
NGA REF NO. USGSX24K72664

National Flood Hazard Layer FIRMette

FEMA

72°52'9"W 41°49'18"N



72°51'32"W 41°48'52"N

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

1:6,000

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

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2023 at 3:50 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

APPENDIX B: SOIL AND WETLAND INFORMATION

- *NCRS CUSTOM SOIL RESOURCE REPORT*
- *GEOTECHNICAL REPORT*

Map Scale: 1:1,350 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
307	Urban land	D	9.7	100.0%
Totals for Area of Interest			**9.7**	**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

Geotechnical Engineering Report

Raising Cane's C935
Simsbury, Connecticut
December 12, 2022
Terracon Project No. J2225062

Prepared for:
Raising Cane's Restaurants, LLC
Plano, Texas

Prepared by:
Terracon Consultants, Inc.
Rocky Hill, Connecticut

December 12, 2022

Raising Cane's Restaurants, LLC
6800 Bishop Road
Plano, Texas 75024-4274

Attn: Mr. Adam Caracci
P: (972) 769-3206
E: acaracci@raisingcanes.com

Re: Geotechnical Engineering Report
Raising Cane's C935
Albany Turnpike & Bushy Hills Road
Simsbury, Connecticut
Terracon Project No. J2225062

Dear Mr. Caracci:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PJ2225062 dated October 25, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavement for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Jennifer S. Jurnack
Staff Geologist

Scott M. Carter, P.E.
Geotechnical Department Manager (NH)

Michael A. Ciance, P.E. (MA, NH VT)
Principal

REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the ***GeoReport*** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Raising Cane's C935
Albany Turnpike & Bushy Hills Road
Simsbury, Connecticut

Terracon Project No. J2225062

December 12, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed Raising Cane's to be located near the intersection of Albany Turnpike & Bushy Hills Road in Simsbury, Connecticut. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Excavation considerations
- Dewatering considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC
- Pavement design and construction
- Frost considerations

The geotechnical field Scope of Services for this project included the advancement of seven test borings (identified as B-1 through B-4, P-1, P-2/IF-1 & P-3) to depths ranging from approximately 7 to 29 feet below existing site grades.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The boring logs and/or laboratory results are shown in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located near the intersection of Albany Turnpike & Bushy Hills Road in Simsbury, Connecticut. The approximate coordinates: 41.8169° N, 72.8656° W. See **Site Location**.

Item	Description
Existing Improvements	The site is an existing parking lot within a shopping plaza bordered by Bed, Bath & Beyond to the north, Santander Bank to the east, Men's Wearhouse to the west, and West Main Street to the south.
Current Ground Cover	Asphalt pavement with landscaped areas
Existing Topography (from Topographic Site Plan)	Topography across the existing parking area slopes slightly from approximately elevation (El.) 282 feet in the southwest corner down to El. 277.5 feet at the catch basins in the northeast portion of the site. Topography slopes up from the parking area to approximately El. 287 feet near the southwest property corner. See **Exploration Plan with Topographic Survey** for additional site details.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. Our final understanding of the project conditions is as follows:

Item	Description
Information Provided	Raising Cane's Restaurants, LLC provided the following information: ■ New Project Request for Proposal Geotechnical Investigation dated October 18, 2022. ■ Raising Cane's "Site Plan" & "Context Site Plan" dated March 9, 2021. ■ "ALTA / NSPS Property Survey" by F.A. Hesketh & Associates, Inc., revised October 4, 2019. ■ "Boundary & Topographic Survey" reviewed and approved by Charles E. Lent with Control Point Associates, Inc. dated March 2, 2022
Project Description	The project includes the development of a single-story, 3,062 square-foot restaurant building. Other site features include a double drive-thru with canopy and paved parking areas.
Building Construction	Unknown at this time but anticipated to be steel or wood framed with masonry walls and slab-on-grade construction. We anticipate the building will not include a basement.

Item	Description
Finished Floor Elevation	The finish floor elevation is not known at this time but expected to be near existing grades at approximate El. 282 feet.
Maximum Loads	Unknown at this time. The following loads and settlement criteria are assumed: ■ Columns: 30 to 60 kips ■ Walls: 1 to 3 kips per linear foot (klf) ■ Slabs: 150 to 250 pounds per square foot (psf) ■ Maximum Allowable Total Settlement: ≤ 1-inch ■ Maximum Allowable Differential Settlement: ≤ ½-inch over 40 feet
Grading/Slopes	Minimal changes to existing site grades are anticipated.
Free-Standing Retaining Walls	Based on existing grades, retaining walls are not expected to be constructed as part of site development to achieve final grades.
Pavements	Access drives, parking and drive-thru lanes are anticipated to consist of flexible (asphalt) pavement sections. Rigid (concrete) pavement will be required for the planned trash enclosure pad. Traffic volumes have not been provided at this time; the following anticipated traffic is assumed: ■ Autos/light trucks: 5,000 vehicles per day ■ Light delivery and trash collection vehicles: 10 vehicles per week ■ Tractor-trailer trucks: 4 vehicles per week ■ Pavement design period of 20 years.
Estimated Start of Construction	2023

GEOTECHNICAL CHARACTERIZATION

Subsurface Conditions

The test borings generally encountered an approximately 2-inch-thick surficial bituminous concrete with approximately 4 inches of aggregate base course. Fill was observed at the three test borings advanced in the western portion of the site to depths ranging from approximately 5.0 to 9.0 feet below existing grades and is anticipated to be associated with the existing water utility transecting the west portion of the site from south to north. The fill is generally described as brown poorly graded sand with silt to silty sand with varying amounts of gravel, upper portions of the fill containing trace amounts of bituminous concrete fragments.

The native soil underlying the fill generally grades with depth from poorly graded sand with silt and varying amounts of gravel and cobbles to silty sand. An approximately 6-inch-thick layer of lean clay with sand was encountered above weathered bedrock in B-3. Groundwater was observed during drilling operations at depths between approximately 17.0 and 22.0 feet below existing ground surface.

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	**Surface Material**	Asphalt / Aggregate Base Course
2	**Fill**	Poorly Graded Sand with silt to Silty Sand, trace to with gravel, occasional cobbles and boulders, contains asphalt fragments, brown
3	**Native Sand**	Poorly Graded Sand to Silty Sand, trace to with gravel, occasional cobbles, brown to red-brown, loose to very dense
4	**Weathered Bedrock**	Residual soil to bedrock fragments

Groundwater Conditions

The borings were observed during and at completion of drilling for the presence and level of groundwater. The water levels observed in the borings can be found on the boring logs in the **Exploration Results** section. The table below contains a summary of groundwater levels from those borings where groundwater was encountered:

Boring No.	Approximate Depth to Groundwater (feet) [1,2]	Approximate Elevation of Groundwater (feet)
B-1	18	263
B-2	22	258
B-3	17	265

Boring No.	Approximate Depth to Groundwater (feet) [1,2]	Approximate Elevation of Groundwater (feet)
B-4	17	264

1. Below ground surface.
2. Observed during drilling operations

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the boring was performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

In-situ Infiltration Testing

At the request of Bohler Engineering, we performed one infiltration test within the stormwater basin area in general accordance with the Connecticut Department of Environmental Protection (CT DEP) "Connecticut Stormwater Quality Manual." In-situ infiltration testing was performed using falling head methodology within a cased borehole. The results of in-situ infiltration testing are included in the **Exploration Results** and are summarized in the following table.

Test Location	Strata	Approximate Depth of Test [1] (inches)	Field Measured Infiltration Rate [2] (in/hour)
P-2/IF-1	Native Sand	84	0.48

1. Below existing grade.
2. The permeability rates presented in the table are measured field hydraulic conductivity rates and do not include a factor of safety. The CTDEP Connecticut Stormwater Quality Manual recommends a minimum factor of safety of 2 be applied to field-derived values for use in design.

It should be noted that individual tests only measure the infiltration rate in the immediate vicinity of the test and may not be representative of the average infiltration rate of the soil. Various factors may influence field testing results, including lack of soil saturation, a non-homogenous soil profile surrounding the test interval, the presence of large gravel or cobbles, or variation in soil density. Field infiltration values should be evaluated based on the measured data in conjunction with published values for the material.

GEOTECHNICAL OVERVIEW

The site appears suitable for the proposed development based upon the geotechnical conditions encountered in the borings provided the recommendations in this report are implemented during design and construction.

As mentioned in the **Geotechnical Characterization** section, approximately 5.0 to 9.0 feet of existing fill was observed in the test borings advanced in the western portion of the site and is anticipated to be associated with construction of an existing water line. Supporting new foundations and floor slabs on undocumented fill may cause the building to settle beyond tolerable limits. As such, the existing undocumented fill is not considered suitable for support of new foundations and floor slabs and should be removed from the building footprint and footing bearing zones (defined as the area beneath 1 Horizontal :1.5 Vertical (1H:1.5V) lines extending downward and outward from footing edges) and replaced with compacted Structural Fill. The exposed subgrade soils should be evaluated by a Terracon representative and where existing fill and/or loose or unstable materials are encountered at or below design footing grade, they should be over-excavated from the footing bearing zones. Excavation, subgrade preparation and fill placement are discussed further in the **Earthwork** section.

The near surface soil could become unstable with typical earthwork and construction traffic, especially after precipitation events. Effective site drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year (typically May to October). If grading is performed during the winter months (typically November to April), an increased risk for possible undercutting and replacement of unstable subgrade material will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The **Shallow Foundations** section addresses support of the building and ancillary structure foundations bearing on proof-rolled native soil subgrades or compacted Structural Fill placed above proof-rolled native sand. Ancillary and canopy structures may also be supported on drilled pier foundations as discussed in the **Drilled Pier Foundations** section. The **Floor Slabs** section addresses slab-on-grade support on a minimum 6 inches of compacted Floor Slab Base Course over proof-rolled native soil subgrades or compacted Structural Fill placed above proof-rolled native sand.

Recommendations for flexible and rigid pavement systems are presented in the **Pavements** section.

Support of pavements on or above existing fill materials is discussed in this report. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but

can be reduced by following the recommendations contained in this report. To take advantage of the cost benefit of not removing the entire amount of undocumented fill, the owner must be willing to accept the risk associated with building over the undocumented fills following the recommended reworking of the material.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include removing existing landscape areas, pavements and underground utilities; excavations; and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Complete removal of existing pavement, vegetation and topsoil should be performed in proposed building, canopy and pavement areas. Following stripping, existing fill (where encountered) should be removed from the building footprint and canopy foundation bearing zones (if spread footings are used) before placing new fill.

We recommend removing underground utilities from within the proposed building footprint and at least 5 feet beyond the outer edge of foundations. For areas outside the proposed building footprint and foundation bearing zones, existing utilities should be removed where they conflict with proposed utilities and pavements. In such cases, existing utilities should be removed to a depth of at least 2 feet below the affected utility or design pavement subgrade elevation.

Subgrade Preparation

As mentioned in the **Geotechnical Characterization** section, existing fill was observed to depths ranging from approximately 5.0 to 9.0 feet below existing ground surface in the western portion of the site and within the proposed building footprint. The existing undocumented fill is not suitable for foundation/slab support and should be removed from the building footprint and foundation bearing zone and replaced with compacted structural fill.

Support of pavements, on or above existing fill soils, is discussed in this report. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

If the owner elects to construct pavements on the existing fill, the following protocol should be followed. Once the planned pavement section subgrade elevation has been reached, the entire area should be proof-rolled as discussed below. Areas of soft or otherwise unsuitable/deleterious material should be undercut and replaced with either new General Fill or excavated on-site material suitable for reuse.

Foundation and slab subgrades (comprised of native sand) and pavement subgrades (comprised of fill or native sand) should be proof-rolled with at least six passes in perpendicular directions using a minimum 10-ton vibratory roller in open areas; or a minimum 1-ton self-propelled vibratory roller or large vibratory plate compactor in areas not accessible by a large vibratory roller.

The proof-rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof-roll should be delineated and subsequently addressed by the Geotechnical Engineer. Soft or unstable areas should be over-excavated to more competent material and replaced with compacted Structural Fill or General Fill depending on the location of the fill placement. Excessively wet or dry material should either be removed, or moisture conditioned and recompacted. Although not anticipated, if proof-rolling is required within deeper excavations near the groundwater table, proof-rolling may need to be accomplished statically (no vibration) to reduce the potential for disturbing the subgrade.

Fill Material Types

The following section presents material property requirements and suitable placement locations for various types of fill. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

Reuse of On-site Soil – Structural Fill: Excavated on-site soil may be selectively reused as Structural Fill at depths greater than 12 inches below footing and slab subgrade elevation provided it is free of deleterious material, maximum particle size is less than 3 inches, it is stable and can be adequately compacted. Excavated onsite soil meeting the requirements for Imported Structural Fill may be used within 12 inches of the bottom of footings and up to the bottom of the Processed Aggregate Base layer below slabs. Portions of the on-site soil have an elevated fines content and may be sensitive to moisture conditions (particularly during seasonally wet periods) and may not be suitable for reuse when above optimum moisture content.

Reuse of On-site Soil – General Fill: Excavated on-site soil may be selectively reused as raise-in-grade fill (General Fill) within pavement and landscaping areas. Portions of the on-site soil have an elevated fines content and will be sensitive to moisture conditions (particularly during seasonally wet periods) and may not be suitable for reuse when above optimum moisture content. On-site soil may be used as General Fill provided it has the following properties:

- Free of deleterious materials

- A maximum particle size equal to the lesser of 6 inches or 2/3 of the lift thickness
- A suitable moisture content allowing for effective compaction
- Compactive efforts yield a firm and stable surface

Imported Fill Materials: Imported fill materials should meet the material property requirements in the following table.

Fill Type[1]	Connecticut State Department of Transportation (CTDOT) Item	Application
Structural Fill	M.02.01 – Granular Fill Grading A [2]	Beneath foundations, within foundation bearing zones, and as backfill within 5 feet of exterior foundation walls. Structural Fill should also be used as raise-in-grade fill to achieve subgrade elevations beneath floor slabs and settlement sensitive structures.
General Fill	M.02.01 – Granular Fill Grading B [2]	General raise-in-grade fill within pavement and landscaping areas. General Fill should not be placed beneath settlement sensitive structures and within foundation bearing zones.
Crushed Stone [3]	M.01.02, No. 67	Backfill of underdrains and over wet subgrades as needed. Crushed Stone may be substituted for Structural Fill when approved by the Geotechnical Engineer.
Floor Slab or Pavement Base Course	M.05.01 – Processed Aggregate Base	Below floor slabs or pavements as aggregate base course.
Non-Frost Susceptible (NFS)Fill	M.02.05 [2] – Pervious Structure Backfill	Below exterior slabs, sidewalks, pavements, or other ancillary structures where frost heave may be a concern.
Free-Draining Materials	M.02.07 [4] – Free-Draining Materials	Backfill of underdrains and over wet subgrades as needed.

Fill Type[1]	Connecticut State Department of Transportation (CTDOT) Item	Application

1. Fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. Shall consist of 1. Broken or crushed stone or 2. Bank or crushed gravel; and meet CTDOT grading requirements.
3. Crushed Stone should be separated from soil subgrades, excavation sidewalls, and backfill using a non-woven geotextile (such as Mirafi 140N or similar).
4. Free-draining material shall consist of sand, gravel, rock fragments, quarry run stone, broken stone or mixtures thereof. This material shall not have more than 70% by weight passing the No. 40 sieve and not more than 10% by weight passing the No. 200 sieve.

Fill Compaction Requirements

Fill materials should meet the following compaction requirements.

Item	Description
Maximum Lift Thickness	*Vibratory Rollers:* 12 inches or less in loose thickness *Plate Compactors:* 6 inches or less in loose thickness when hand-guided equipment (i.e., jumping jack or plate compactor) is used
Minimum Compaction Requirements [1, 2]	*General Fill:* At least 92% of the material's maximum dry density *Structural Fill:* At least 95% of the material's maximum dry density *Crushed Stone:* Densified and compacted using at least six (6) passes of a vibratory roller or large vibratory plate compactor
Water Content Range [1]	±3% of optimum water content

1. Maximum density and optimum water content as determined by the Modified Proctor test (ASTM D1557, Method C).
2. We recommend testing fill for moisture content and compaction during placement. If the results of in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested, as required, until the specified moisture and compaction requirements are achieved.

Grading and Drainage

All grades must provide effective drainage away from the building during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and

walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge into the site drainage system.

Exposed ground should be sloped and maintained at a minimum 5% away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations for the proposed structure are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

We do not anticipate the groundwater table affecting shallow excavation efforts. If dewatering becomes necessary, a temporary dewatering system could be used to achieve the recommended depth of over-excavation. Dewatering is a means and methods consideration for the contractor.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of pavement, vegetation, topsoil, and unsuitable fill. Foundation excavations and subgrade preparation should also be observed

by the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should be notified to evaluate the need for supplemental mitigation recommendations.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

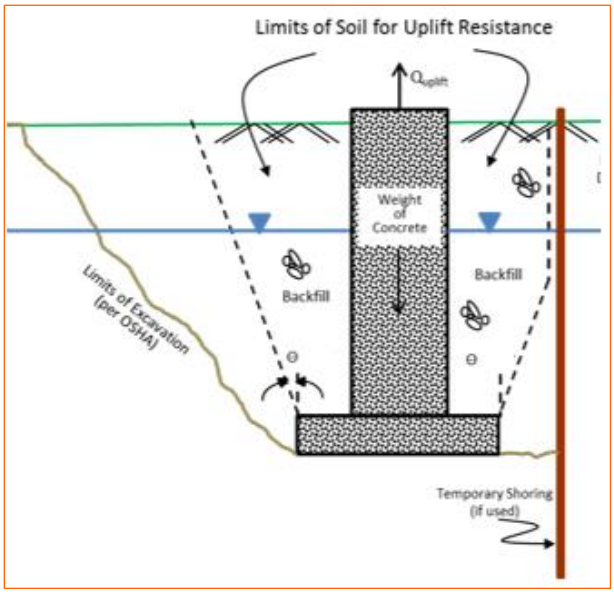
Item	Description
Maximum Net Allowable Bearing Pressure [1, 2]	4,000 psf
Required Bearing Stratum [3]	Proof-rolled native soil or compacted Structural Fill placed over an approved proof-rolled native soil subgrade.
Minimum Foundation Dimensions	Columns: 30 inches Continuous: 18 inches
Ultimate Passive Resistance [4] **(Equivalent Fluid Pressures)**	390 pcf (Structural Fill)
Ultimate Coefficient of Sliding Friction [5]	0.55 (Concrete on Structural Fill)
Minimum Embedment below Finished Grade [6]	Exterior footings in unheated areas: 42 inches Interior footings in heated areas: 18 inches
Estimated Total Settlement from Structural Loads [2]	Less than about 1 inch
Estimated Differential Settlement [2, 7]	About 1/2 of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 2H:1V next to the structure.
2. Values provided are for maximum loads noted in the **Project Description** section.

Item	Description
3.	Unsuitable or soft soils should be over-excavated and replaced per the recommendations presented in the **Earthwork** section.
4.	Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed, and compacted Structural Fill is placed against the vertical footing face.
5.	Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6.	Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure. Interior footings in heated areas may be seated at the 18-inch depth if allowed by local building codes.
7.	Differential settlements are as measured over a span of 40 feet.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum total unit weight of 110 pcf should be used for the backfill. This unit weight should be reduced to 47.6 pcf for portions of the backfill or natural soils below the groundwater elevation.



Foundation Construction Considerations

As noted in the **Earthwork** section, the foundation excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the foundation excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable material is encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils. The over-excavation should be backfilled up to the foundation subgrade elevation with Structural Fill placed as recommended in the **Earthwork** section.

DRILLED PIER FOUNDATIONS

As an alternative to conventional shallow spread footing foundations, the following sections address support of appurtenances such as light poles and/or canopy structures on drilled pier foundations. Design parameters are based on existing ground surface elevations and do not account for foundations bearing in areas of raise-in-grade fill. Supplemental recommendations may be warranted depending on the final design and layout.

Drilled Pier Design Parameters – Axial Capacity

Soil design parameters are provided below in the **Drilled Pier Design Summary** table for the design of drilled pier foundations. The values presented for allowable side friction and end bearing include a factor of safety.

Pier Embedment Depth Below Ground Surface (feet)	Material	Allowable Skin Friction (psf) [1,2,3]	Allowable End Bearing Pressure (psf) [1,2,4]
0 to 4	Fill/Frost Zone	Neglect	Neglect
4 to 10 [5]	Native Sand	50	3,000
10 to 15	Native Sand	100	4,000

Pier Embedment Depth Below Ground Surface (feet)	Material	Allowable Skin Friction (psf) [1,2,3]	Allowable End Bearing Pressure (psf) [1,2,4]

1. Design capacities are dependent upon the method of installation, and quality control parameters. The values provided are estimates and should be verified when installation protocol have been finalized.
2. We assumed a factor of safety of 2.0 to calculate the allowable skin friction and 3.0 to calculate the allowable end bearing pressure.
3. Applicable for compressive loading only. Reduce to 2/3 of values shown for uplift loading. Effective weight of the pier can be added to uplift load capacity.
4. Piers should extend at least one diameter into the bearing stratum for end bearing to be considered.
5. Drilled piers should bear in the native sand. Fill was observed to depths on the order of 5 to 9 feet below existing grade in the western portion of the site. Where fill is expected and/or encountered, drilled piers should be extended deeper to bear in the native soil.

Tensile reinforcement should extend to the bottom of piers subjected to uplift loading. Buoyant unit weights of the soil and concrete should be used in the calculations below the highest anticipated groundwater elevation.

Drilled piers should have a minimum (center-to-center) spacing of three diameters. Closer spacing may require a reduction in axial load capacity. Axial capacity reduction can be determined by comparing the allowable axial capacity determined from the sum of individual piles in a group versus the capacity calculated using the perimeter and base of the pile group acting as a unit. The lesser of the two capacities should be used in design.

A minimum pier diameter of 18 inches should be used. Drilled piers should have a minimum length of 4 feet and should extend into the bearing strata at least one pier diameter for the allowable end-bearing pressures listed in the above table.

Post-construction settlements of drilled piers designed and constructed as described in this report are estimated to range from about ½ to ¾ inch. Differential settlement between individual shafts is expected to be approximately ½ of the total settlement.

Drilled Pier Lateral Loading

The following table lists input values for use in LPile analyses. These parameters are based on correlations with SPT results, published values, and our experience with similar soil types. Since deflection or a service limit criterion will most likely control lateral capacity design, no safety/resistance factor is included with the parameters.

Depth (feet)	Material	LPile (P-y) Curve Soil Model	Effective Unit Weight, γ (pcf) [1]	Friction Angle, Φ (deg)	P-Multiplier
0 to 4	Fill/Frost Zone	Sand (Reese) [2]	110	30	0.7
4 to 10	Fill/Native Sand	Sand (Reese) [2]	110	32	1.0
10 to 15	Native Sand	Sand (Reese) [2]	110	32	1.0

1. Design depth to groundwater is 10 feet.
2. Use a default value for Soil Modulus, k.

Drilled Pier Construction Considerations

Drilled piers should be designed and constructed in accordance with the provisions of the American Concrete Institute (ACI) reports titled "Report on Design and Construction of Drilled Piers (ACI 336.3-14)" and "Specification for the Construction of Drilled Piers (ACI 336.1-01)."

Drilled piers should be aligned vertically. The drilling method or combination of methods selected by the contractor should be submitted for review by the Geotechnical Engineer, prior to mobilization of drilling equipment. Temporary casing may be required to reduce the likelihood of caving. If piers extend below the groundwater table, drilling mud may also be required to stabilize the hole. Concrete should be placed by directing the concrete down the center of the pier to reduce the likelihood of hitting the reinforcing steel and segregating. Groundwater should be removed prior to placing concrete, or the concrete should be placed via tremie methods.

Drilling of foundations to design depths should be possible with conventional drilling equipment using single flight power augers. However, if caving soils are encountered, temporary casing or drilling slurry may be required to advance the drilled piers to design depth. Temporary casing should also be used whenever piers are installed adjacent to any existing structures or improvements to reduce the potential for ground loss and movement due to drilled pier excavation. Water, if encountered, should be removed from each pier hole prior to concrete placement. Casing should be installed for the full pier depth if downhole inspection and clean out is required. Pier concrete should be placed immediately after completion of drilling and cleaning. If pier concrete cannot be placed in dry conditions, a tremie should be used for concrete placement. Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes.

Where casing is used for drilled pier construction, it should be withdrawn in a slow continuous manner maintaining a sufficient head of concrete to prevent infiltration of water or the creation of voids in the concrete. The concrete should have a relatively high fluidity when placed in cased holes or through a tremie.

SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC).

Based on the soil properties encountered at the site and as described on the exploration logs, and SPT results, it is our professional opinion that the **Seismic Site Classification is D**. Subsurface explorations at this site were extended to a maximum depth of 29 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

FLOOR SLABS

Design parameters for floor slabs assume the requirements in the **Earthwork** section have been followed.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1, 2]	Minimum 6 inches of compacted Floor Slab Base Course over proof-rolled native soil or compacted Structural Fill placed above native soil.
Estimated Modulus of Subgrade Reaction [3]	150 pounds per square inch per inch (psi/in) for point loads
Modulus Correction Factor, K_c [3]	$K_c = k\left(\frac{b+1}{2b}\right)^2$

1. Floor slabs should be structurally independent of building foundations or walls to reduce the possibility of floor slab distress caused by differential movements between the slab and foundation.
2. Other design considerations such as cold temperatures and condensation development could warrant a different base course material.
3. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in the **Earthwork** section, and the floor slab support as noted in this table. It is provided for point loads. It is common to reduce the k-value to account for dimensional effects of large, loaded areas using the modulus correction factor provided, where K_c is the corrected or design modulus value and b is the mat width (short dimension) or tributary loaded area. The native soil at subgrade is expected to develop a subgrade modulus value of 150 psi/in when combined with the base course. Soft or unstable subgrade will be remediated by scarifying and re-compacting or by over-excavation and replacement.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a waterproof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of control joints, appropriate reinforcing, or other means.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and compacted Structural Fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in the **Project Description** section and in the following sections. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Flexible Pavement Design Recommendations

Pavement designs were based on "AASHTO Guide for Design of Pavement Structures (1993)". The thickness of each course is a function of subgrade strength, traffic, design life, and frost susceptibility. Anticipated traffic volumes have not been provided at this time. For design purposes, we assumed traffic volumes and other design parameters based on our experience with similar projects. Our pavement section design was based on the following assumptions:

- Autos/light delivery trucks: 5,000 vehicles per day
- Light delivery and trash collection vehicles: 10 vehicles per week
- Tractor-trailer trucks: 4 vehicles per week
- Pavement design period of 20 years

The following table provides minimum thicknesses for flexible bituminous concrete pavements:

Layer [1]	Thickness (inches)
Asphalt Top Course	1.5
Asphalt Binder Course	2.0
Aggregate Base Course	8.0
Total Thickness	11.5

1. All materials should meet the current Connecticut Department of Transportation (CTDOT) Standard Specifications for Highways and Bridges, as listed below for asphaltic materials. The base course material is listed in the **Earthwork** section.
    - Asphalt Top Course – M.04.S0.5 Level 1
    - Asphalt Binder Course – M.04.S1 Level 1

Rigid Pavement Design Recommendations

We recommend rigid concrete pavement be considered at the dumpster location where refuse trucks will park. At a minimum, the concrete pavement area for the dumpster pad should be large enough to support the container and tipping axle of the refuse truck. The outer edges of concrete pavement are susceptible to damage as trucks move from the concrete to the adjacent bituminous concrete. Therefore, the concrete thickness of the outer 2 feet of the concrete pavement should be increased to 12 inches. Dowels should be placed across slab expansion joints to limit differential settlements. Welded wire mesh (¼ inch, minimum) should be incorporated into the rigid concrete pavement design to provide tensile strength and increase serviceability. The below sections represent minimum thicknesses and, as such, periodic maintenance should be anticipated.

The following table provides minimum thicknesses for rigid Portland cement concrete pavements:

Layer [1]	Thickness (inches)
Portland Cement Concrete	6.0
Aggregate Base	8.0
Total Thickness	14.0

1. All materials should meet the current Connecticut Department of Transportation (CTDOT) Standard Specifications for Highways and Bridges. Portland Cement concrete pavements should meet the specifications for CTDOT concrete using a 28-day compressive strength of 4,000 psi and ¾-inch coarse aggregate. The base course material is listed in the **Earthwork** section.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related distress may still occur, requiring further repairs.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install pavement drainage systems surrounding areas anticipated for frequent wetting of the pavement surface.
- Install joint sealant and seal cracks immediately.

- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curbs and gutters.

FROST CONSIDERATIONS

The soils on this site are frost susceptible, and small amounts of water can affect the performance of the slabs on-grade, sidewalks, and pavements. Exterior slabs and pavements should be anticipated to heave during winter months. If frost action needs to be eliminated in critical areas, we recommend the use of Non-Frost Susceptible (NFS) Fill. Placement of NFS Fill in large areas may not be feasible; however, the following recommendations are provided to help reduce potential frost heave:

- Provide surface drainage away from the building and slabs, and toward the site storm drainage system.
- Install drains around the perimeter of the building, stoops, below exterior slabs, and pavements, and connect them to the site storm drainage system.
- Grade subgrades so groundwater potentially perched in overlying more permeable subgrades, such as sand or aggregate base, slope toward a site drainage system.
- Place NFS Fill as backfill beneath sidewalks, slabs, and pavements critical to the project.
- Place a 3 horizontal to 1 vertical (3H:1V) transition zone between NFS Fill and other soils.

As an alternative to extending NFS Fill to the full frost depth, consideration can be made to placing extruded polystyrene or cellular concrete under a buffer of at least 2 feet of NFS Fill.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of

pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

Contents:

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet)	Location
4	25.2 to 29	Planned building area
2	7	Planned parking & drive-thru
1	16.4	Planned drive-thru canopy area

Boring Layout and Elevations: Unless otherwise noted, Terracon personnel provided the boring layout. Bohler Engineering provided the location for the infiltration test. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were estimated from a provided topographic site plan. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted rotary drill rig using continuous flight augers (hollow stem). At the building and canopy borings, four samples were obtained in the upper 10 feet and at intervals of 5 feet thereafter. At the pavement borings, three samples were collected continuously to a depth of 7 feet. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration was recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels while drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings upon completion and capped with cold patch asphalt.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. Procedural

standards noted below are for reference to methodology in general. In some cases, variations to methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM C136 Standard Test Method for Particle-Size Analysis of Soils

The laboratory testing program included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System, as shown in the **Supporting Information** section.

PHOTOGRAPHY LOG

Figure 1: Offset at P-1 because of underground utility

Figure 2: Example of backfilled borehole at completion

Figure 3: Drill rig setup at P-2/IF-1

Figure 4: Example of cleared utilities

Figure 5: Drill rig setup at B-1

Figure 6: Drill rig setup at B-2

SITE LOCATION AND EXPLORATION PLANS

Contents:

Note: All attachments are one page unless noted above.

SITE LOCATION

Raising Cane's C935 ■ Simsbury, Connecticut
December 12, 2022 ■ Terracon Project No. J2225062

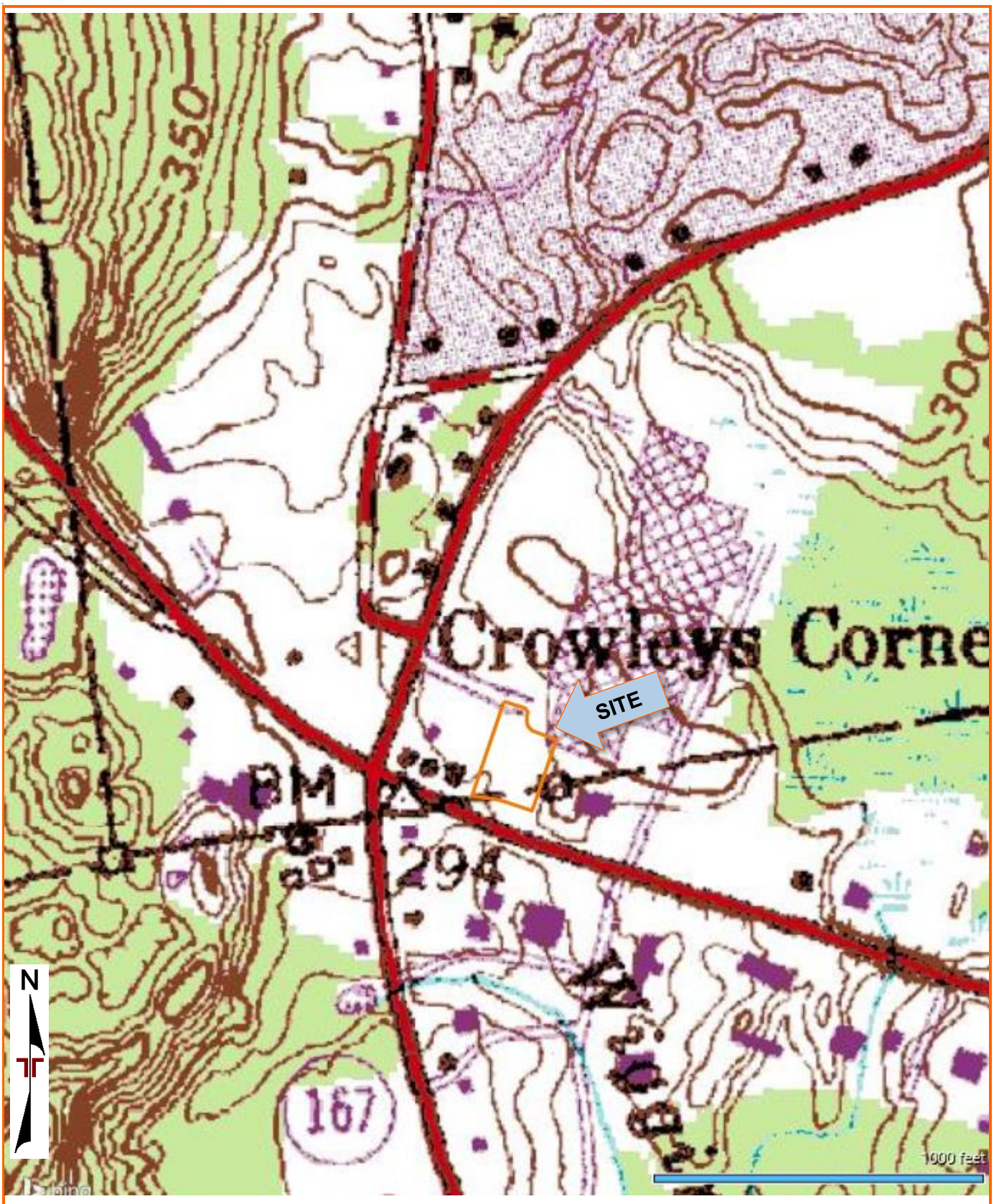


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP COURTESY OF THE U.S. GEOLOGICAL SURVEY

EXPLORATION PLAN WITH OVERLAY

Raising Cane's C935 ■ Simsbury, Connecticut
December 12, 2022 ■ Terracon Project No. J2225062

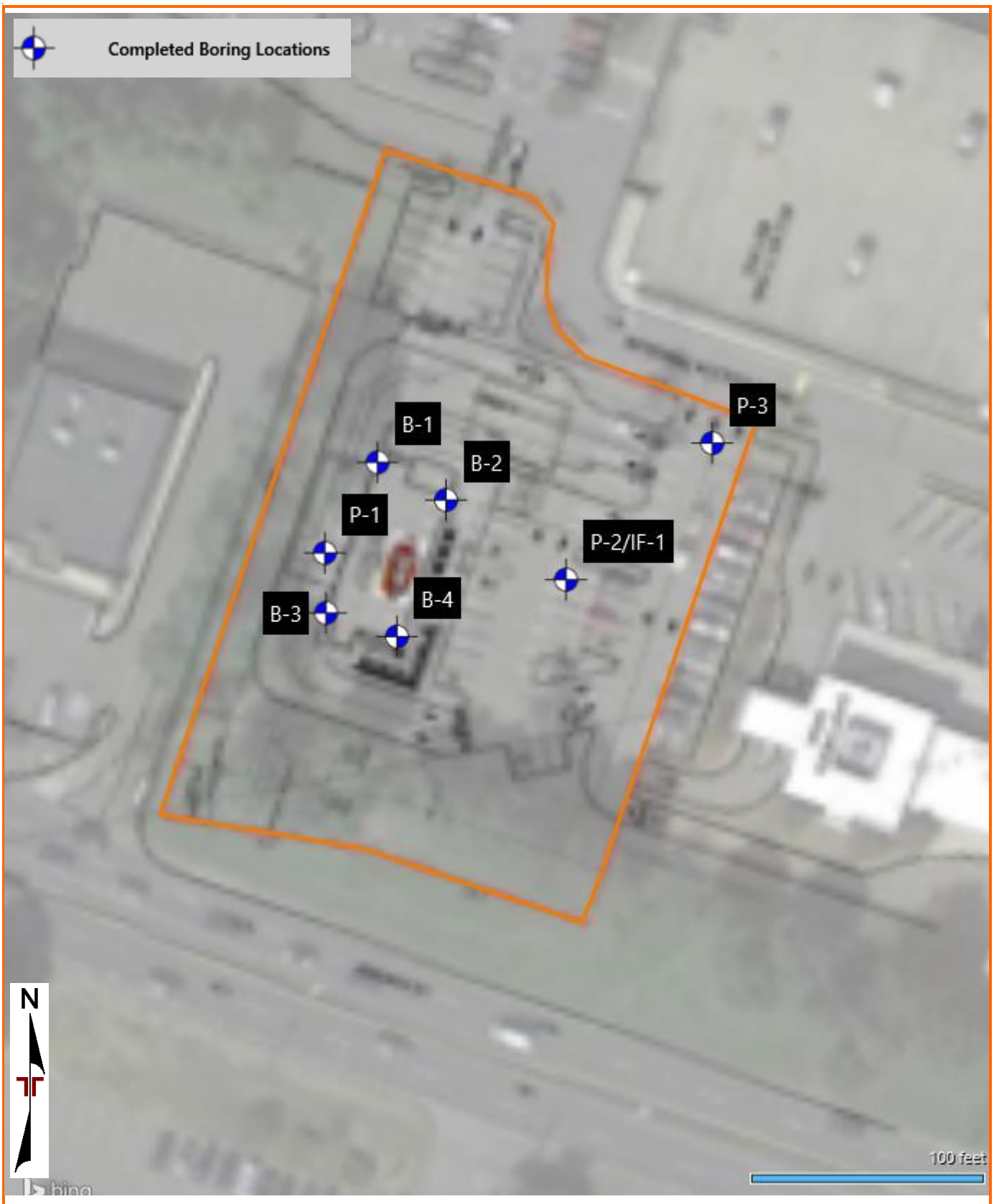


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

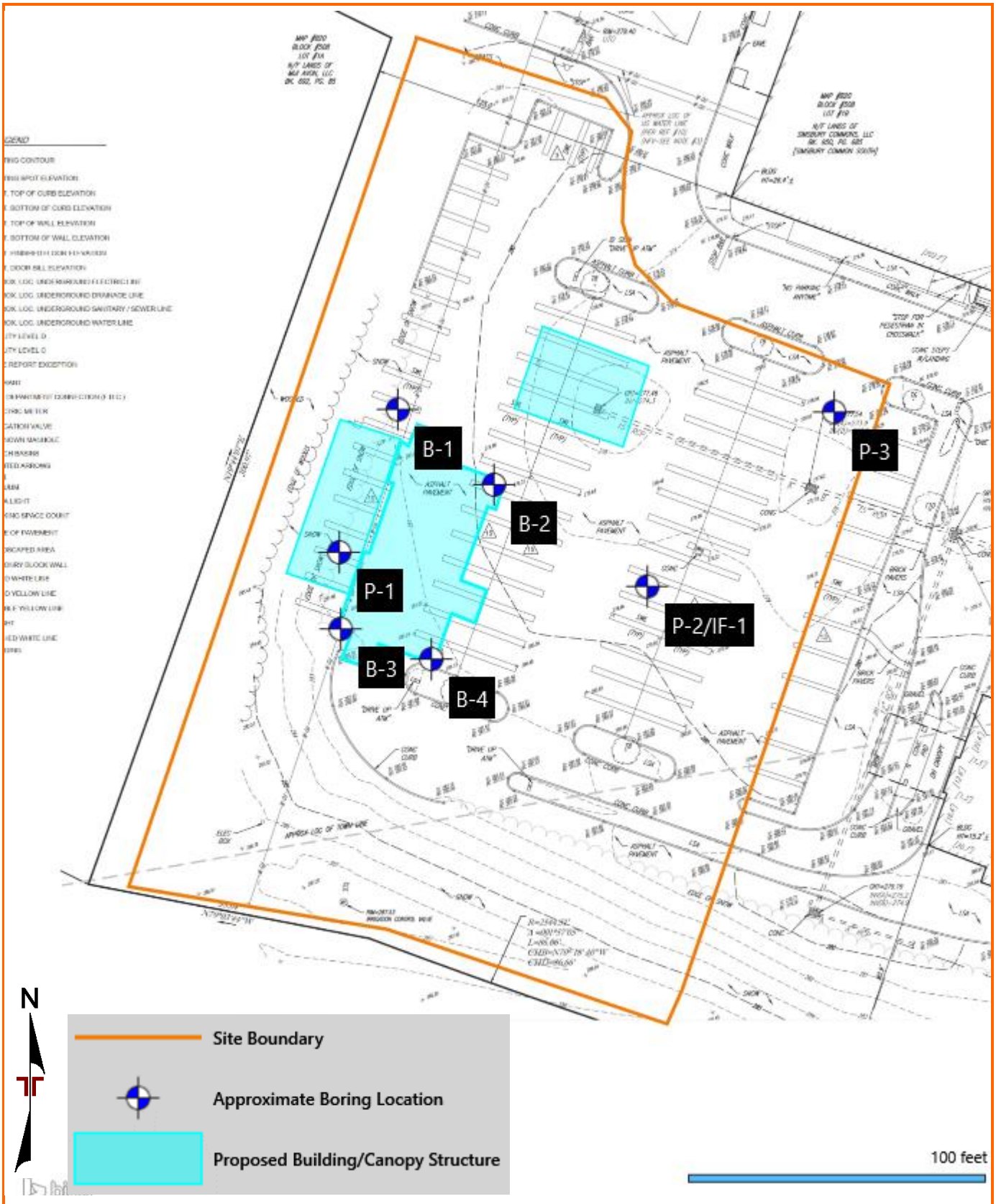
MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN WITH TOPOGRAPHIC SURVEY PLAN

Raising Cane's C935 ■ Simsbury, Connecticut

December 12, 2022 ■ Terracon Project No. J2225062

Terracon GeoReport



FOR GENERAL REFERNCE ONLY. DEVELOPED FROM THE "BOUNDARY & TOPOGRAPHIC SURVEY" BY CONTRL POINT ASSOCIATES, DATED MARCH 2, 2022.

EXPLORATION RESULTS

Contents:

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8170° Longitude: -72.8658°

Approximate Surface Elev.: 281 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	281+/-	**BITUMINOUS CONCRETE**						
		0.4	280.5+/-	**AGGREGATE BASE COURSE**						
2				**FILL - POORLY GRADED SAND WITH SILT**, trace gravel, brown				14	23-26-23-12 N=49	
				FILL - SILTY SAND WITH GRAVEL, trace roots, occasional cobbles, brown to dark brown				20	8-7-4-3 N=11	
					5			16	2-3-12-23 N=15	
				FILL - SILTY SAND, trace gravel, brown				5	21-20-29-28 N=49	
		9.0	272+/-							
3				**POORLY GRADED SAND (SP)**, trace gravel, occasional cobbles, brown, medium dense to dense	10			16	6-9-14-15 N=23	
				contains dark brown staining	15			14	8-18-18-20 N=36	4.0
		20.0	261+/-							
				SILTY SAND (SM), trace gravel, red-brown, loose to medium dense	20			6	17-7-5-7 N=12	
					25			12	4-2-2-9 N=4	
		29.0	252+/-							
				Boring Terminated at 29 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-25 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:
Logged by J. Jurnack

WATER LEVEL OBSERVATIONS

- *While drilling*
- *At completion of drilling*
- *After 18 hours*

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-07-2022	Boring Completed: 11-07-2022
Drill Rig: Mobile Drill B-53	Driller: T. McGovern
Project No.: J2225062	

BORING LOG NO. B-2

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8170° Longitude: -72.8657°

Approximate Surface Elev.: 280 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1	0.2	280+/-	**BITUMINOUS CONCRETE**				
	0.4	279.5+/-	**AGGREGATE BASE COURSE**				
3			**POORLY GRADED SAND WITH SILT (SP-SM)**, trace to with gravel, occasional cobbles, brown, medium dense to very dense		14	12-13-9-5 N=22	
					16	10-15-25-28 N=40	5.9
					16	12-20-25-33 N=45	
					14	35-37-34-29 N=71	
	10.0	270+/-					
			POORLY GRADED SAND (SP), trace to with gravel, occasional cobbles, brown, medium dense to dense		12	8-12-17-17 N=29	
					16	11-14-17-19 N=31	
			contains dark brown/black staining		14	9-12-14-19 N=26	
	25.0	255+/-					
			SILTY SAND (SM), trace gravel, red-brown, medium dense		14	3-6-12-16 N=18	
	27.0	253+/-					
			Boring Terminated at 27 Feet				

DEPTH (Ft.): 5, 10, 15, 20, 25

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-25 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:
Logged by J. Jurnack

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-08-2022 | Boring Completed: 11-08-2022

Drill Rig: Mobile Drill B-53 | Driller: T. McGovern

Project No.: J2225062

BORING LOG NO. B-3

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8168° Longitude: -72.8659°

Approximate Surface Elev.: 282 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	282+/-						
		0.4	281.5+/-						
			BITUMINOUS CONCRETE						
			AGGREGATE BASE COURSE						
2			**FILL - SILTY SAND WITH GRAVEL**, contains asphalt fragments, dark brown				12	3-6-11-50/2" N=17	
			FILL - SILTY SAND, brown				16	2-3-4-4 N=7	
				5			18	2-1-4-15 N=5	
		7.0	275+/-						
			POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, brown, medium dense				16	12-20-19-17 N=39	5.2
		10.0	272+/-	10					
3			**POORLY GRADED SAND (SP)**, trace gravel, occasional cobbles, brown, medium dense to dense				14	10-14-14-15 N=28	
				15	▽		14	12-17-14-33 N=31	
			contains black staining						
		20.0	262+/-	20	▽				
			SILTY SAND (SM), trace gravel, red-brown, medium dense				10	4-6-16-29 N=22	
		21.0	261+/-						
		21.5	260.5+/-						
4			**LEAN CLAY WITH SAND (CL)**, with gravel, red-brown, very stiff						
			WEATHERED BEDROCK, gray						
		25.2	257+/-	25			2	50/2"	
			Sampler Spoon Refusal at 25.2 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-25 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

Perched water observed at approximately 6 feet.
Logged by J. Jurnack

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-07-2022 | Boring Completed: 11-07-2022

Drill Rig: Mobile Drill B-53 | Driller: T. McGovern

Project No.: J2225062

BORING LOG NO. B-4

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8168° Longitude: -72.8658°

Approximate Surface Elev.: 281 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)	
1	0.2	281+/-	**BITUMINOUS CONCRETE**
	0.4	280.5+/-	**AGGREGATE BASE COURSE**
3			**POORLY GRADED SAND WITH SILT (SP-SM)**, trace gravel, occasional cobbles, brown, medium dense
	10.0	271+/-	**POORLY GRADED SAND (SP)**, brown, dense
	15.0	266+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, trace gravel, contains black staining, occasional cobbles, brown, dense
	20.0	261+/-	**SILTY SAND (SM)**, trace gravel, red-brown, dense to very dense
	25.9	255+/-	***Sampler Spoon Refusal at 25.9 Feet***

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
			12	5-10-13-11 N=23	
			12	9-6-6-7 N=12	
5			18	5-5-7-7 N=12	
			14	8-10-14-20 N=24	
10			14	12-16-20-22 N=36	
15	▽		16	6-18-26-34 N=44	
20	▽		12	7-7-29-15 N=36	
25			4	4-50/5"	

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-25 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:
Logged by J. Jurnack

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-07-2022	Boring Completed: 11-07-2022
Drill Rig: Mobile Drill B-53	Driller: T. McGovern
Project No.: J2225062	

BORING LOG NO. P-1

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8169° Longitude: -72.8659°

Approximate Surface Elev.: 282 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	282+/-	**BITUMINOUS CONCRETE**						
		0.4	281.5+/-	**AGGREGATE BASE COURSE**						
2				**FILL - POORLY GRADED SAND WITH SILT**, trace gravel, contains asphalt fragments, brown				14	14-20-13-9 N=33	
				FILL - SILTY SAND WITH GRAVEL, occasional cobbles and boulders, brown				14	9-6-13-12 N=19	
		5.0	277+/-		5					
3				**POORLY GRADED GRAVEL (SP)**, trace to with gravel, occasional cobbles, brown, medium dense to very dense				16	9-12-13-20 N=25	
								16	14-18-19-17 N=37	
					10			14	10-13-16-17 N=29	
					15			10	5-23-50/5"	
		16.4	265.5+/-	***Sampler Spoon Refusal at 16.4 Feet***						

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-15 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:
Logged by J. Jurnack

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-07-2022	Boring Completed: 11-07-2022
Drill Rig: Mobile Drill B-53	Driller: T. McGovern
Project No.: J2225062	

BORING LOG NO. P-2/IF-1

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8169° Longitude: -72.8655°

Approximate Surface Elev.: 279.5 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	279.5+/-						
		0.4	279+/-						
		BITUMINOUS CONCRETE							
		AGGREGATE BASE COURSE							
3		**POORLY GRADED SAND (SP)**, trace to with gravel, brown, medium dense to dense					12	6-9-11-10 N=20	
							12	5-5-9-20 N=14	
				5			14	15-17-15-39 N=32	
		7.0	272.5+/-						
		Boring Terminated at 7 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-7 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:
Install 4-in. solid PVC pipe and run infiltration test at 7 feet.
Logged by J. Jurnack

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-07-2022 | Boring Completed: 11-07-2022

Drill Rig: Mobile Drill B-53 | Driller: T. McGovern

Project No.: J2225062

BORING LOG NO. P-3

PROJECT: Raising Cane's C0935 Simsbury, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

LOCATION See Exploration Plan

Latitude: 41.8170° Longitude: -72.8653°

Approximate Surface Elev.: 278 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
1		0.2	278+/-						
		0.4	277.5+/-						
			BITUMINOUS CONCRETE						
			AGGREGATE BASE COURSE						
			POORLY GRADED SAND WITH GRAVEL (SP), brown, medium dense				12	9-18-15-10 N=33	
		3.0	275+/-						
3			**POORLY GRADED SAND (SP)**, brown, medium dense				14	12-9-11-10 N=20	
				5			14	16-10-13-8 N=23	
		7.0	271+/-						
			Boring Terminated at 7 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.
Samples obtained using a 2-in. O.D. split spoon sampler

Hammer Type: Safety

Advancement Method:
0-5 ft: 3 1/4-in. continuous flight hollow stem augers

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:
Logged by J. Jurnack

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

Boring Started: 11-08-2022 | Boring Completed: 11-08-2022

Drill Rig: Mobile Drill B-53 | Driller: T. McGovern

Project No.: J2225062

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2225062	**Date:**	11/7/2022
Location ID:	P-2/IF-1	**Weather:**	Sunny
Ground EL (ft):	278.0	**Temperature:**	70.0
Initial Water Depth[1] (ft):	5.97	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	9.00	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0.0	Bituminous concrete / Aggregate Base Course	Surface Material / 0.4
0.4	Brown Poorly Graded Sand, trace to with gravel	Fill / 5.7

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)
0	**0**	**81.60**	
30	**30**	**94.20**	**12.60**
60	**30**	**98.40**	**4.20**

> 2", 10-min. increment
< 2", 30-min. increment

Infiltration Testing

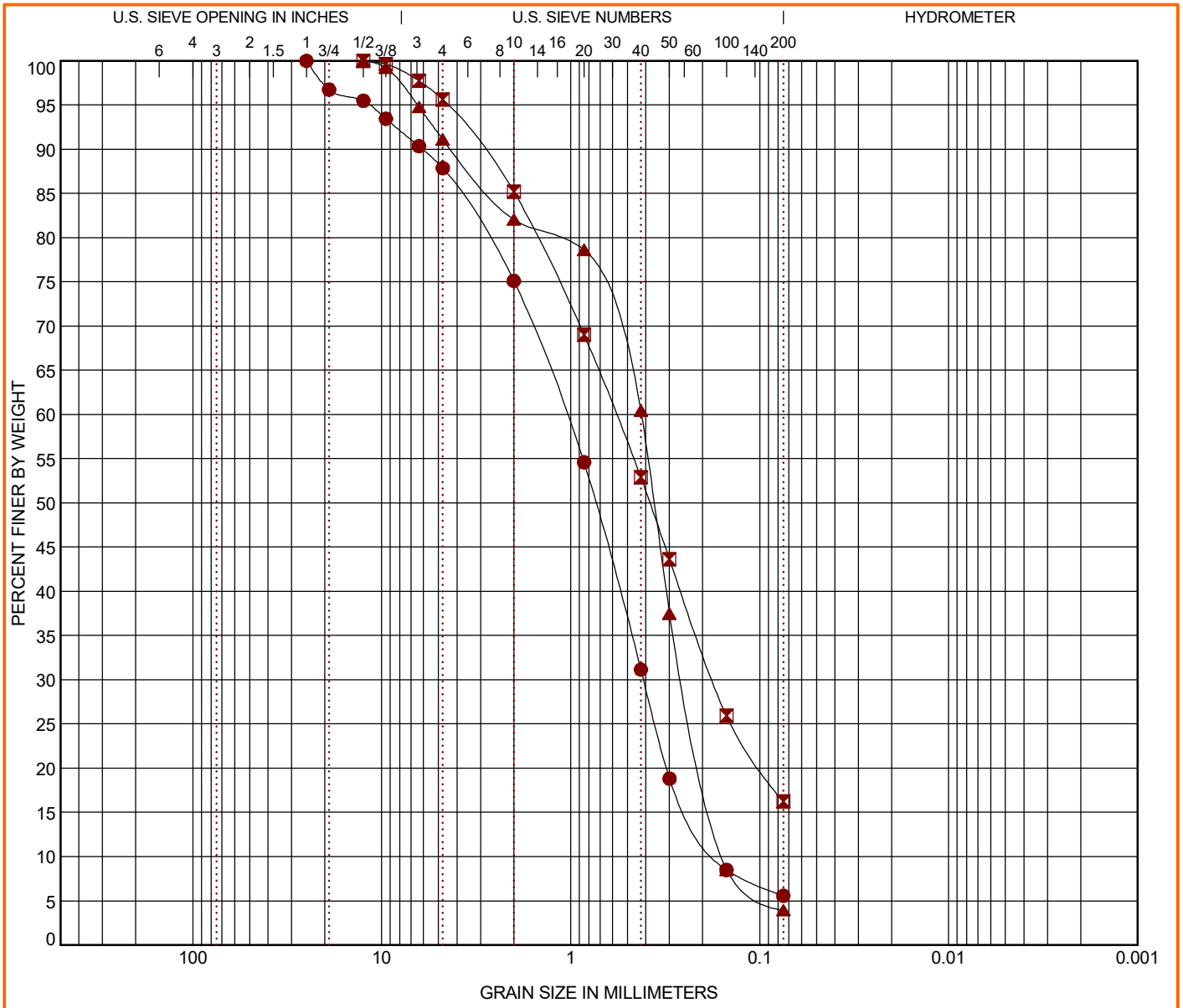
Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**71.64**	**n/a**	**n/a**	
10	**10**	**75.60**	**3.96**	**0.77**	
20	**10**	**78.00**	**2.40**	**0.51**	
30	**10**	**80.40**	**2.40**	**0.56**	
40	**10**	**81.84**	**1.44**	**0.36**	
50	**10**	**83.88**	**2.04**	**0.54**	
60	**10**	**85.20**	**1.32**	**0.38**	
70	**10**	**86.28**	**1.08**	**0.32**	
80	**10**	**87.60**	**1.32**	**0.42**	

Stabilized Infiltration Testing Rate (inches per hour): **0.48**

Remarks:

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-1	15 - 17	Poorly graded sand with silt (SP-SM)	4.0				0.96	6.42
⊠	B-2	3 - 5	Silty sand (SM)	5.9					
▲	B-3	7 - 9	poorly graded sand (SP)	5.2				0.96	2.71

Boring ID		Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-1	15 - 17	25	1.065	0.411	0.166	0.0	12.1	82.3		5.6	
⊠	B-2	3 - 5	12.5	0.576	0.176		0.0	4.3	79.4		16.3	
▲	B-3	7 - 9	12.5	0.422	0.251	0.156	0.0	8.9	87.2		3.9	

PROJECT: Raising Cane's C0935 Simsbury, CT

PROJECT NUMBER: J2225062

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 J2225062 RAISING CANE'S RC.GPJ TERRACON_DATATEMPLATE.GDT 12/9/22

Summary of Laboratory Results

BORING ID	Depth (Ft.)	Water Content (%)
B-1	15-17	4.0
B-2	3-5	5.9
B-3	7-9	5.2

PROJECT: Raising Cane's C0935 Simsbury, CT

SITE: Albany Turnpike & Bushy Hill Road
Simsbury, Connecticut

Terracon
201 Hammer Mill Rd, Ste B
Rocky Hill, CT

PROJECT NUMBER: J2225062

CLIENT: Raising Cane's Restaurants, LLC
Plano, Texas

SUPPORTING INFORMATION

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

Raising Cane's C0935 Simsbury, CT ■ Simsbury, Connecticut

Terracon Project No. J2225062

Terracon GeoReport

SAMPLING

Standard Penetration Test

WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Cave In Encountered

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
UC	**Unconfined Compressive Strength**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Terracon GeoReport

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

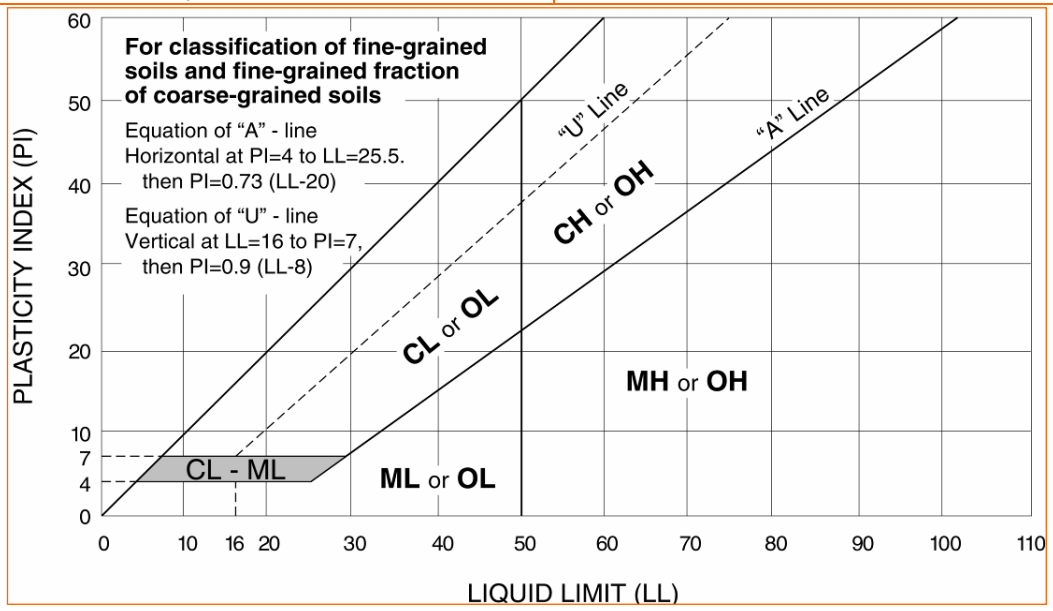
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

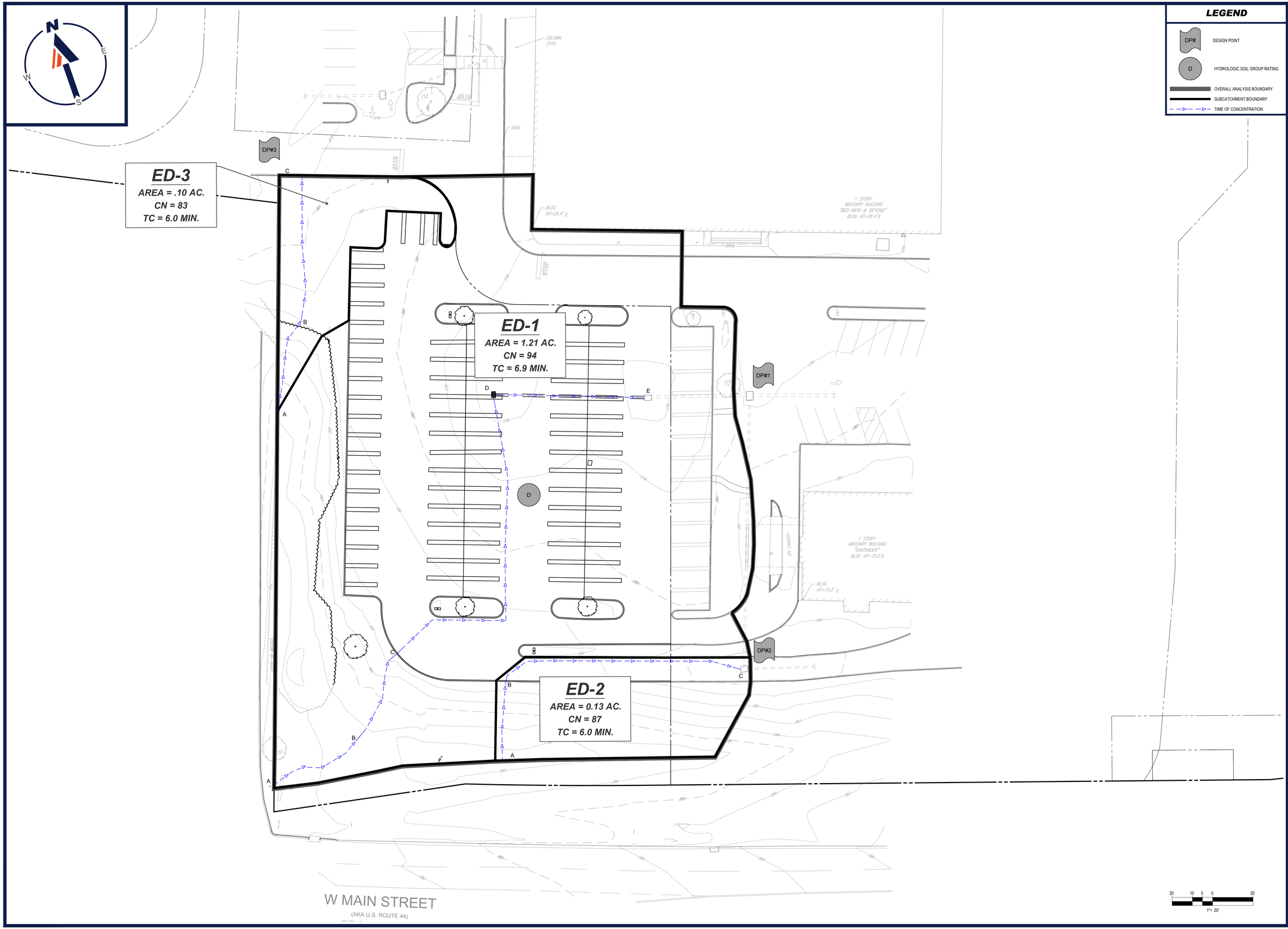
[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



APPENDIX C: EXISTING CONDITIONS HYDROLOGIC ANALYSIS

- *EXISTING CONDITIONS DRAINAGE MAP*
- *EXISTING CONDITIONS CN CALCULATIONS*
- *EXISTING CONDITIONS HYDROCAD COMPUTATIONS*



Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:

RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:

BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -

UPDATE ISSUE DATE: -

PROJECT MANAGER: JGB

FOR CONCEPT PURPOSES ONLY

PROFESSIONAL OF RECORD:

J.G. BORD
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 30414

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:

SHEET TITLE:

EXISTING CONDITIONS DRAINAGE AREA MAP

DATE: 01/23/2022

PROJECT NUMBER: CTA220075.00

DRAWN BY: KMB

SHEET NUMBER:

EXDAM

P:\2022\CTA220075.00\CAD\DRAWINGS\PLAN SETS\DRAINAGE MAPS\CTA220075.00-EDAM.dwg —— LAYOUT: EXDAM EXIST. WATERSHED-24X36

Runoff Calculations Cn Worksheet

Project: **CTA220075.00 - Raising Cane's Simsbury**

Description: **ED-1**

Soil Group	Land Use Description	CN (A)	% or Area (Acre) (B)	Product (A x B) (C)
A				
B	Meadow			
C	Meadow			
D	Impervious (Low Traffic Parking Lot)	98	0.820	80.36
	Impervious	98	0.03	3.15
	Woods, Fair Condition	79	0.10	7.74
	Open Space (Lawns), Fair Condition	84	0.26	22.18
Impervious				
			1.21	**113.42**

CN (weighted) = $\frac{\text{Total (C)}}{\text{Total (B)}} = \frac{113.42}{1.21} = 93.42$

CN = 93

Runoff Calculations Cn Worksheet

Project: **CTA220075.00 - Raising Cane's Simsbury**

Description: **ED-2**

Soil Group	Land Use Description	CN (A)	% or Area (Acre) (B)	Product (A x B) (C)
A				
B	Meadow			
C	Meadow			
D	Impervious (Low Traffic Parking Lot)	98	0.031	3.08
	Open Space (Lawns), Fair Condition	84	0.10	8.62
Impervious				
			0.13	**11.70**

CN (weighted) = $\frac{\text{Total (C)}}{\text{Total (B)}} = \frac{11.70}{0.13} = 87.28$

CN = 87

Runoff Calculations Cn Worksheet

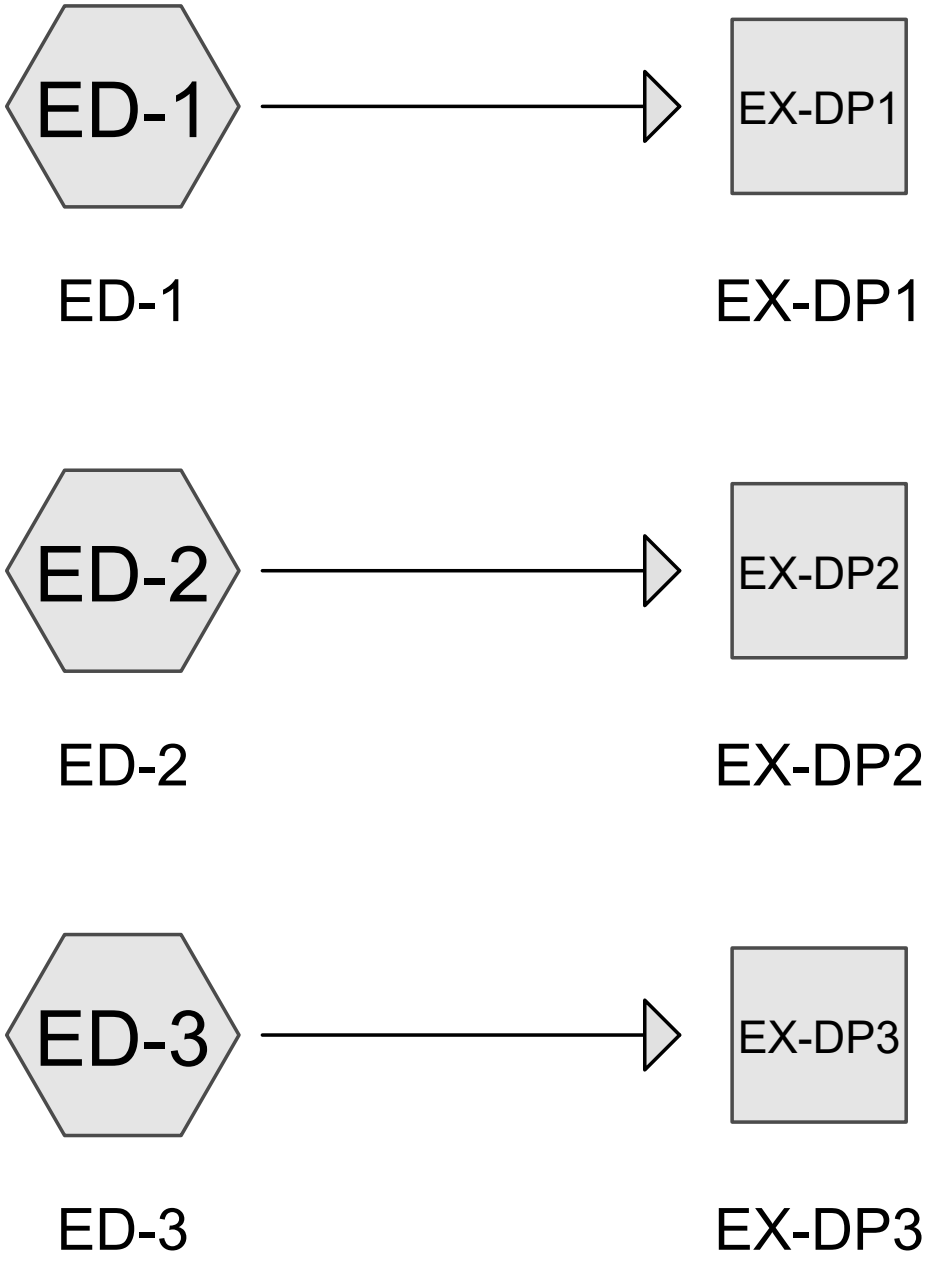
Project: **CTA220075.00 - Raising Cane's Simsbury**

Description: **ED-3**

Soil Group	Land Use Description	CN (A)	% or Area (Acre) (B)	Product (A x B) (C)
A				
B	Meadow			
C	Meadow			
D	Open Space (Lawns), Fair Condition	84	0.087	7.32
	Woods, Fair Condition	79	0.01	0.84
Impervious				
			0.10	**8.15**

CN (weighted) = $\frac{\text{Total (C)}}{\text{Total (B)}} = \frac{8.15}{0.10} = 83.46$

CN = 83



Subcat Reach Pond Link

Routing Diagram for CTA220075.00 Pre vs. Post

Prepared by {enter your company name here}, Printed 4/17/2023

Summary for Subcatchment ED-1: ED-1

Runoff = 3.57 cfs @ 12.09 hrs, Volume= 0.270 af, Depth> 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	1.210	93	
	1.210		100.00% Pervious Area

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

Summary for Subcatchment ED-2: ED-2

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	0.130	87	
	0.130		100.00% Pervious Area

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

Summary for Subcatchment ED-3: ED-3

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	0.100	83	
	0.100		100.00% Pervious Area

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

Summary for Reach EX-DP1: EX-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth > 2.67" for 2 Year Storm event
Inflow = 3.57 cfs @ 12.09 hrs, Volume= 0.270 af
Outflow = 3.57 cfs @ 12.09 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP2: EX-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth > 2.13" for 2 Year Storm event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.32 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP3: EX-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth > 1.81" for 2 Year Storm event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Subcatchment ED-1: ED-1

Runoff = 6.12 cfs @ 12.09 hrs, Volume= 0.477 af, Depth> 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	1.210	93	
	1.210		100.00% Pervious Area

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

Summary for Subcatchment ED-2: ED-2

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	0.130	87	
	0.130		100.00% Pervious Area

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

Summary for Subcatchment ED-3: ED-3

Runoff = 0.43 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	0.100	83	
	0.100		100.00% Pervious Area

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

Summary for Reach EX-DP1: EX-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth > 4.73" for 10 Year Storm event
Inflow = 6.12 cfs @ 12.09 hrs, Volume= 0.477 af
Outflow = 6.12 cfs @ 12.09 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP2: EX-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth > 4.08" for 10 Year Storm event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.61 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP3: EX-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth > 3.67" for 10 Year Storm event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 0.031 af
Outflow = 0.43 cfs @ 12.09 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Subcatchment ED-1: ED-1

Runoff = 7.70 cfs @ 12.09 hrs, Volume= 0.609 af, Depth> 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	1.210	93	
	1.210		100.00% Pervious Area

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

Summary for Subcatchment ED-2: ED-2

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	0.130	87	
	0.130		100.00% Pervious Area

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

Summary for Subcatchment ED-3: ED-3

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	0.100	83	
	0.100		100.00% Pervious Area

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

Summary for Reach EX-DP1: EX-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth > 6.04" for 25 Year Storm event
Inflow = 7.70 cfs @ 12.09 hrs, Volume= 0.609 af
Outflow = 7.70 cfs @ 12.09 hrs, Volume= 0.609 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP2: EX-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth > 5.35" for 25 Year Storm event
Inflow = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af
Outflow = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP3: EX-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth > 4.90" for 25 Year Storm event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Subcatchment ED-1: ED-1

Runoff = 10.11 cfs @ 12.09 hrs, Volume= 0.812 af, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	1.210	93	
	1.210		100.00% Pervious Area

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

Summary for Subcatchment ED-2: ED-2

Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.079 af, Depth> 7.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	0.130	87	
	0.130		100.00% Pervious Area

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

Summary for Subcatchment ED-3: ED-3

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	0.100	83	
	0.100		100.00% Pervious Area

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

Summary for Reach EX-DP1: EX-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth > 8.05" for 100 Year Storm event
Inflow = 10.11 cfs @ 12.09 hrs, Volume= 0.812 af
Outflow = 10.11 cfs @ 12.09 hrs, Volume= 0.812 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP2: EX-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth > 7.32" for 100 Year Storm event
Inflow = 1.06 cfs @ 12.08 hrs, Volume= 0.079 af
Outflow = 1.06 cfs @ 12.08 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach EX-DP3: EX-DP3

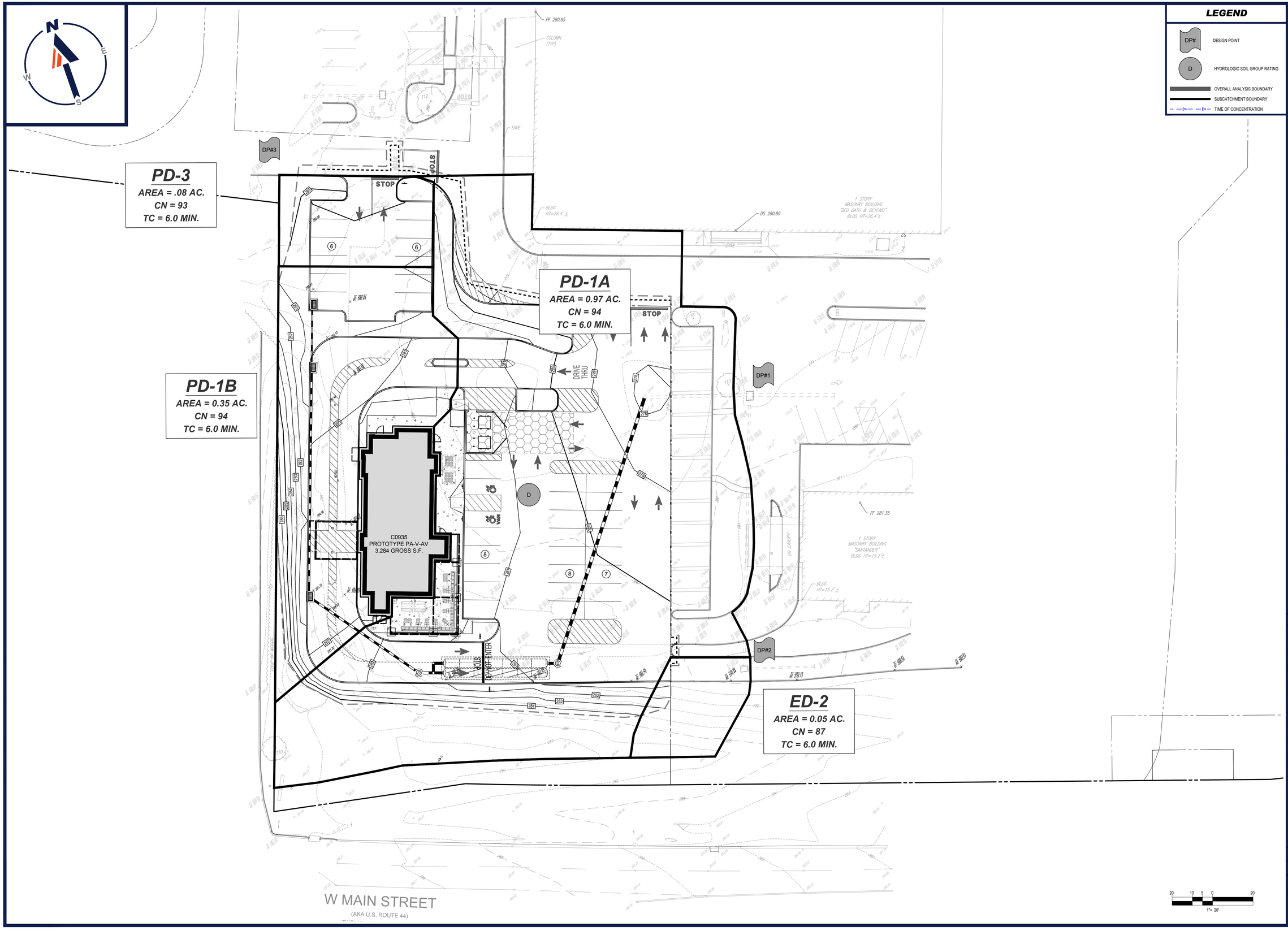
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth > 6.83" for 100 Year Storm event
Inflow = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

APPENDIX D: PROPOSED CONDITIONS HYDROLOGIC ANALYSIS

- *PROPOSED CONDITIONS DRAINAGE MAP*
- *PROPOSED CONDITIONS CN CALCULATIONS*
- *PROPOSED CONDITIONS HYDROCAD CALCULATIONS*



Raising Cane's Chicken Fingers

Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:

RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:

BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -

UPDATE ISSUE DATE: -

PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

J.G. BORD
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 30414

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:

SHEET TITLE:

PROPOSED CONDITIONS DRAINAGE AREA MAP

DATE: 01/23/2022

PROJECT NUMBER: CTA220075.00

DRAWN BY: KMB

SHEET NUMBER:

PRDAM

P:\2022\CTA220075.00\CAD\DRAWINGS\PLAN SETS\DRAINAGE MAPS\CTA220075.00-PRDAM.dwg —LAYOUT: PRDAM PROP. WATERSHED-24X36

Runoff Calculations Cn Worksheet

Project: **CTA220075.00 - Raising Cane's Simsbury**

Description: **PD-1A**

Soil Group	Land Use Description	CN (A)	% or Area (Acre) (B)	Product (A x B) (C)
A				
B	Meadow			
C	Meadow			
D	Impervious (Low Traffic Parking Lot)	98	0.679	66.58
	Open Space (Lawns), Fair Condition	84	0.30	24.82
Impervious				
			0.97	**91.40**

CN (weighted) = $\frac{\text{Total (C)}}{\text{Total (B)}} = \frac{91.40}{0.97} = 93.76$

CN = 94

Runoff Calculations Cn Worksheet

Project: **CTA220075.00 - Raising Cane's Simsbury**

Description: **PD-1B**

Soil Group	Land Use Description	CN (A)	% or Area (Acre) (B)	Product (A x B) (C)
A				
B	Meadow			
C	Meadow			
D	Impervious (Low Traffic Parking Lot)	98	0.240	23.52
	Open Space (Lawns), Fair Condition	84	0.11	9.34
Impervious				
			0.35	**32.86**

CN (weighted) = $\frac{\text{Total (C)}}{\text{Total (B)}} = \frac{32.86}{0.35} = 93.57$

CN = 94

Runoff Calculations Cn Worksheet

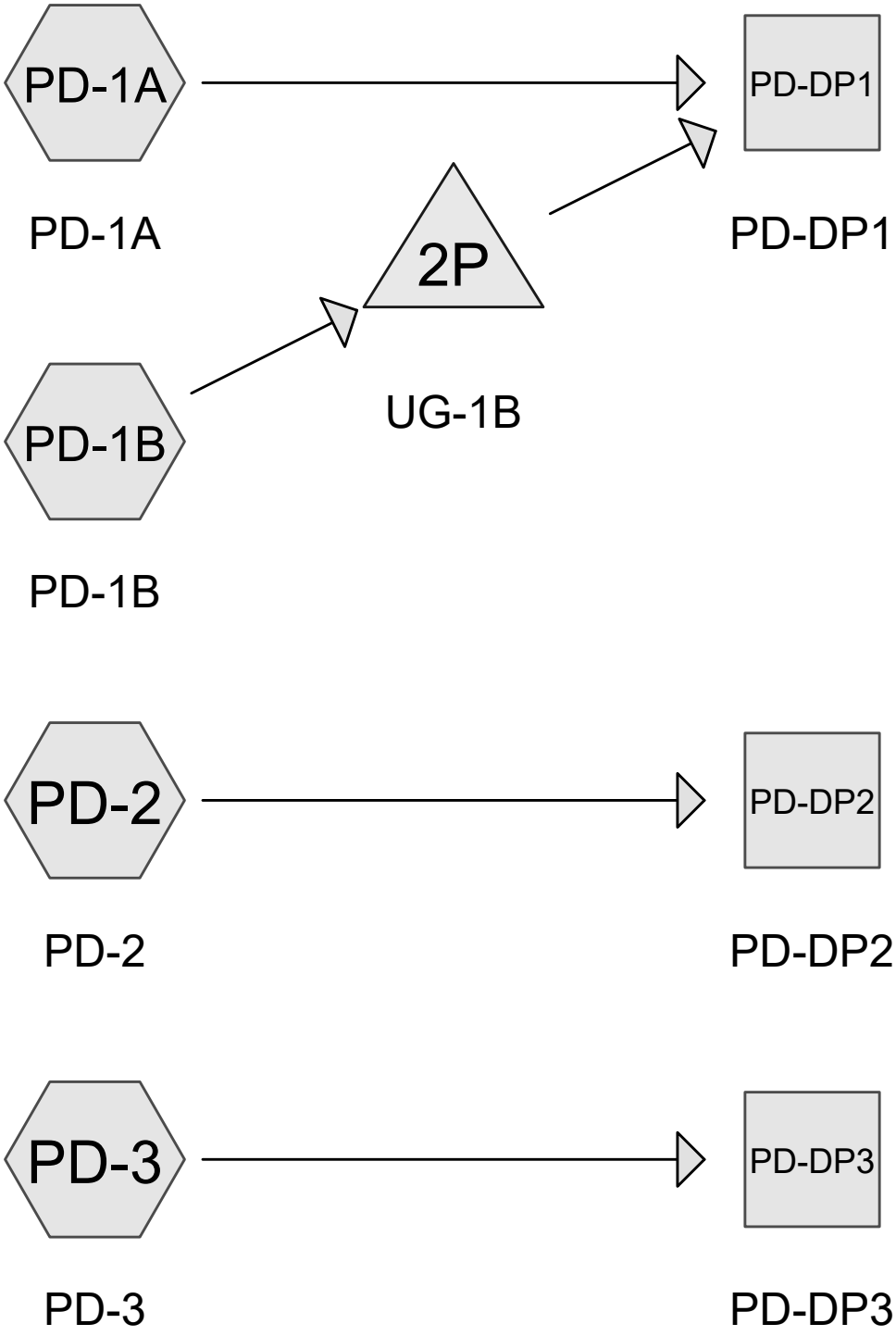
Project: **CTA220075.00 - Raising Cane's Simsbury**

Description: **PD-2**

Soil Group	Land Use Description	CN (A)	% or Area (Acre) (B)	Product (A x B) (C)
A				
B	Meadow			
C	Meadow			
D	Impervious (Low Traffic Parking Lot)	98	0.011	1.09
	Open Space (Lawns), Fair Condition	84	0.04	3.37
Impervious				
			0.05	**4.47**

CN (weighted) = $\frac{\text{Total (C)}}{\text{Total (B)}} = \frac{4.47}{0.05} = 87.04$

CN = 87



Subcat Reach Pond Link

Routing Diagram for CTA220075.00 Pre vs. Post
Prepared by {enter your company name here}, Printed 4/17/2023

Summary for Subcatchment PD-1A: PD-1A

Runoff = 3.01 cfs @ 12.08 hrs, Volume= 0.224 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	0.970	94	
	0.970		100.00% Pervious Area

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

Summary for Subcatchment PD-1B: PD-1B

Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.081 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	0.350	94	Direct
	0.350		100.00% Pervious Area

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

Summary for Subcatchment PD-2: PD-2

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	0.050	90	
	0.050		100.00% Pervious Area

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

Summary for Subcatchment PD-3: PD-3

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

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

Summary for Reach PD-DP1: PD-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.320 ac, 0.00% Impervious, Inflow Depth > 2.77" for 2 Year Storm event
Inflow = 3.56 cfs @ 12.09 hrs, Volume= 0.305 af
Outflow = 3.56 cfs @ 12.09 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP2: PD-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth > 2.39" for 2 Year Storm event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af
Outflow = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP3: PD-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 2.58" for 2 Year Storm event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 2.77" for 2 Year Storm event
Inflow = 1.09 cfs @ 12.08 hrs, Volume= 0.081 af
Outflow = 0.63 cfs @ 12.19 hrs, Volume= 0.081 af, Atten= 42%, Lag= 6.6 min
Primary = 0.63 cfs @ 12.19 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 275.74' @ 12.19 hrs Surf.Area= 0.013 ac Storage= 0.009 af

Plug-Flow detention time= 10.7 min calculated for 0.081 af (100% of inflow)
Center-of-Mass det. time= 8.1 min (792.3 - 784.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.63 cfs @ 12.19 hrs HW=275.74' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.63 cfs of 2.72 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 4.64 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

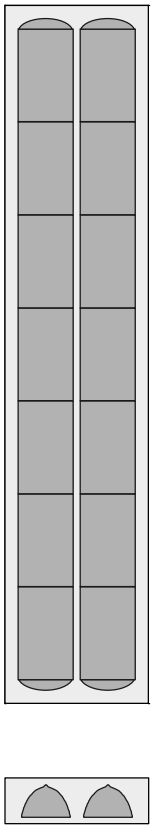
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Summary for Subcatchment PD-1A: PD-1A

Runoff = 5.09 cfs @ 12.08 hrs, Volume= 0.392 af, Depth> 4.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	0.970	94	
	0.970		100.00% Pervious Area

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

Summary for Subcatchment PD-1B: PD-1B

Runoff = 1.84 cfs @ 12.08 hrs, Volume= 0.141 af, Depth> 4.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	0.350	94	Direct
	0.350		100.00% Pervious Area

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

Summary for Subcatchment PD-2: PD-2

Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.018 af, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	0.050	90	
	0.050		100.00% Pervious Area

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

Summary for Subcatchment PD-3: PD-3

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.027 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.55"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

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

Summary for Reach PD-DP1: PD-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.320 ac, 0.00% Impervious, Inflow Depth > 4.84" for 10 Year Storm event
Inflow = 6.07 cfs @ 12.09 hrs, Volume= 0.533 af
Outflow = 6.07 cfs @ 12.09 hrs, Volume= 0.533 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP2: PD-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth > 4.40" for 10 Year Storm event
Inflow = 0.25 cfs @ 12.08 hrs, Volume= 0.018 af
Outflow = 0.25 cfs @ 12.08 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP3: PD-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 4.62" for 10 Year Storm event
Inflow = 0.36 cfs @ 12.08 hrs, Volume= 0.027 af
Outflow = 0.36 cfs @ 12.08 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 4.85" for 10 Year Storm event
Inflow = 1.84 cfs @ 12.08 hrs, Volume= 0.141 af
Outflow = 1.18 cfs @ 12.18 hrs, Volume= 0.141 af, Atten= 36%, Lag= 5.5 min
Primary = 1.18 cfs @ 12.18 hrs, Volume= 0.141 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 276.54' @ 12.18 hrs Surf.Area= 0.013 ac Storage= 0.017 af

Plug-Flow detention time= 9.9 min calculated for 0.141 af (100% of inflow)
Center-of-Mass det. time= 7.9 min (777.9 - 770.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.18 cfs @ 12.18 hrs HW=276.54' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.86 cfs of 3.54 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.86 cfs @ 6.34 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Orifice Controls 0.32 cfs @ 3.65 fps)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

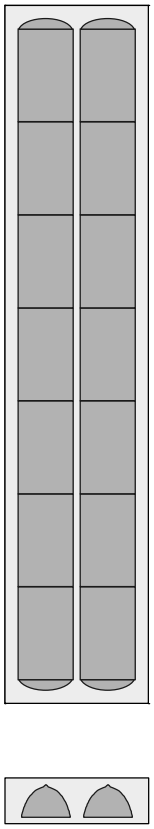
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Summary for Subcatchment PD-1A: PD-1A

Runoff = 6.38 cfs @ 12.08 hrs, Volume= 0.497 af, Depth> 6.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	0.970	94	
	0.970		100.00% Pervious Area

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

Summary for Subcatchment PD-1B: PD-1B

Runoff = 2.30 cfs @ 12.08 hrs, Volume= 0.179 af, Depth> 6.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	0.350	94	Direct
	0.350		100.00% Pervious Area

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

Summary for Subcatchment PD-2: PD-2

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	0.050	90	
	0.050		100.00% Pervious Area

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

Summary for Subcatchment PD-3: PD-3

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=6.87"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

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

Summary for Reach PD-DP1: PD-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.320 ac, 0.00% Impervious, Inflow Depth > 6.15" for 25 Year Storm event
Inflow = 7.61 cfs @ 12.09 hrs, Volume= 0.676 af
Outflow = 7.61 cfs @ 12.09 hrs, Volume= 0.676 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP2: PD-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth > 5.69" for 25 Year Storm event
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.024 af
Outflow = 0.32 cfs @ 12.08 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP3: PD-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 5.92" for 25 Year Storm event
Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 6.15" for 25 Year Storm event
Inflow = 2.30 cfs @ 12.08 hrs, Volume= 0.179 af
Outflow = 1.46 cfs @ 12.18 hrs, Volume= 0.179 af, Atten= 37%, Lag= 5.7 min
Primary = 1.46 cfs @ 12.18 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 277.14' @ 12.18 hrs Surf.Area= 0.013 ac Storage= 0.022 af

Plug-Flow detention time= 9.6 min calculated for 0.179 af (100% of inflow)
Center-of-Mass det. time= 7.9 min (772.4 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.46 cfs @ 12.18 hrs HW=277.14' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.00 cfs of 4.14 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.00 cfs @ 7.35 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Orifice Controls 0.45 cfs @ 5.21 fps)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

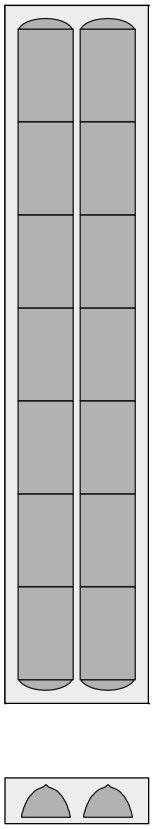
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Summary for Subcatchment PD-1A: PD-1A

Runoff = 8.35 cfs @ 12.08 hrs, Volume= 0.660 af, Depth> 8.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	0.970	94	
	0.970		100.00% Pervious Area

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

Summary for Subcatchment PD-1B: PD-1B

Runoff = 3.01 cfs @ 12.08 hrs, Volume= 0.238 af, Depth> 8.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	0.350	94	Direct
	0.350		100.00% Pervious Area

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

Summary for Subcatchment PD-2: PD-2

Runoff = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 7.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	0.050	90	
	0.050		100.00% Pervious Area

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

Summary for Subcatchment PD-3: PD-3

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 7.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Storm Rainfall=8.90"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

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

Summary for Reach PD-DP1: PD-DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.320 ac, 0.00% Impervious, Inflow Depth > 8.17" for 100 Year Storm event
Inflow = 9.93 cfs @ 12.09 hrs, Volume= 0.898 af
Outflow = 9.93 cfs @ 12.09 hrs, Volume= 0.898 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP2: PD-DP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth > 7.69" for 100 Year Storm event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af
Outflow = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach PD-DP3: PD-DP3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 7.93" for 100 Year Storm event
Inflow = 0.60 cfs @ 12.08 hrs, Volume= 0.046 af
Outflow = 0.60 cfs @ 12.08 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 8.17" for 100 Year Storm event
Inflow = 3.01 cfs @ 12.08 hrs, Volume= 0.238 af
Outflow = 2.59 cfs @ 12.13 hrs, Volume= 0.238 af, Atten= 14%, Lag= 3.0 min
Primary = 2.59 cfs @ 12.13 hrs, Volume= 0.238 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 278.06' @ 12.13 hrs Surf.Area= 0.013 ac Storage= 0.028 af

Plug-Flow detention time= 9.2 min calculated for 0.238 af (100% of inflow)
Center-of-Mass det. time= 7.7 min (766.1 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.56 cfs @ 12.13 hrs HW=278.05' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.95 cfs of 4.91 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.18 cfs @ 8.67 fps)
  - **3=Sharp-Crested Rectangular Weir** (Weir Controls 0.77 cfs @ 1.28 fps)
- **4=Orifice/Grate** (Orifice Controls 0.61 cfs @ 6.95 fps)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

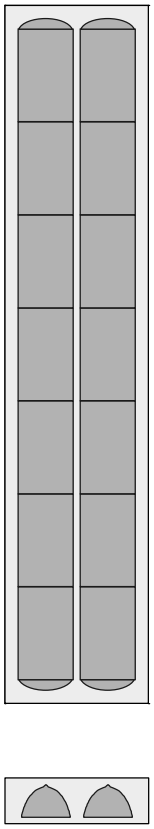
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



APPENDIX E: STORMWATER CALCULATIONS

- *NOAA RAINFALL DATA*
- *POLLUTANT REDUCTION*
- *CONVEYANCE PROTECTION CALCULATIONS*

NOAA Atlas 14, Volume 10, Version 3
Location name: Simsbury, Connecticut, USA*
Latitude: 41.8181°, Longitude: -72.864°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.355 (0.273-0.455)	0.425 (0.326-0.545)	0.539 (0.412-0.694)	0.633 (0.482-0.821)	0.763 (0.563-1.04)	0.861 (0.624-1.20)	0.963 (0.679-1.39)	1.08 (0.723-1.60)	1.24 (0.800-1.91)	1.37 (0.864-2.16)
10-min	0.503 (0.387-0.645)	0.602 (0.462-0.773)	0.763 (0.584-0.983)	0.897 (0.683-1.16)	1.08 (0.798-1.47)	1.22 (0.884-1.70)	1.37 (0.962-1.97)	1.53 (1.02-2.27)	1.75 (1.13-2.71)	1.93 (1.22-3.06)
15-min	0.592 (0.455-0.759)	0.708 (0.543-0.909)	0.898 (0.687-1.16)	1.06 (0.803-1.37)	1.27 (0.939-1.73)	1.44 (1.04-2.00)	1.61 (1.13-2.32)	1.79 (1.20-2.67)	2.06 (1.33-3.18)	2.28 (1.44-3.60)
30-min	0.801 (0.616-1.03)	0.959 (0.736-1.23)	1.22 (0.932-1.57)	1.43 (1.09-1.86)	1.73 (1.28-2.35)	1.95 (1.41-2.71)	2.18 (1.54-3.16)	2.44 (1.64-3.63)	2.80 (1.81-4.33)	3.10 (1.96-4.89)
60-min	1.01 (0.777-1.30)	1.21 (0.930-1.56)	1.54 (1.18-1.98)	1.81 (1.38-2.35)	2.18 (1.61-2.97)	2.47 (1.79-3.43)	2.76 (1.95-3.99)	3.09 (2.07-4.59)	3.55 (2.30-5.48)	3.92 (2.48-6.19)
2-hr	1.31 (1.01-1.67)	1.56 (1.21-1.99)	1.98 (1.52-2.53)	2.32 (1.78-2.99)	2.80 (2.08-3.79)	3.15 (2.31-4.38)	3.53 (2.52-5.13)	3.97 (2.68-5.89)	4.64 (3.01-7.15)	5.20 (3.30-8.19)
3-hr	1.51 (1.18-1.92)	1.81 (1.40-2.30)	2.29 (1.77-2.93)	2.70 (2.07-3.46)	3.25 (2.43-4.40)	3.66 (2.69-5.09)	4.10 (2.95-5.97)	4.64 (3.13-6.87)	5.47 (3.56-8.41)	6.18 (3.93-9.70)
6-hr	1.91 (1.49-2.40)	2.30 (1.80-2.91)	2.96 (2.30-3.75)	3.50 (2.71-4.46)	4.24 (3.20-5.72)	4.79 (3.55-6.64)	5.39 (3.91-7.84)	6.14 (4.15-9.04)	7.31 (4.77-11.2)	8.34 (5.32-13.0)
12-hr	2.34 (1.85-2.94)	2.89 (2.27-3.62)	3.77 (2.96-4.75)	4.50 (3.51-5.71)	5.52 (4.19-7.42)	6.26 (4.67-8.65)	7.07 (5.17-10.3)	8.11 (5.51-11.9)	9.74 (6.38-14.9)	11.2 (7.15-17.4)
24-hr	2.74 (2.17-3.41)	3.44 (2.73-4.29)	4.60 (3.63-5.75)	5.55 (4.36-6.99)	6.87 (5.26-9.21)	7.83 (5.89-10.8)	8.90 (6.57-13.0)	10.3 (7.02-15.0)	12.5 (8.23-19.1)	14.5 (9.33-22.6)
2-day	3.07 (2.45-3.79)	3.93 (3.14-4.86)	5.34 (4.25-6.64)	6.51 (5.15-8.15)	8.13 (6.28-10.9)	9.29 (7.07-12.8)	10.6 (7.94-15.5)	12.4 (8.48-18.1)	15.4 (10.1-23.3)	18.1 (11.7-28.0)
3-day	3.34 (2.68-4.11)	4.29 (3.44-5.29)	5.85 (4.67-7.23)	7.14 (5.67-8.89)	8.91 (6.91-11.9)	10.2 (7.79-14.1)	11.6 (8.76-17.1)	13.7 (9.36-19.8)	17.0 (11.2-25.7)	20.1 (13.0-31.0)
4-day	3.59 (2.89-4.41)	4.61 (3.71-5.66)	6.27 (5.02-7.73)	7.64 (6.09-9.50)	9.54 (7.42-12.7)	10.9 (8.35-15.0)	12.5 (9.39-18.2)	14.6 (10.0-21.2)	18.2 (12.0-27.5)	21.5 (13.9-33.1)
7-day	4.29 (3.48-5.24)	5.43 (4.40-6.64)	7.30 (5.89-8.96)	8.85 (7.09-10.9)	11.0 (8.58-14.5)	12.5 (9.63-17.1)	14.3 (10.8-20.7)	16.6 (11.5-24.0)	20.6 (13.6-31.0)	24.1 (15.6-37.1)
10-day	4.99 (4.06-6.07)	6.20 (5.04-7.55)	8.17 (6.61-9.99)	9.80 (7.88-12.1)	12.1 (9.43-15.9)	13.7 (10.5-18.6)	15.5 (11.7-22.3)	18.0 (12.4-25.9)	22.0 (14.6-33.0)	25.6 (16.6-39.3)
20-day	7.21 (5.91-8.70)	8.46 (6.92-10.2)	10.5 (8.56-12.8)	12.2 (9.88-14.9)	14.5 (11.4-18.9)	16.2 (12.5-21.7)	18.1 (13.6-25.6)	20.6 (14.3-29.4)	24.4 (16.3-36.4)	27.8 (18.1-42.5)
30-day	9.06 (7.46-10.9)	10.3 (8.49-12.4)	12.4 (10.1-15.0)	14.1 (11.5-17.2)	16.5 (13.0-21.2)	18.2 (14.0-24.1)	20.1 (15.0-28.0)	22.4 (15.7-31.9)	25.9 (17.4-38.6)	29.0 (18.9-44.2)
45-day	11.4 (9.39-13.6)	12.7 (10.4-15.2)	14.8 (12.1-17.8)	16.5 (13.5-20.1)	18.9 (14.9-24.2)	20.8 (16.0-27.2)	22.7 (16.8-31.0)	24.8 (17.4-35.2)	27.9 (18.7-41.3)	30.3 (19.8-46.1)
60-day	13.3 (11.0-15.8)	14.6 (12.1-17.5)	16.8 (13.9-20.2)	18.6 (15.3-22.5)	21.1 (16.7-26.8)	23.1 (17.7-30.0)	25.0 (18.5-33.8)	27.0 (19.0-38.1)	29.6 (19.9-43.7)	31.6 (20.6-47.9)

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

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

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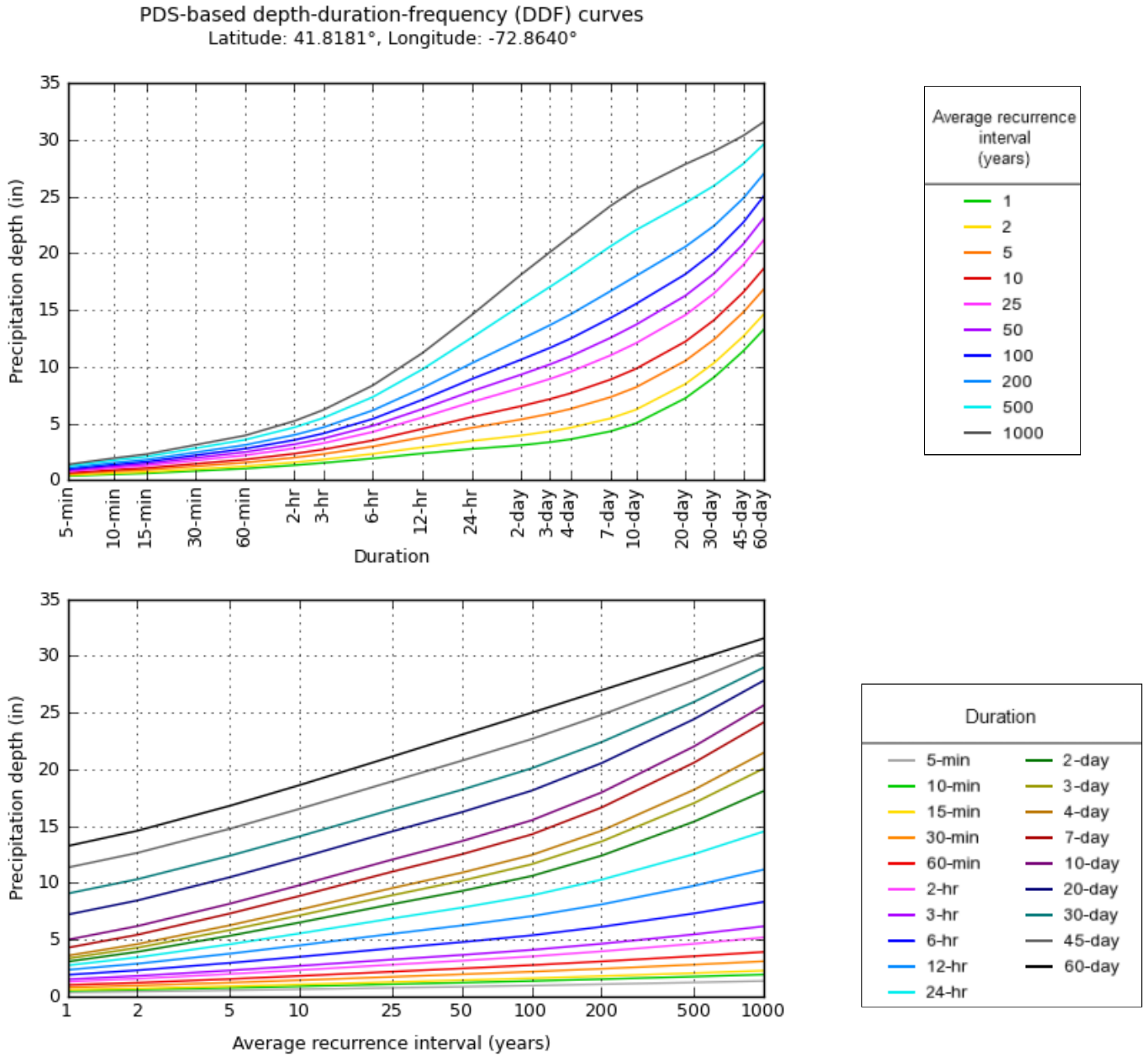
Back to Top

PF graphical



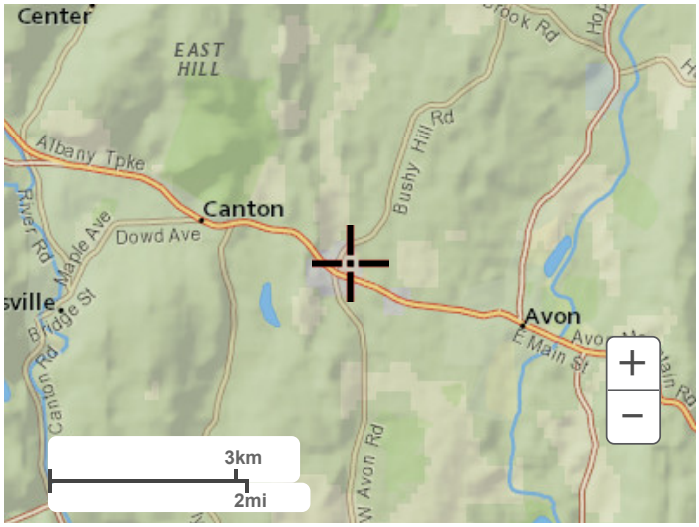
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Fri Mar 17 16:52:40 2023

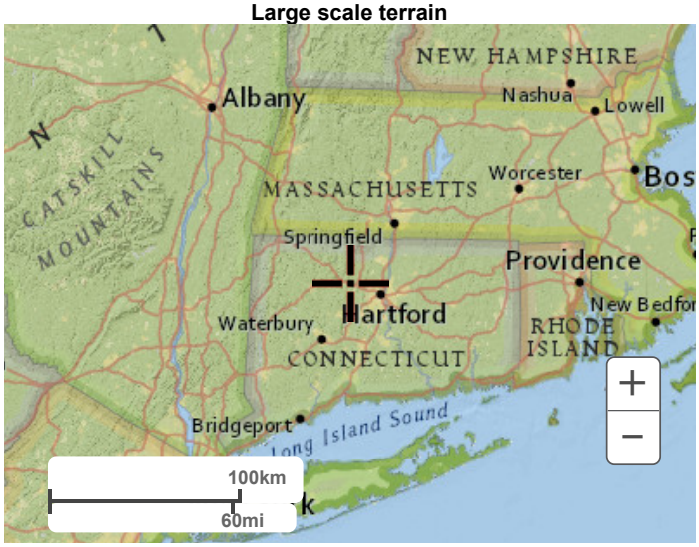
Back to Top

Maps & aerials

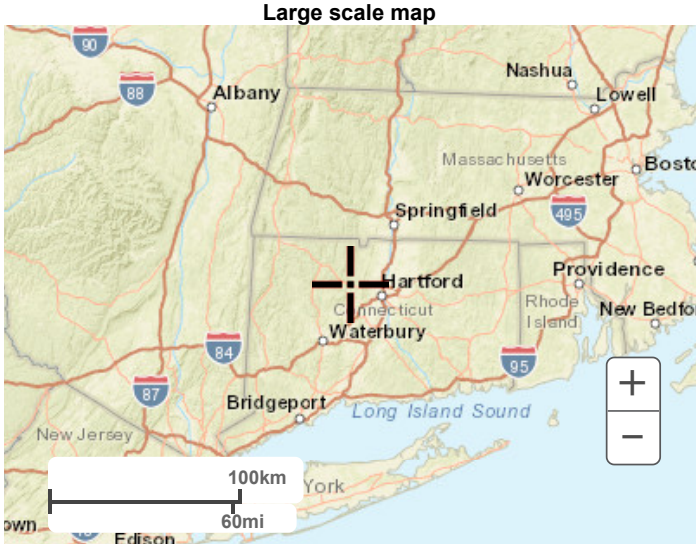
Small scale terrain



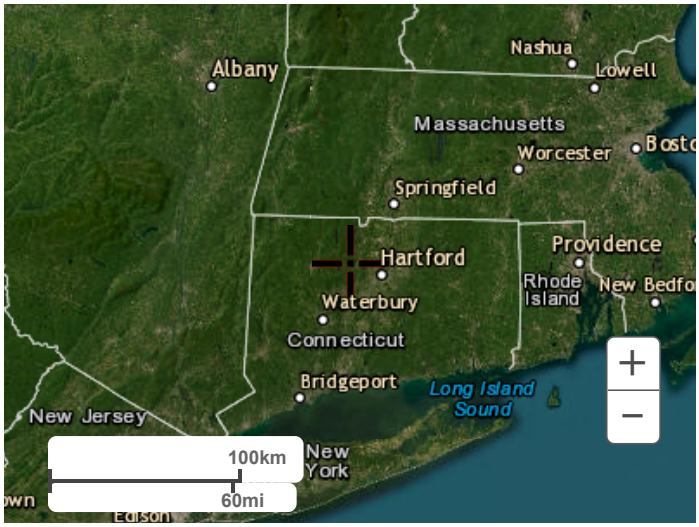
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 10, Version 3
Location name: Simsbury, Connecticut, USA*
Latitude: 41.8181°, Longitude: -72.864°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.26** (3.28-5.46)	**5.10** (3.91-6.54)	**6.47** (4.94-8.33)	**7.60** (5.78-9.85)	**9.16** (6.76-12.4)	**10.3** (7.49-14.4)	**11.6** (8.15-16.7)	**12.9** (8.68-19.2)	**14.8** (9.60-22.9)	**16.4** (10.4-25.9)
10-min	**3.02** (2.32-3.87)	**3.61** (2.77-4.64)	**4.58** (3.50-5.90)	**5.38** (4.10-6.98)	**6.49** (4.79-8.81)	**7.32** (5.30-10.2)	**8.19** (5.77-11.8)	**9.15** (6.14-13.6)	**10.5** (6.80-16.2)	**11.6** (7.34-18.3)
15-min	**2.37** (1.82-3.04)	**2.83** (2.17-3.64)	**3.59** (2.75-4.63)	**4.22** (3.21-5.47)	**5.09** (3.76-6.91)	**5.74** (4.16-7.98)	**6.42** (4.52-9.29)	**7.18** (4.82-10.7)	**8.24** (5.33-12.7)	**9.10** (5.76-14.4)
30-min	**1.60** (1.23-2.06)	**1.92** (1.47-2.46)	**2.44** (1.86-3.14)	**2.86** (2.18-3.71)	**3.46** (2.55-4.70)	**3.90** (2.83-5.43)	**4.37** (3.08-6.32)	**4.88** (3.27-7.26)	**5.61** (3.63-8.66)	**6.20** (3.92-9.79)
60-min	**1.01** (0.777-1.30)	**1.21** (0.930-1.56)	**1.54** (1.18-1.98)	**1.81** (1.38-2.35)	**2.18** (1.61-2.97)	**2.47** (1.79-3.43)	**2.76** (1.95-3.99)	**3.09** (2.07-4.59)	**3.55** (2.30-5.48)	**3.92** (2.48-6.19)
2-hr	**0.654** (0.506-0.834)	**0.782** (0.604-0.997)	**0.989** (0.762-1.27)	**1.16** (0.890-1.50)	**1.40** (1.04-1.90)	**1.58** (1.15-2.19)	**1.76** (1.26-2.56)	**1.99** (1.34-2.94)	**2.32** (1.51-3.57)	**2.60** (1.65-4.09)
3-hr	**0.503** (0.391-0.639)	**0.602** (0.468-0.765)	**0.764** (0.591-0.974)	**0.897** (0.691-1.15)	**1.08** (0.810-1.47)	**1.22** (0.896-1.69)	**1.37** (0.982-1.99)	**1.55** (1.04-2.29)	**1.82** (1.18-2.80)	**2.06** (1.31-3.23)
6-hr	**0.318** (0.249-0.401)	**0.385** (0.301-0.486)	**0.493** (0.384-0.625)	**0.584** (0.452-0.745)	**0.708** (0.534-0.956)	**0.799** (0.593-1.11)	**0.899** (0.652-1.31)	**1.02** (0.694-1.51)	**1.22** (0.796-1.87)	**1.39** (0.888-2.18)
12-hr	**0.195** (0.153-0.244)	**0.239** (0.189-0.300)	**0.313** (0.246-0.394)	**0.374** (0.292-0.474)	**0.458** (0.348-0.615)	**0.519** (0.388-0.718)	**0.587** (0.429-0.854)	**0.673** (0.457-0.988)	**0.809** (0.529-1.23)	**0.928** (0.594-1.45)
24-hr	**0.114** (0.091-0.142)	**0.143** (0.114-0.179)	**0.191** (0.151-0.239)	**0.231** (0.182-0.291)	**0.286** (0.219-0.384)	**0.326** (0.246-0.450)	**0.371** (0.274-0.540)	**0.429** (0.292-0.627)	**0.523** (0.343-0.795)	**0.606** (0.389-0.941)
2-day	**0.064** (0.051-0.079)	**0.082** (0.065-0.101)	**0.111** (0.089-0.138)	**0.136** (0.107-0.170)	**0.169** (0.131-0.227)	**0.194** (0.147-0.268)	**0.221** (0.165-0.324)	**0.258** (0.177-0.376)	**0.321** (0.211-0.486)	**0.377** (0.243-0.583)
3-day	**0.046** (0.037-0.057)	**0.060** (0.048-0.073)	**0.081** (0.065-0.100)	**0.099** (0.079-0.123)	**0.124** (0.096-0.165)	**0.142** (0.108-0.195)	**0.162** (0.122-0.237)	**0.190** (0.130-0.276)	**0.236** (0.156-0.358)	**0.279** (0.180-0.431)
4-day	**0.037** (0.030-0.046)	**0.048** (0.039-0.059)	**0.065** (0.052-0.081)	**0.080** (0.063-0.099)	**0.099** (0.077-0.132)	**0.114** (0.087-0.156)	**0.130** (0.098-0.190)	**0.152** (0.104-0.221)	**0.190** (0.125-0.286)	**0.224** (0.144-0.345)
7-day	**0.026** (0.021-0.031)	**0.032** (0.026-0.040)	**0.043** (0.035-0.053)	**0.053** (0.042-0.065)	**0.065** (0.051-0.087)	**0.075** (0.057-0.102)	**0.085** (0.064-0.123)	**0.099** (0.068-0.143)	**0.123** (0.081-0.184)	**0.144** (0.093-0.221)
10-day	**0.021** (0.017-0.025)	**0.026** (0.021-0.031)	**0.034** (0.028-0.042)	**0.041** (0.033-0.050)	**0.050** (0.039-0.066)	**0.057** (0.044-0.077)	**0.065** (0.049-0.093)	**0.075** (0.052-0.108)	**0.092** (0.061-0.138)	**0.107** (0.069-0.164)
20-day	**0.015** (0.012-0.018)	**0.018** (0.014-0.021)	**0.022** (0.018-0.027)	**0.025** (0.021-0.031)	**0.030** (0.024-0.039)	**0.034** (0.026-0.045)	**0.038** (0.028-0.053)	**0.043** (0.030-0.061)	**0.051** (0.034-0.076)	**0.058** (0.038-0.089)
30-day	**0.013** (0.010-0.015)	**0.014** (0.012-0.017)	**0.017** (0.014-0.021)	**0.020** (0.016-0.024)	**0.023** (0.018-0.029)	**0.025** (0.019-0.033)	**0.028** (0.021-0.039)	**0.031** (0.022-0.044)	**0.036** (0.024-0.054)	**0.040** (0.026-0.061)
45-day	**0.011** (0.009-0.013)	**0.012** (0.010-0.014)	**0.014** (0.011-0.016)	**0.015** (0.013-0.019)	**0.018** (0.014-0.022)	**0.019** (0.015-0.025)	**0.021** (0.016-0.029)	**0.023** (0.016-0.033)	**0.026** (0.017-0.038)	**0.028** (0.018-0.043)
60-day	**0.009** (0.008-0.011)	**0.010** (0.008-0.012)	**0.012** (0.010-0.014)	**0.013** (0.011-0.016)	**0.015** (0.012-0.019)	**0.016** (0.012-0.021)	**0.017** (0.013-0.023)	**0.019** (0.013-0.026)	**0.021** (0.014-0.030)	**0.022** (0.014-0.033)

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

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

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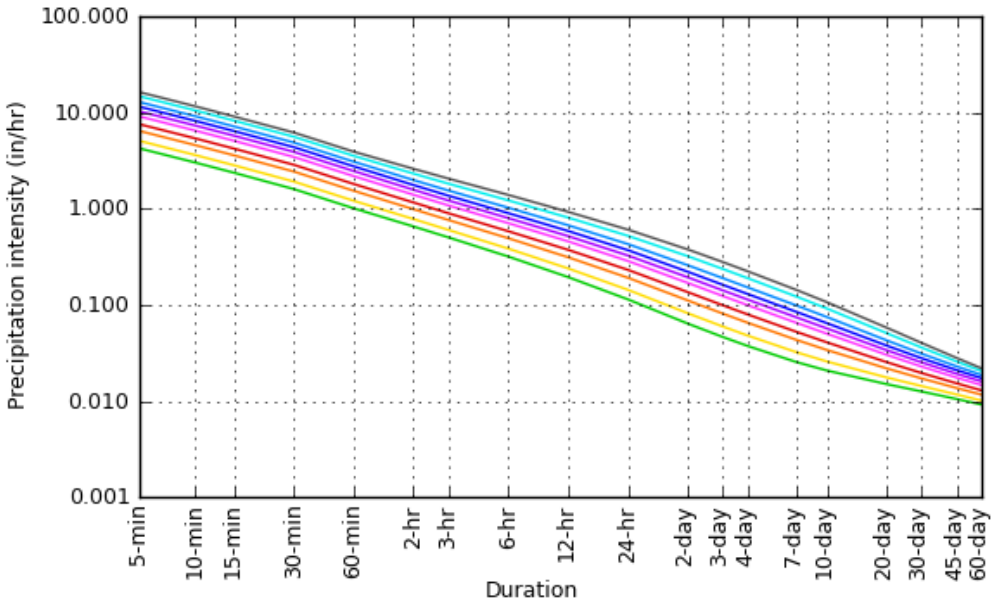
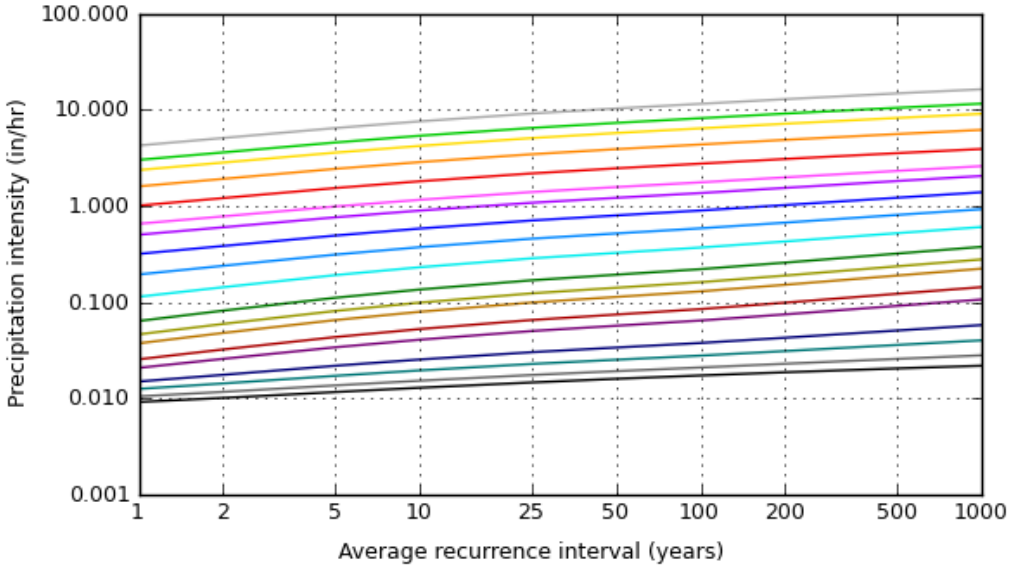
Back to Top

PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.8181°, Longitude: -72.8640°



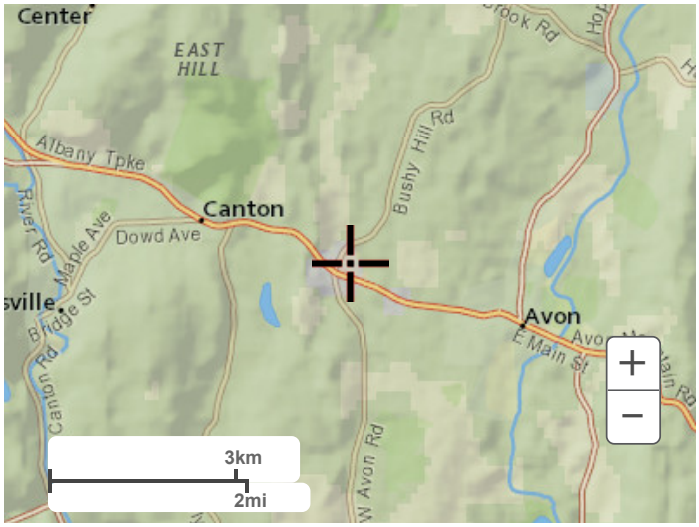


NOAA Atlas 14, Volume 10, Version 3 Created (GMT): Fri Mar 17 16:54:59 2023

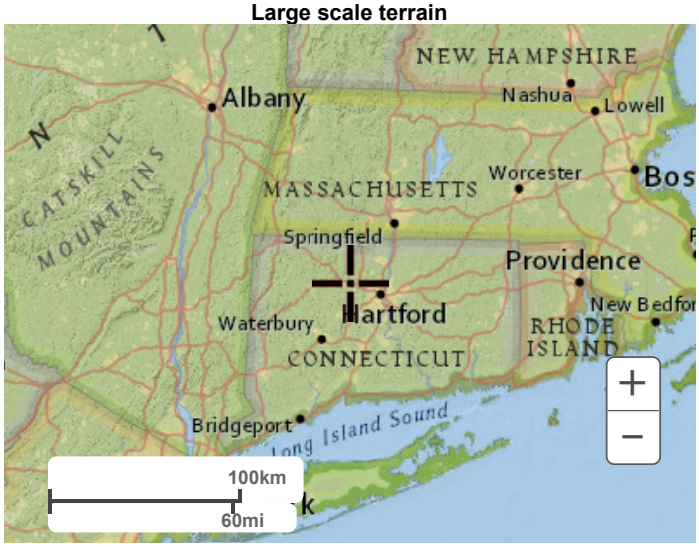
Back to Top

Maps & aerials

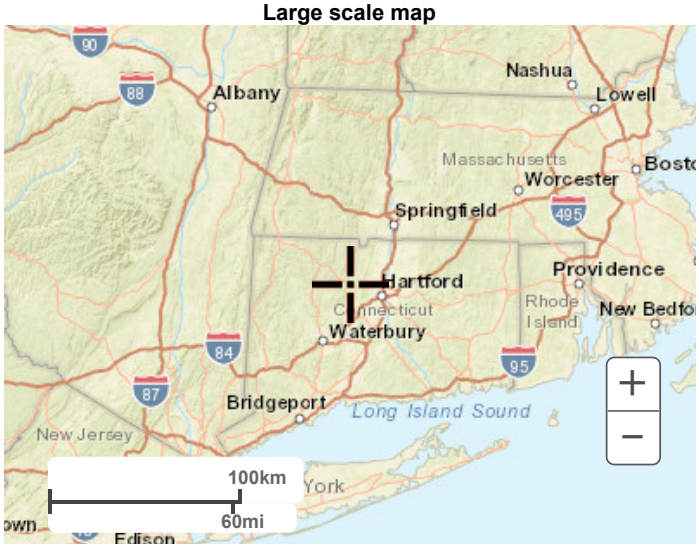
Small scale terrain



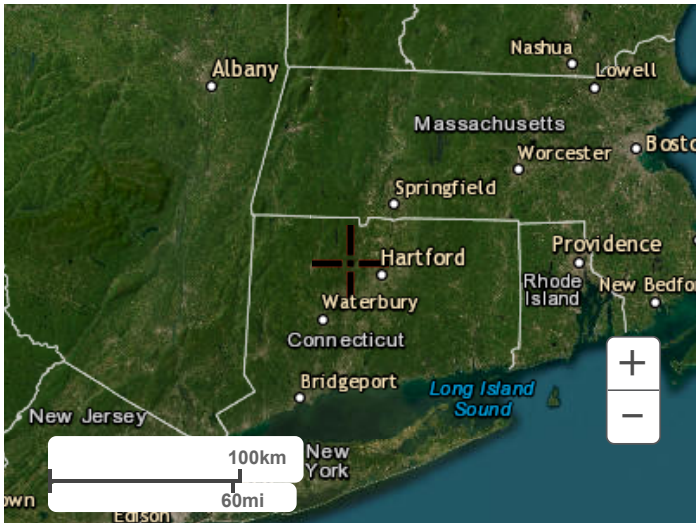
Large scale terrain



Large scale map



Large scale aerial



Back to Top

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Questions?: HDSC.Questions@noaa.gov

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Raising Cane's
530 Bushy Hill Rd
Simsbury, CT
Bohler Job Number: CTA220075.00
April 14, 2023

Water Quality Calculations - Water Quality Flow

From CT 2004 Stormwater Quality Manual:

$$WQF = (q_u)(A)(Q)$$

$$Q = \frac{[WQV(acre-feet) \times [12(inches/foot)]]}{DrainageArea(acres)}$$

$$CN = \frac{1000}{\left[10 + 5P + 10Q - 10(Q^2 + 1.25QP)^{\frac{1}{2}}\right]}$$

WQF = water quality flow (cfs)
q_u = unit peak discharge,
A = Area (sq. miles)
Q = runoff depth (in watershed inches)
CN = Runoff Curve Number
P = design preciptation, inches, (1" for water quality storm)
T_c = time of concentration
I_a = Initial abstraction, inches, from Table 4-1, Chapter 4, TR-55

$$WQV = \frac{(1")(R)(A)}{12}$$

$$R = 0.05 + 0.009(I)$$

WQV = water quality volume (ac-ft)
R = volumetric runoff coefficient
I = percent impervious cover
A = site area in acres

Watershed Area	Structure ID	Proprietary Structure	Total Area			Imp Area		Imp Cover	R	WQV	Q	P	CN	T_c		I_a	I_a/P	q_u [1]	WQF Req.	WQF Provided
			ft^2	ac	mi^2	ft^2	ac	%	-	acre-feet	in	in	-	mins	hours	in	-	$cfs/mi^2/in$	cfs	cfs
PD-1B	ICS-1	SC-740	15,246	0.350	0.0005	4,792	0.110	31.43	0.333	0.010	0.33	1.00	90	6.0	0.1	0.222	0.222	650	**0.12**	**0.40**

1- From Exhibit 4-III: Unit peak discharge (q_u) for SCS type III rainfall distribution, Urban Hydrology for Small Watersheds (TR-55), USDS< SCS, June 1986.

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution

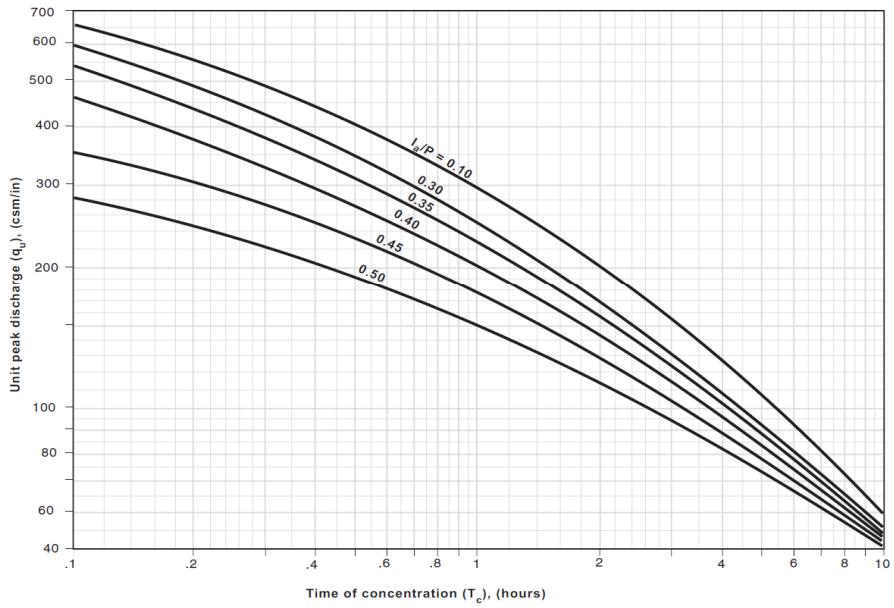


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 2.77" for 2 Year Storm event
Inflow = 1.09 cfs @ 12.08 hrs, Volume= 0.081 af
Outflow = 0.63 cfs @ 12.19 hrs, Volume= 0.081 af, Atten= 42%, Lag= 6.6 min
Primary = 0.63 cfs @ 12.19 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 275.74' @ 12.19 hrs Surf.Area= 0.013 ac Storage= 0.009 af

Plug-Flow detention time= 10.7 min calculated for 0.081 af (100% of inflow)
Center-of-Mass det. time= 8.1 min (792.3 - 784.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.63 cfs @ 12.19 hrs HW=275.74' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.63 cfs of 2.72 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 4.64 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

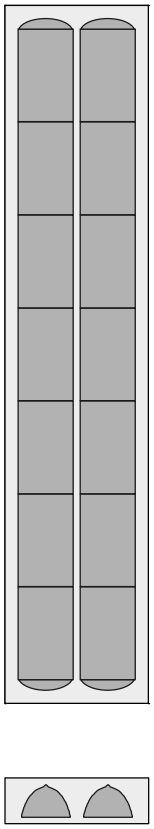
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Stage-Area-Storage for Pond 2P: UG-1B

Elevation (feet)	Storage (acre-feet)
274.60	0.000
274.65	0.000
274.70	0.001
274.75	0.001
274.80	0.001
274.85	0.001
274.90	0.002
274.95	0.002
275.00	0.002
275.05	0.002
275.10	0.003
275.15	0.003
275.20	0.004
275.25	0.004
275.30	0.005
275.35	0.005
275.40	0.006
275.45	0.006
275.50	0.007
275.55	0.007
275.60	0.008
275.65	0.008
275.70	0.009
275.75	0.009
275.80	0.010
275.85	0.010
275.90	0.011
275.95	0.011
276.00	0.012
276.05	0.012
276.10	0.013
276.15	0.013
276.20	0.014
276.25	0.014
276.30	0.015
276.35	0.015
276.40	0.016
276.45	0.016
276.50	0.017
276.55	0.017
276.60	0.018
276.65	0.018
276.70	0.018
276.75	0.019
276.80	0.019
276.85	0.020
276.90	0.020
276.95	0.021
277.00	0.021
277.05	0.021
277.10	0.022
277.15	0.022
277.20	0.023
277.25	0.023
277.30	0.023
277.35	0.024
277.40	0.024
277.45	0.024
277.50	0.025
277.55	0.025
277.60	0.025
277.65	0.025
277.70	0.026
277.75	0.026
277.80	0.026
277.85	0.026
277.90	0.027
277.95	0.027
278.00	0.027
278.05	0.027
278.10	**0.028**

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 4.85" for 10 Year Storm event
Inflow = 1.84 cfs @ 12.08 hrs, Volume= 0.141 af
Outflow = 1.18 cfs @ 12.18 hrs, Volume= 0.141 af, Atten= 36%, Lag= 5.5 min
Primary = 1.18 cfs @ 12.18 hrs, Volume= 0.141 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 276.54' @ 12.18 hrs Surf.Area= 0.013 ac Storage= 0.017 af

Plug-Flow detention time= 9.9 min calculated for 0.141 af (100% of inflow)
Center-of-Mass det. time= 7.9 min (777.9 - 770.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.18 cfs @ 12.18 hrs HW=276.54' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.86 cfs of 3.54 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.86 cfs @ 6.34 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Orifice Controls 0.32 cfs @ 3.65 fps)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

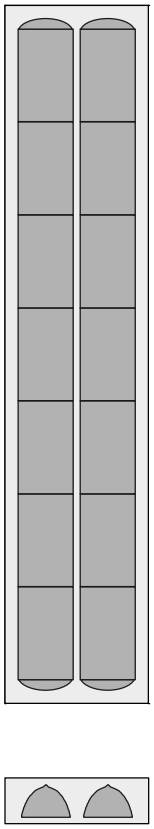
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Stage-Area-Storage for Pond 2P: UG-1B

Elevation (feet)	Storage (acre-feet)
274.60	0.000
274.65	0.000
274.70	0.001
274.75	0.001
274.80	0.001
274.85	0.001
274.90	0.002
274.95	0.002
275.00	0.002
275.05	0.002
275.10	0.003
275.15	0.003
275.20	0.004
275.25	0.004
275.30	0.005
275.35	0.005
275.40	0.006
275.45	0.006
275.50	0.007
275.55	0.007
275.60	0.008
275.65	0.008
275.70	0.009
275.75	0.009
275.80	0.010
275.85	0.010
275.90	0.011
275.95	0.011
276.00	0.012
276.05	0.012
276.10	0.013
276.15	0.013
276.20	0.014
276.25	0.014
276.30	0.015
276.35	0.015
276.40	0.016
276.45	0.016
276.50	0.017
276.55	0.017
276.60	0.018
276.65	0.018
276.70	0.018
276.75	0.019
276.80	0.019
276.85	0.020
276.90	0.020
276.95	0.021
277.00	0.021
277.05	0.021
277.10	0.022
277.15	0.022
277.20	0.023
277.25	0.023
277.30	0.023
277.35	0.024
277.40	0.024
277.45	0.024
277.50	0.025
277.55	0.025
277.60	0.025
277.65	0.025
277.70	0.026
277.75	0.026
277.80	0.026
277.85	0.026
277.90	0.027
277.95	0.027
278.00	0.027
278.05	0.027
278.10	**0.028**

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 6.15" for 25 Year Storm event
Inflow = 2.30 cfs @ 12.08 hrs, Volume= 0.179 af
Outflow = 1.46 cfs @ 12.18 hrs, Volume= 0.179 af, Atten= 37%, Lag= 5.7 min
Primary = 1.46 cfs @ 12.18 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 277.14' @ 12.18 hrs Surf.Area= 0.013 ac Storage= 0.022 af

Plug-Flow detention time= 9.6 min calculated for 0.179 af (100% of inflow)
Center-of-Mass det. time= 7.9 min (772.4 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.46 cfs @ 12.18 hrs HW=277.14' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.00 cfs of 4.14 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.00 cfs @ 7.35 fps)
  - **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Orifice Controls 0.45 cfs @ 5.21 fps)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

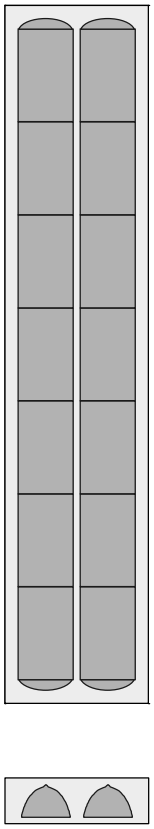
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Stage-Area-Storage for Pond 2P: UG-1B

Elevation (feet)	Storage (acre-feet)
274.60	0.000
274.65	0.000
274.70	0.001
274.75	0.001
274.80	0.001
274.85	0.001
274.90	0.002
274.95	0.002
275.00	0.002
275.05	0.002
275.10	0.003
275.15	0.003
275.20	0.004
275.25	0.004
275.30	0.005
275.35	0.005
275.40	0.006
275.45	0.006
275.50	0.007
275.55	0.007
275.60	0.008
275.65	0.008
275.70	0.009
275.75	0.009
275.80	0.010
275.85	0.010
275.90	0.011
275.95	0.011
276.00	0.012
276.05	0.012
276.10	0.013
276.15	0.013
276.20	0.014
276.25	0.014
276.30	0.015
276.35	0.015
276.40	0.016
276.45	0.016
276.50	0.017
276.55	0.017
276.60	0.018
276.65	0.018
276.70	0.018
276.75	0.019
276.80	0.019
276.85	0.020
276.90	0.020
276.95	0.021
277.00	0.021
277.05	0.021
277.10	0.022
277.15	0.022
277.20	0.023
277.25	0.023
277.30	0.023
277.35	0.024
277.40	0.024
277.45	0.024
277.50	0.025
277.55	0.025
277.60	0.025
277.65	0.025
277.70	0.026
277.75	0.026
277.80	0.026
277.85	0.026
277.90	0.027
277.95	0.027
278.00	0.027
278.05	0.027
278.10	**0.028**

Summary for Pond 2P: UG-1B

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth > 8.17" for 100 Year Storm event
Inflow = 3.01 cfs @ 12.08 hrs, Volume= 0.238 af
Outflow = 2.59 cfs @ 12.13 hrs, Volume= 0.238 af, Atten= 14%, Lag= 3.0 min
Primary = 2.59 cfs @ 12.13 hrs, Volume= 0.238 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 278.06' @ 12.13 hrs Surf.Area= 0.013 ac Storage= 0.028 af

Plug-Flow detention time= 9.2 min calculated for 0.238 af (100% of inflow)
Center-of-Mass det. time= 7.7 min (766.1 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	274.60'	0.013 af	**11.00'W x 53.46'L x 3.50'H Field A** 0.047 af Overall - 0.015 af Embedded = 0.032 af x 40.0% Voids
#2A	275.10'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 7 Chambers
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	274.60'	**12.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 274.60' / 273.90' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	274.60'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	277.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	275.80'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.56 cfs @ 12.13 hrs HW=278.05' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.95 cfs of 4.91 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.18 cfs @ 8.67 fps)
  - **3=Sharp-Crested Rectangular Weir** (Weir Controls 0.77 cfs @ 1.28 fps)
- **4=Orifice/Grate** (Orifice Controls 0.61 cfs @ 6.95 fps)

Pond 2P: UG-1B - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

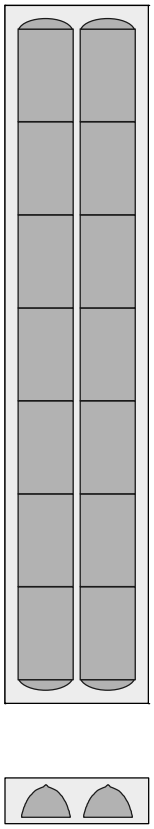
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

14 Chambers x 45.9 cf = 643.2 cf Chamber Storage

2,058.1 cf Field - 643.2 cf Chambers = 1,414.9 cf Stone x 40.0% Voids = 566.0 cf Stone Storage

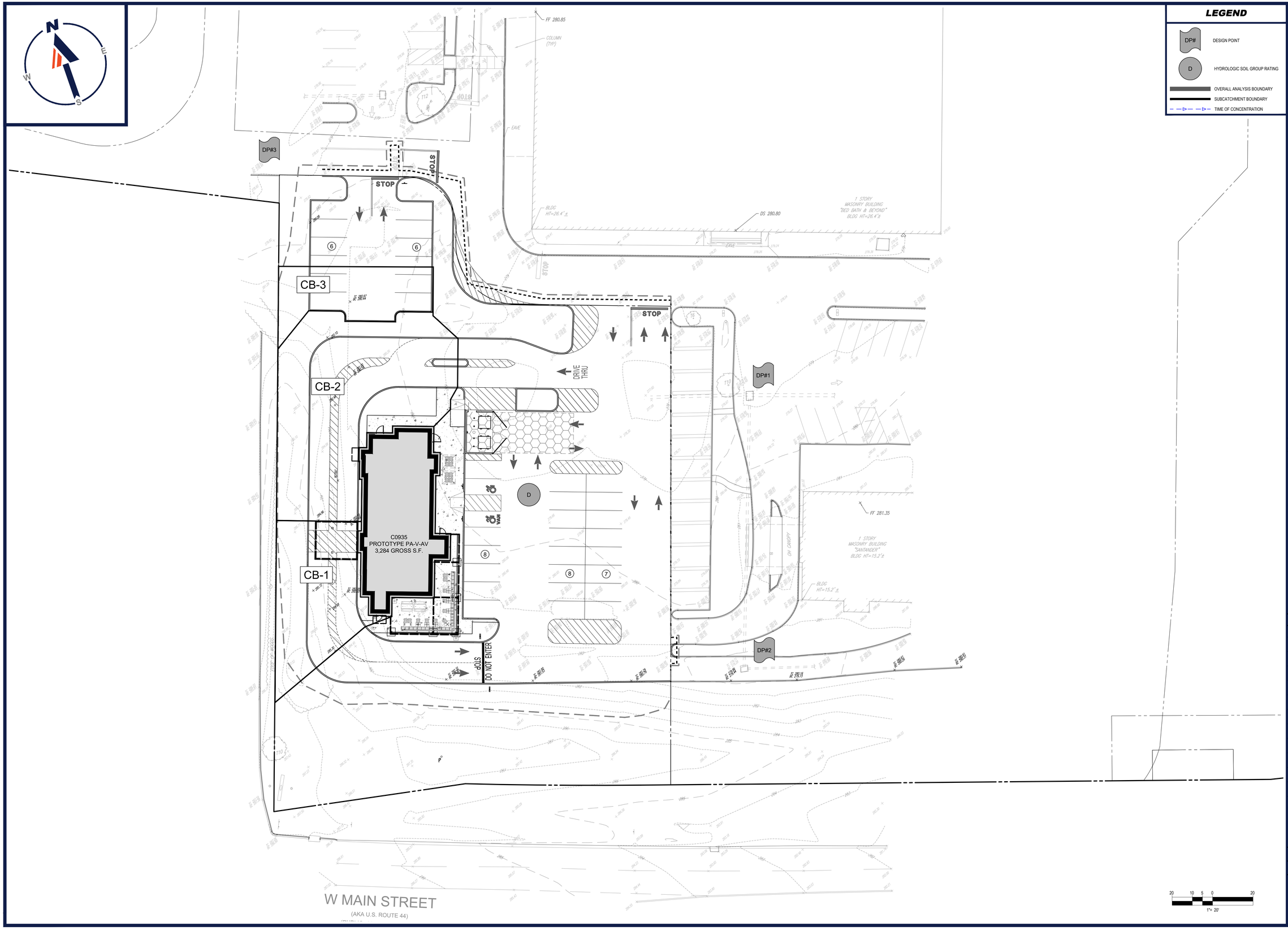
Chamber Storage + Stone Storage = 1,209.1 cf = 0.028 af
Overall Storage Efficiency = 58.8%
Overall System Size = 53.46' x 11.00' x 3.50'

14 Chambers
76.2 cy Field
52.4 cy Stone



Stage-Area-Storage for Pond 2P: UG-1B

Elevation (feet)	Storage (acre-feet)
274.60	0.000
274.65	0.000
274.70	0.001
274.75	0.001
274.80	0.001
274.85	0.001
274.90	0.002
274.95	0.002
275.00	0.002
275.05	0.002
275.10	0.003
275.15	0.003
275.20	0.004
275.25	0.004
275.30	0.005
275.35	0.005
275.40	0.006
275.45	0.006
275.50	0.007
275.55	0.007
275.60	0.008
275.65	0.008
275.70	0.009
275.75	0.009
275.80	0.010
275.85	0.010
275.90	0.011
275.95	0.011
276.00	0.012
276.05	0.012
276.10	0.013
276.15	0.013
276.20	0.014
276.25	0.014
276.30	0.015
276.35	0.015
276.40	0.016
276.45	0.016
276.50	0.017
276.55	0.017
276.60	0.018
276.65	0.018
276.70	0.018
276.75	0.019
276.80	0.019
276.85	0.020
276.90	0.020
276.95	0.021
277.00	0.021
277.05	0.021
277.10	0.022
277.15	0.022
277.20	0.023
277.25	0.023
277.30	0.023
277.35	0.024
277.40	0.024
277.45	0.024
277.50	0.025
277.55	0.025
277.60	0.025
277.65	0.025
277.70	0.026
277.75	0.026
277.80	0.026
277.85	0.026
277.90	0.027
277.95	0.027
278.00	0.027
278.05	0.027
278.10	**0.028**



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Raising Cane's Chicken Fingers

Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:

RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:

BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE: -

UPDATE ISSUE DATE: -

PROJECT MANAGER: JGB

PERMIT SET

PROFESSIONAL OF RECORD:

J.G. BORD
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SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:

SHEET TITLE:

PROPOSED CONDITIONS
CATCHMENT AREA MAP

DATE: 01/23/2022

PROJECT NUMBER: CTA220075.00

DRAWN BY: KMB

SHEET NUMBER:

PRCAM

Raising Cane's
530 Bushy Hill Rd
Simsbury, CT
Bohler Job Number: CTA220075.00
April 14, 2023

Proposed Rational Method Runoff Coefficients Summary

$$Q = C * I * A$$

	Land Use							
	Grassed (sf)	Impervious (sf)						
Rational Runoff Coefficient	0.3	0.9	Total Drainage Area (sf)	Total Drainage Area (A, ac)	Composite Runoff Coefficient	Time of Conc. (tc, min)	Rainfall Intensity* (I, in/hr)	Peak Rational Flow (Q, cfs)
Structure ID								
System 100								
CB 1	1,446	4,928	6,574	0.15	0.75	6	8.04	0.90
CB 2	2,882	3,272	6,354	0.15	0.60	6	8.04	0.71
CB 3	538	1,423	1,961	0.05	0.75	6	8.04	0.27

*Rainfall intensity of 10-year storm event and TC of 6 min = 8.04

Raising Cane's
530 Bushy Hill Rd
Simsbury, CT
Bohler Job Number: CTA220075.00
April 14, 2023

Rational Pipe Sizing Calculations

Design Period Storm:		10	Year	Design Period Intensity*			0.231	in/hr									
LOCATION		IMPERVIOUS			OTHER			SUM	Tc	I	Q	D	S	Material	n	Q Full	V Full
FROM	TO	A	C	CA	A	C	CA	CA	(min)	(in/hr)	(cfs)	(in)	(ft/ft)			(cfs)	(fps)
CB-3	CB-2	0.11	0.95	0.10	0.04	0.30	0.01	0.12	6	0.231	0.03	8	0.010	HDPE	0.012	1.31	3.75
CB-2	CB-1	0.08	0.95	0.08	0.07	0.30	0.02	0.10	6	0.231	0.02	12	0.005	HDPE	0.012	4.04	3.47
CB-1	ICS-1	0.01	0.95	0.01	0.04	0.30	0.01	0.02	6	0.231	0.00	12	0.006	HDPE	0.012	7.03	3.81

*Rainfall intensity provided by TR55 Exhibit X-XX or Cornell University's NRCC Atlas of Precipitation Extremes for the North Eastern United States and Canada or NOAA Atlas 1

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Apr 17 2023

OCS-1 to Existing CB

Circular

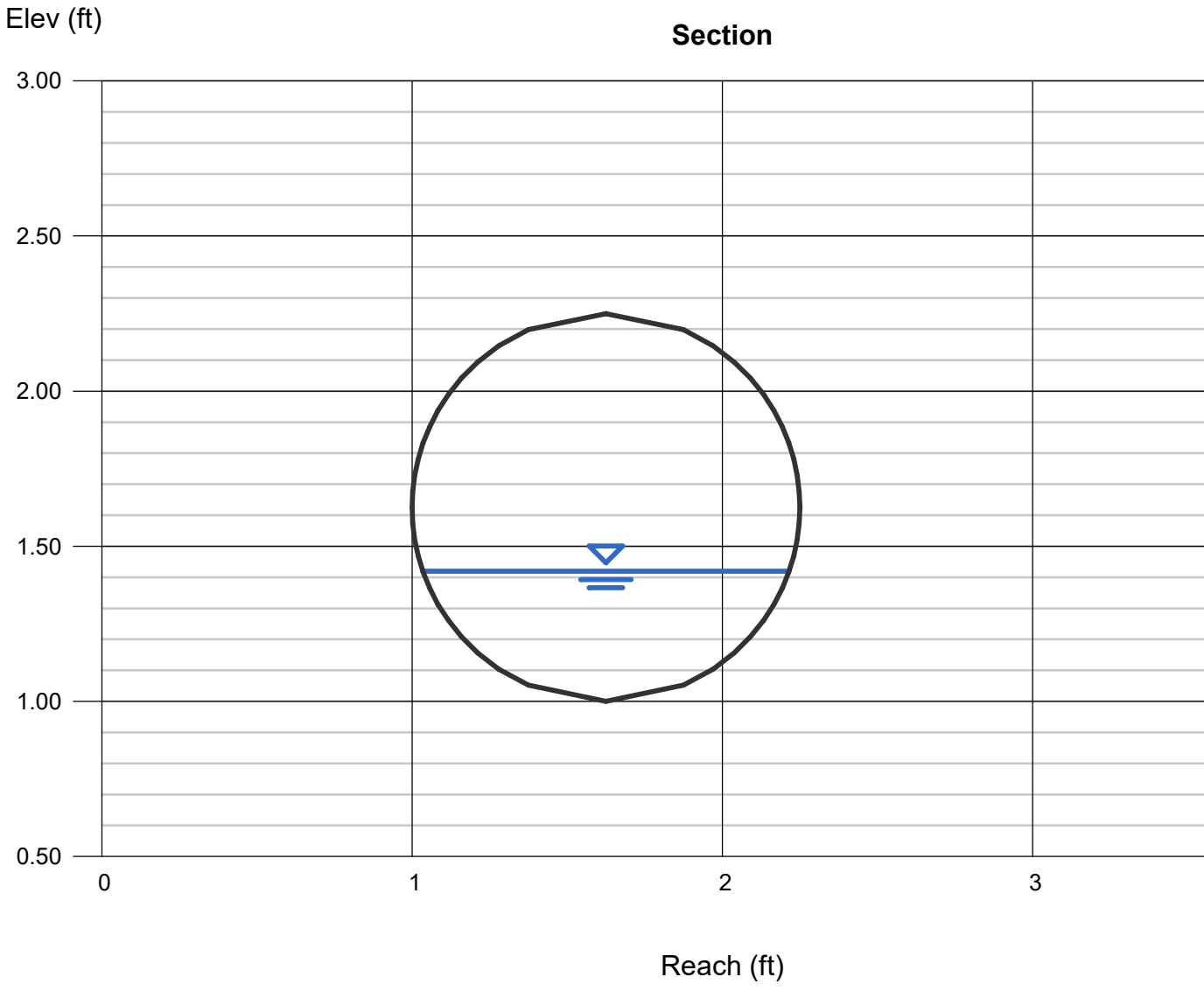
Diameter (ft)	= 1.25
Invert Elev (ft)	= 1.00
Slope (%)	= 0.51
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.18

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 1.180
Area (sqft)	= 0.36
Velocity (ft/s)	= 3.24
Wetted Perim (ft)	= 1.55
Crit Depth, Yc (ft)	= 0.43
Top Width (ft)	= 1.18
EGL (ft)	= 0.58



Annual Mass Load and Maintenance Interval Calculations

Incorporates the Isolator Row Pre-Treatment System

1 Location Scenario	2 Area	3 Runoff Coef	4 Annual Rainfall	5 Annual Runoff	6 TSS EMC**	7 Mass Load	8 Spec Wt of solids*	9 Annual Sediment	10 Runoff Treated	11 Runoff Treated	12 Isolator Efficien.	13 Sediment Captured	14 Sediment Lost to Voids	15 Service Life	16 Sediment Accum.	Maintenance 17 SC-740 Maint. Interval	18 SC-310 Maint. Interval
	A (Ac)	C	P (in)	V_r (ft^3)	(mg/l)	M (lbs)	(lbs/ft^3)	S_v (ft^3)	%	Vt (ft^3)	%	S_c (ft^3/yr)	SL (ft^3)	(years)	(ft^3)	(years)	(years)
BRIDGEPORT, CT	1	0.9	44.15	144238	80	720	80	9.00	90%	129814	80%	6.48	2.52	50	126.0	**2**	**2**
HARTFORD, CT	1	0.9	46.16	150805	80	753	80	9.41	90%	135724	80%	6.77	2.63	50	131.7	**2**	**1**
SIMSBURY, CT	0.34	0.9	53	58871	80	294	80	3.67	90%	52984	80%	2.64	1.03	50	51.4	**6**	**4**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**
	1	0.9		0	80	0	80	0.00	90%	0	80%	0.00	0.00	50	0.0	**NOT APP.**	**NOT APP.**

7	**Isolator Row Chambers**
1	inch depth of sediment in Isolator Row
2.20	cubic feet of storage for SC-740 chambers
1.44	cubic feet of storage for SC-310 chambers

STORMTECH RECOMMENDS CLEANING ISOLATOR ROW WHEN SEDIMENT REACHES 1INCH OF ACCUMULATION

General Notes:

Conversions used are: 28.3 L/ft^3 and 2.2046 lbs/kg

EMC is the Event Mean Concentration of sediment for a storm event.

* - Specific weight of stormwater sediments varies from 93 lbs/ft^3 for sand, 82 for silt and 78 for clay. Stormtech uses 80 lbs/ft^3 as an average default value.

** - Based on a NURP/USGS study, the national median is 54.5 mg/l. StormTech uses 80 mg/l as a default value.

EMC Reference Scenarios:

1 - Clayton Cnty, GA. EMC = 38 (mg/l) Based on Atlanta Regional Commission, calculated concentration generating 400 pounds per impervious acre per year.

2 - Cookeville, TN. EMC = 57 (mg/l) Based on Cookeville, TN study concentration from impervious area.

3 - Durham, NH. EMC = 37 (mg/l) Based on University of New Hampshire Stormwater Center's 2005 Data Report from impervious area.

4 - Milwaukee, WI. EMC = 140 (mg/l) Based on Milwaukee study, median value of 297 tons/sqmile from watershed of pervious and impervious area.

APPENDIX E: STORMWATER CALCULATIONS

- *NOAA RAINFALL DATA*
- *POLLUTANT REDUCTION*
- *CONVEYANCE PROTECTION CALCULATIONS*
- *ISOLATOR ROW MASS CALCULATIONS*

STORMWATER OPERATION AND MAINTENANCE PLAN

Raising Cane's
530 Bushy Hill Road
Simsbury, CT

RESPONSIBLE PARTY DURING CONSTRUCTION:

TBD

RESPONSIBLE PARTY POST CONSTRUCTION:

TBD

Construction Phase

During the construction phase, all erosion control devices and measures shall be maintained in accordance with the final record plans, local/state approvals and conditions, and the CT General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, if applicable. Additionally, the maintenance of all erosion / siltation control measures during construction shall be the responsibility of the general contractor. Upon proper notice to the property owner, the Town/City or its authorized designee shall be allowed to enter the property at a reasonable time and in a reasonable manner for the purposes of inspection.

Post Development Controls

Once construction is completed, the post development stormwater controls are to be operated and maintained in compliance with the following permanent procedures (note that the continued implementation of these procedures shall be the responsibility of the Owner or its assignee):

1. Parking lots: Sweep at least four (4) times per year and on a more frequent basis depending on sanding operations. All resulting sweepings shall be collected and properly disposed of offsite in accordance with local, state, federal, and other applicable requirements.

2. Roadways: Sweep at least four (4) times per year and on a more frequent basis depending on sanding operations. All resulting sweepings shall be collected and properly disposed of off site in accordance with local, state, federal, and other applicable requirements.

3. Catch basins, yard drains, trench drains, manholes and piping: Inspect four (4) times per year and at the end of foliage and snow-removal. These features shall be cleaned four (4) times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the catch basin or underground system. Accumulated sediment and hydrocarbons present must be removed and properly disposed of off-site in accordance with local, state, federal, and other applicable requirements.

4. Water Quality Unit (Proprietary Separator): Follow manufacturer's recommendations (attached).

All components of the stormwater system will be accessible by the owner or their assignee.

STORMWATER MANAGEMENT SYSTEM

POST-CONSTRUCTION INSPECTION REPORT

LOCATION:

Raising Cane's
530 Bushy Hill Road
Simsbury, CT

RESPONSIBLE PARTY:

TBD

NAME OF INSPECTOR:	INSPECTION DATE:
Note Condition of the Following (sediment depth, debris, standing water, damage, etc.):	
Catch Basins:	
Water Quality Units:	
Other:	
Note Recommended Actions to be taken on the Following (sediment and/or debris removal, repairs, etc.):	
Catch Basins:	
Water Quality Units:	

Other:
Comments:

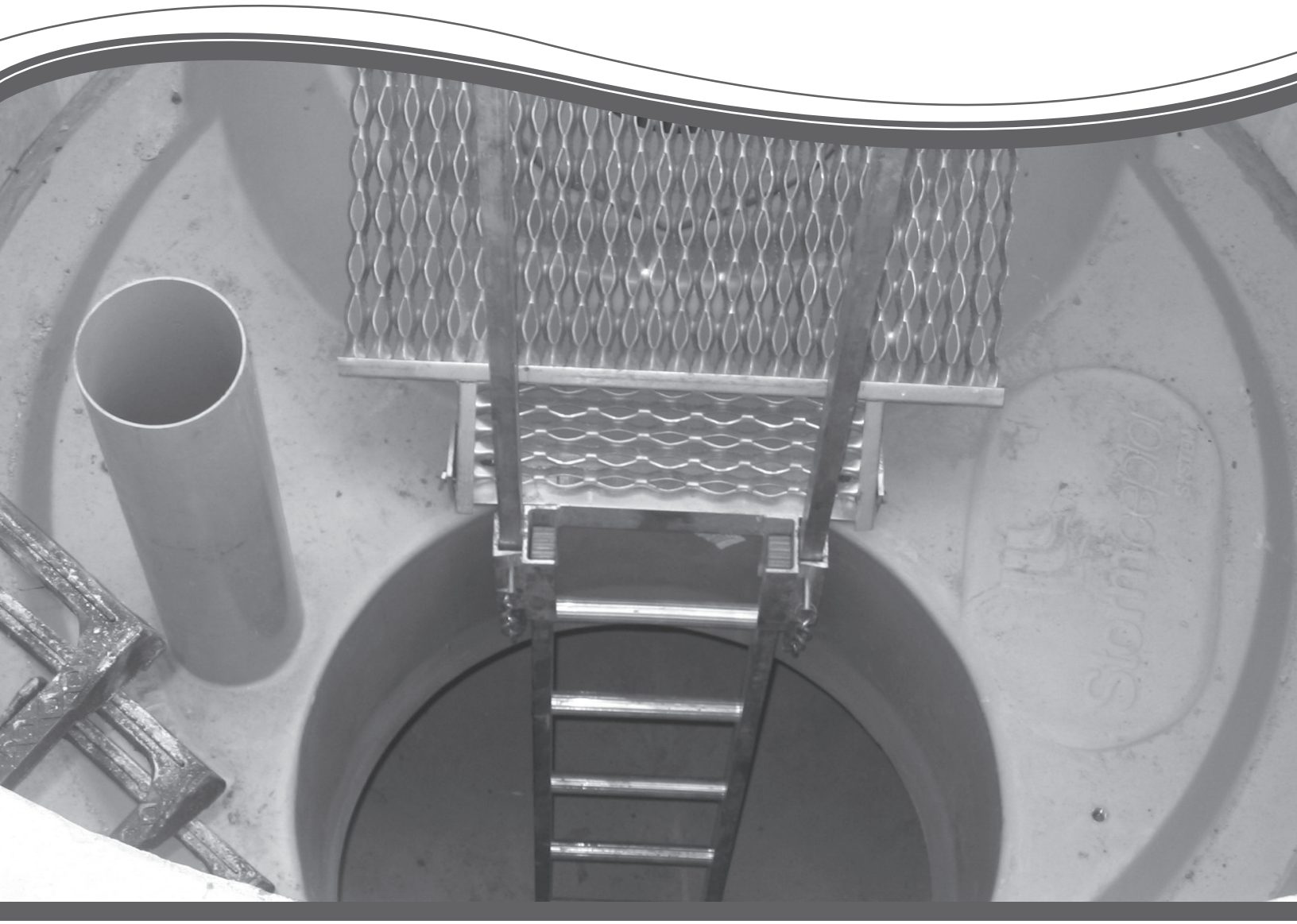
STORMWATER INSPECTION AND MAINTENANCE LOG FORM

Raising Cane's
530 Bushy Hill Road
Simsbury, CT

Stormwater Management Practice	Responsible Party	Date	Maintenance Activity Performed

CONTECH®
ENGINEERED SOLUTIONS

Stormceptor® STC
Operation and Maintenance Guide



Stormceptor® STC

Stormceptor Design Notes

- Only the STC 450i is adaptable to function with a catch basin inlet and/or inline pipes.
- Only the Stormceptor models STC 450i to STC 7200 may accommodate multiple inlet pipes.

Inlet and outlet invert elevation differences are as follows:

Inlet and Outlet Pipe Invert Elevations Differences			
Inlet Pipe Configuration	STC 450i	STC 900 to STC 7200	STC 11000 to STC 16000
Single inlet pipe	3 in. (75 mm)	1 in. (25 mm)	3 in. (75 mm)
Multiple inlet pipes	3 in. (75 mm)	3 in. (75 mm)	Only one inlet pipe.

Maximum inlet and outlet pipe diameters:

Inlet/Outlet Configuration	Inlet Unit STC 450i	In-Line Unit STC 900 to STC 7200	Series* STC 11000 to STC 16000
Straight Through	24 inch (600 mm)	42 inch (1050 mm)	60 inch (1500 mm)
Bend (90 degrees)	18 inch (450 mm)	33 inch (825 mm)	33 inch (825 mm)

- The inlet and in-line Stormceptor units can accommodate turns to a maximum of 90 degrees.
- Minimum distance from top of grade to crown is 2 feet (0.6 m)
- Submerged conditions. A unit is submerged when the standing water elevation at the proposed location of the Stormceptor unit is greater than the outlet invert elevation during zero flow conditions. In these cases, please contact your local Stormceptor representative and provide the following information:
- Top of grade elevation
- Stormceptor inlet and outlet pipe diameters and invert elevations
- Standing water elevation
- Stormceptor head loss, K = 1.3 (for submerged condition, K = 4)

Stormceptor® STC

OPERATION AND MAINTENANCE GUIDE
Table of Content

1. About Stormceptor

The Stormceptor® STC (Standard Treatment Cell) was developed by Imbrium™ Systems to address the growing need to remove and isolate pollution from the storm drain system before it enters the environment. The Stormceptor STC targets hydrocarbons and total suspended solids (TSS) in stormwater runoff. It improves water quality by removing contaminants through the gravitational settling of fine sediments and floatation of hydrocarbons while preventing the re-suspension or scour of previously captured pollutants.

The development of the Stormceptor STC revolutionized stormwater treatment, and created an entirely new category of environmental technology. Protecting thousands of waterways around the world, the Stormceptor System has set the standard for effective stormwater treatment.

1.1. Patent Information

The Stormceptor technology is protected by the following patents:

- Australia Patent No. 693,164 • 693,164 • 707,133 • 729,096 • 779401
- Austrian Patent No. 289647
- Canadian Patent No 2,009,208 •2,137,942 • 2,175,277 • 2,180,305 • 2,180,383 • 2,206,338 • 2,327,768 (Pending)
- China Patent No 1168439
- Denmark DK 711879
- German DE 69534021
- Indonesian Patent No 16688
- Japan Patent No 9-11476 (Pending)
- Korea 10-2000-0026101 (Pending)
- Malaysia Patent No PI9701737 (Pending)
- New Zealand Patent No 314646
- United States Patent No 4,985,148 • 5,498,331 • 5,725,760 • 5,753,115 • 5,849,181 • 6,068,765 • 6,371,690
- Stormceptor OSR Patent Pending • Stormceptor LCS Patent Pending

2. Stormceptor Design Overview

2.1. Design Philosophy

The patented Stormceptor System has been designed to focus on the environmental objective of providing long-term pollution control. The unique and innovative Stormceptor design allows for continuous positive treatment of runoff during all rainfall events, while ensuring that all captured pollutants are retained within the system, even during intense storm events.

An integral part of the Stormceptor design is PCSWMM for Stormceptor - sizing software developed in conjunction with Computational Hydraulics Inc. (CHI) and internationally acclaimed expert, Dr. Bill James. Using local historical rainfall data and continuous simulation modeling, this software allows a Stormceptor unit to be designed for each individual site and the corresponding water quality objectives.

By using PCSWMM for Stormceptor, the Stormceptor System can be designed to remove a wide range of particles (typically from 20 to 2,000 microns), and can also be customized to remove a specific particle size distribution (PSD). The specified PSD should accurately reflect what is in the stormwater runoff to ensure the device is achieving the desired water quality objective. Since stormwater runoff contains small particles (less than 75 microns), it is important to design a treatment system to remove smaller particles in addition to coarse particles.

2.2. Benefits

The Stormceptor System removes free oil and suspended solids from stormwater, preventing spills and non-point source pollution from entering downstream lakes and rivers. The key benefits, capabilities and applications of the Stormceptor System are as follows:

- Provides continuous positive treatment during all rainfall events
- Can be designed to remove over 80% of the annual sediment load
- Removes a wide range of particles
- Can be designed to remove a specific particle size distribution (PSD)
- Captures free oil from stormwater
- Prevents scouring or re-suspension of trapped pollutants
- Pre-treatment to reduce maintenance costs for downstream treatment measures (ponds, swales, detention basins, filters)
- Groundwater recharge protection
- Spills capture and mitigation
- Simple to design and specify
- Designed to your local watershed conditions
- Small footprint to allow for easy retrofit installations
- Easy to maintain (vacuum truck)
- Multiple inlets can connect to a single unit
- Suitable as a bend structure
- Pre-engineered for traffic loading (minimum AASHTO HS-20)
- Minimal elevation drop between inlet and outlet pipes
- Small head loss
- Additional protection provided by an 18" (457 mm) fiberglass skirt below the top of the insert, for the containment of hydrocarbons in the event of a spill.

2.3. Environmental Benefit

Freshwater resources are vital to the health and welfare of their surrounding communities. There is increasing public awareness, government regulations and corporate commitment to reducing the pollution entering our waterways. A major source of this pollution originates from stormwater runoff from urban areas. Rainfall runoff carries oils, sediment and other contaminants from roads and parking lots discharging directly into our streams, lakes and coastal waterways.

The Stormceptor System is designed to isolate contaminants from getting into the natural environment. The Stormceptor technology provides protection for the environment from spills that occur at service stations and vehicle accident sites, while also removing contaminated sediment in runoff that washes from roads and parking lots.

3. Key Operation Features

3.1. Scour Prevention

A key feature of the Stormceptor System is its patented scour prevention technology. This innovation ensures pollutants are captured and retained during all rainfall events, even extreme storms. The Stormceptor System provides continuous positive treatment for all rainfall events, including intense storms. Stormceptor slows incoming runoff, controlling and reducing velocities in the lower chamber to create a non-turbulent environment that promotes free oils and floatable debris to rise and sediment to settle.

The patented scour prevention technology, the fiberglass insert, regulates flows into the lower chamber through a combination of a weir and orifice while diverting high energy flows away through the upper chamber to prevent scouring. Laboratory testing demonstrated no scouring when tested up to 125% of the unit's operating rate, with the unit loaded to 100% sediment capacity (NJDEP, 2005). Second, the depth of the lower chamber ensures the sediment storage zone is adequately separated from the path of flow in the lower chamber to prevent scouring.

3.2. Operational Hydraulic Loading Rate

Designers and regulators need to evaluate the treatment capacity and performance of manufactured stormwater treatment systems. A commonly used parameter is the "operational hydraulic loading rate" which originated as a design methodology for wastewater treatment devices.

Operational hydraulic loading rate may be calculated by dividing the flow rate into a device by its settling area. This represents the critical settling velocity that is the prime determinant to quantify the influent particle size and density captured by the device. PCSWMM for Stormceptor uses a similar parameter that is calculated by dividing the hydraulic detention time in the device by the fall distance of the sediment.

$$v_{SC} = \frac{H}{6_H} = \frac{Q}{A_S}$$

Where:

v_{SC} = critical settling velocity, ft/s (m/s)

H = tank depth, ft (m)

$Ø_H$ = hydraulic detention time, ft/s (m/s)

Q = volumetric flow rate, ft3/s (m3/s)

A_S = surface area, ft^2 (m^2)

(Tchobanoglous, G. and Schroeder, E.D. 1987. Water Quality. Addison Wesley.)

Unlike designing typical wastewater devices, stormwater systems are designed for highly variable flow rates including intense peak flows. PCSWMM for Stormceptor incorporates all of the flows into its calculations, ensuring that the operational hydraulic loading rate is considered not only for one flow rate, but for all flows including extreme events.

3.3. Double Wall Containment

The Stormceptor System was conceived as a pollution identifier to assist with identifying illicit discharges. The fiberglass insert has a continuous skirt that lines the concrete barrel wall for a depth of 18 inches (457 mm) that provides double wall containment for hydrocarbons storage. This protective barrier ensures that toxic floatables do not migrate through the concrete wall into the surrounding soils.

4. Stormceptor Product Line

4.1. Stormceptor Models

A summary of Stormceptor models and capacities are listed in Table 1.

Table 1. Stormceptor Models

Stormceptor Model	Total Storage Volume U.S. Gal (L)	Hydrocarbon Storage Capacity U.S. Gal (L)	Maximum Sediment Capacity ft^3 (L)
STC 450i	470 (1,780)	86 (330)	46 (1,302)
STC 900	952 (3,600)	251 (950)	89 (2,520)
STC 1200	1,234 (4,670)	251 (950)	127 (3,596)
STC 1800	1,833 (6,940)	251 (950)	207 (5,861)
STC 2400	2,462 (9,320)	840 (3,180)	205 (5,805)
STC 3600	3,715 (1,406)	840 (3,180)	373 (10,562)
STC 4800	5,059 (1,950)	909 (3,440)	543 (15,376)
STC 6000	6,136 (23,230)	909 (3,440)	687 (19,453)
STC 7200	7,420 (28,090)	1,059 (4,010)	839 (23,757)
STC 11000	11,194 (42,370)	2,797 (10, 590)	1,086 (30,752)
STC 13000	13,348 (50,530)	2,797 (10, 590)	1,374 (38,907)
STC 16000	15,918 (60,260)	3,055 (11, 560)	1,677 (47,487)

NOTE: Storage volumes may vary slightly from region to region. For detailed information, contact your local Stormceptor representative.

4.2. Inline Stormceptor

The Inline Stormceptor, Figure 1, is the standard design for most stormwater treatment applications. The patented Stormceptor design allows the Inline unit to maintain continuous positive treatment of total suspended solids (TSS) year-round, regardless of flow rate. The Inline Stormceptor is composed of a precast concrete tank with a fiberglass insert situated at the invert of the storm sewer pipe, creating an upper chamber above the insert and a lower chamber below the insert.

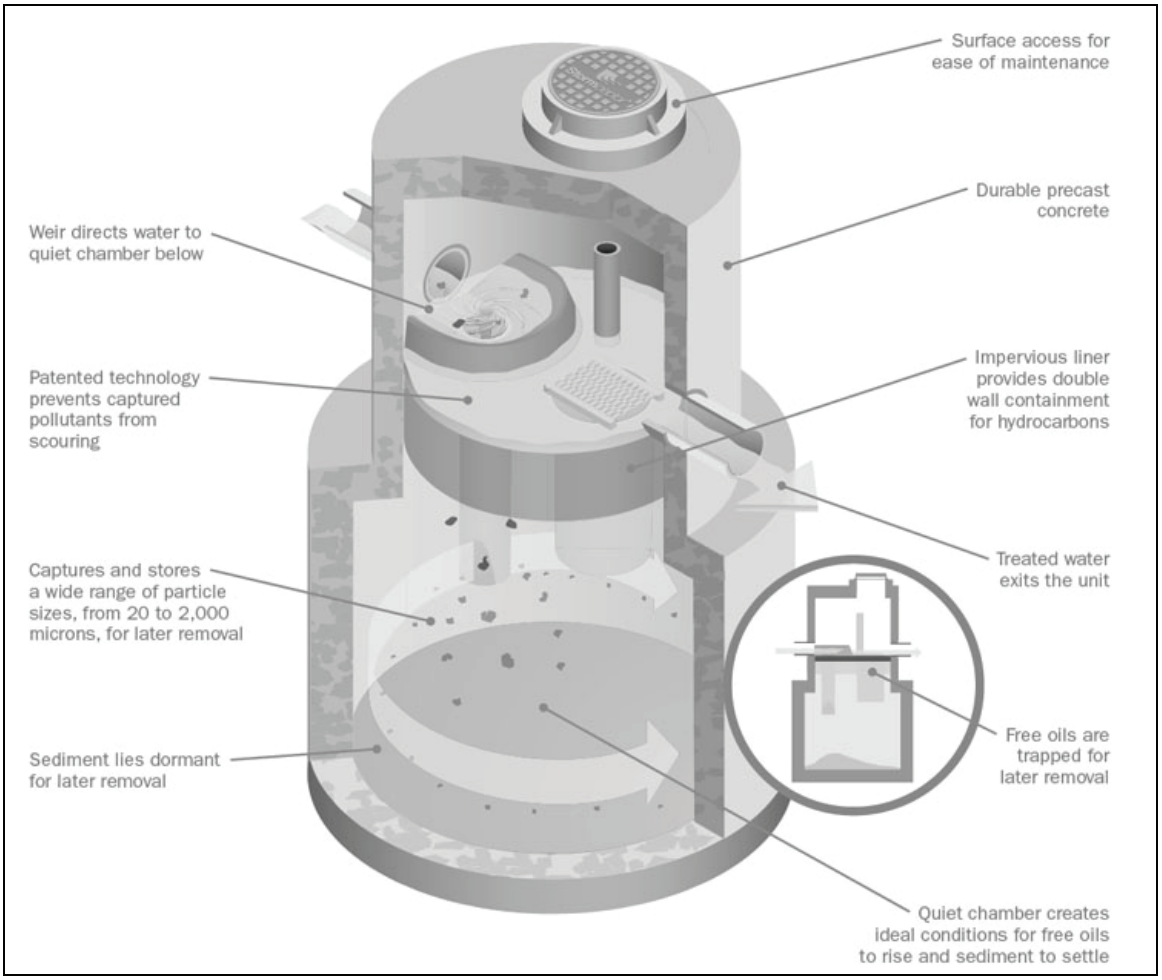


Figure 1. Inline Stormceptor

Operation

As water flows into the Stormceptor unit, it is slowed and directed to the lower chamber by a weir and drop tee. The stormwater enters the lower chamber, a non-turbulent environment, allowing free oils to rise and sediment to settle. The oil is captured underneath the fiberglass insert and shielded from exposure to the concrete walls by a fiberglass skirt. After the pollutants separate, treated water continues up a riser pipe, and exits the lower chamber on the downstream side of the weir before leaving the unit. During high flow events, the Stormceptor System's patented scour prevention technology ensures continuous pollutant removal and prevents re-suspension of previously captured pollutants.

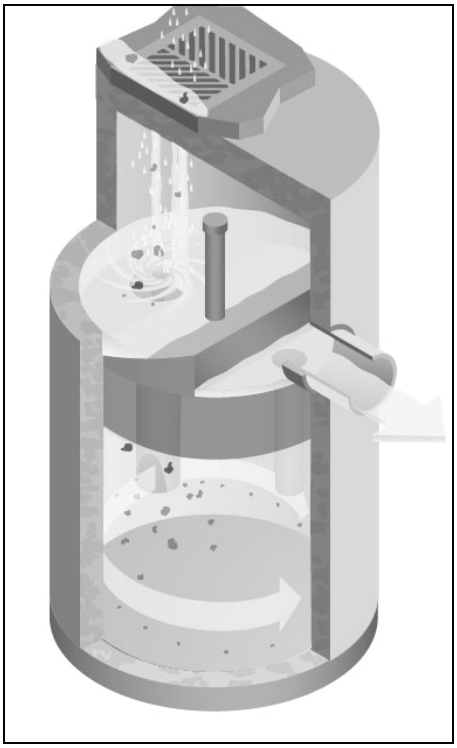


Figure 2. Inlet Stormceptor

4.3. Inlet Stormceptor

The Inlet Stormceptor System, Figure 2, was designed to provide protection for parking lots, loading bays, gas stations and other spill-prone areas. The Inlet Stormceptor is designed to remove sediment from stormwater introduced through a grated inlet, a storm sewer pipe, or both.

The Inlet Stormceptor design operates in the same manner as the Inline unit, providing continuous positive treatment, and ensuring that captured material is not re-suspended.

4.4. Series Stormceptor

Designed to treat larger drainage areas, the Series Stormceptor System, Figure 3, consists of two adjacent Stormceptor models that function in parallel. This design eliminates the need for additional structures and piping to reduce installation costs.

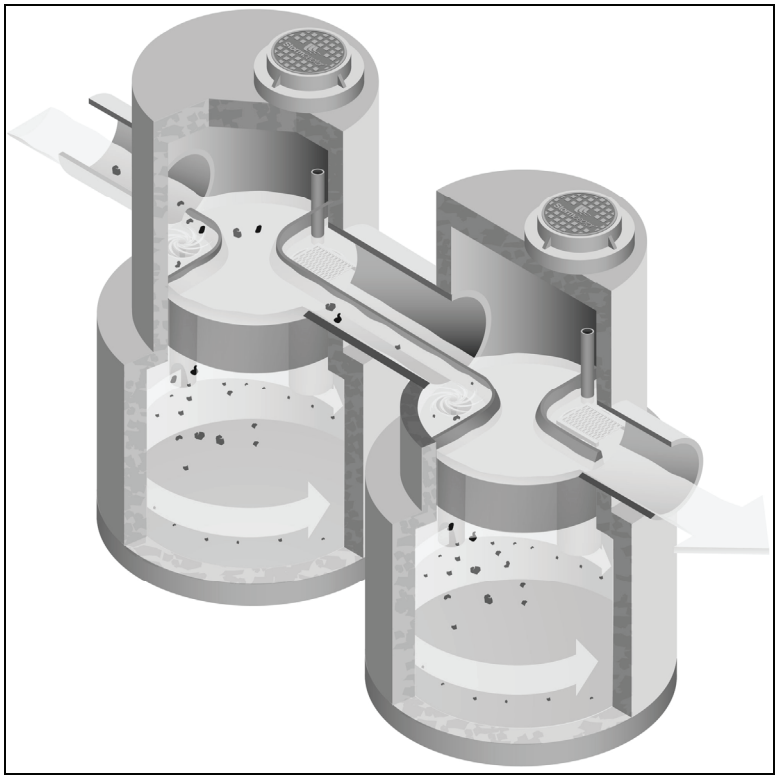


Figure 3. Series System

The Series Stormceptor design operates in the same manner as the Inline unit, providing continuous positive treatment, and ensuring that captured material is not re-suspended.

5. Sizing the Stormceptor System

The Stormceptor System is a versatile product that can be used for many different aspects of water quality improvement. While addressing these needs, there are conditions that the designer needs to be aware of in order to size the Stormceptor model to meet the demands of each individual site in an efficient and cost-effective manner.

PCSWMM for Stormceptor is the support tool used for identifying the appropriate Stormceptor model. In order to size a unit, it is recommended the user follow the seven design steps in the program. The steps are as follows:

STEP 1 – Project Details

The first step prior to sizing the Stormceptor System is to clearly identify the water quality objective for the development. It is recommended that a level of annual sediment (TSS) removal be identified and defined by a particle size distribution.

STEP 2 – Site Details

Identify the site development by the drainage area and the level of imperviousness. It is recommended that imperviousness be calculated based on the actual area of imperviousness based on paved surfaces, sidewalks and rooftops.

STEP 3 – Upstream Attenuation

The Stormceptor System is designed as a water quality device and is sometimes used in conjunction with onsite water quantity control devices such as ponds or underground detention systems. When possible, a greater benefit is typically achieved when installing a Stormceptor unit upstream of a detention facility. By placing the Stormceptor unit upstream of a detention structure, a benefit of less maintenance of the detention facility is realized.

STEP 4 – Particle Size Distribution

It is critical that the PSD be defined as part of the water quality objective. PSD is critical for the design of treatment system for a unit process of gravity settling and governs the size of a treatment system. A range of particle sizes has been provided and it is recommended that clays and silt-sized particles be considered in addition to sand and gravel-sized particles. Options and sample PSDs are provided in PCSWMM for Stormceptor. The default particle size distribution is the Fine Distribution, Table 2, option.

Table 2. Fine Distribution

Particle Size	Distribution	Specific Gravity
20	20%	1.3
60	20%	1.8
150	20%	2.2
400	20%	2.65
2000	20%	2.65

If the objective is the long-term removal of 80% of the total suspended solids on a given site, the PSD should be representative of the expected sediment on the site. For example, a system designed to remove 80% of coarse particles (greater than 75 microns) would provide relatively poor removal efficiency of finer particles that may be naturally prevalent in runoff from the site.

Since the small particle fraction contributes a disproportionately large amount of the total available particle surface area for pollutant adsorption, a system designed primarily for coarse particle capture will compromise water quality objectives.

STEP 5 – Rainfall Records

Local historical rainfall has been acquired from the U.S. National Oceanic and Atmospheric Administration, Environment Canada and regulatory agencies across North America. The rainfall data provided with PCSMM for Stormceptor provides an accurate estimation of small storm hydrology by modeling actual historical storm events including duration, intensities and peaks.

STEP 6 – Summary

At this point, the program may be executed to predict the level of TSS removal from the site. Once the simulation has completed, a table shall be generated identifying the TSS removal of each Stormceptor unit.

STEP 7 – Sizing Summary

Performance estimates of all Stormceptor units for the given site parameters will be displayed in a tabular format. The unit that meets the water quality objective, identified in Step 1, will be highlighted.

5.1. PCSWMM for Stormceptor

The Stormceptor System has been developed in conjunction with PCSWMM for Stormceptor as a technological solution to achieve water quality goals. Together, these two innovations model, simulate, predict and calculate the water quality objectives desired by a design engineer for TSS removal.

PCSWMM for Stormceptor is a proprietary sizing program which uses site specific inputs to a computer model to simulate sediment accumulation, hydrology and long-term total suspended solids removal. The model has been calibrated to field monitoring results from Stormceptor units that have been monitored in North America. The sizing methodology can be described by three processes:

1. Determination of real time hydrology
2. Buildup and wash off of TSS from impervious land areas
3. TSS transport through the Stormceptor (settling and discharge). The use of a calibrated model is the preferred method for sizing stormwater quality structures for the following reasons:
    - » The hydrology of the local area is properly and accurately incorporated in the sizing (distribution of flows, flow rate ranges and peaks, back-to-back storms, inter-event times)
    - » The distribution of TSS with the hydrology is properly and accurately considered in the sizing
    - » Particle size distribution is properly considered in the sizing
    - » The sizing can be optimized for TSS removal
    - » The cost benefit of alternate TSS removal criteria can be easily assessed
    - » The program assesses the performance of all Stormceptor models. Sizing may be selected based on a specific water quality outcome or based on the Maximum Extent Practicable

For more information regarding PCSWMM for Stormceptor, contact your local Stormceptor representative, or visit www.imbriumsystems.com to download a free copy of the program.

5.2. Sediment Loading Characteristics

The way in which sediment is transferred to stormwater can have a considerable effect on which type of system is implemented. On typical impervious surfaces (e.g. parking lots) sediment will build over time and wash off with the next rainfall. When rainfall patterns are examined, a short intense storm will have a higher concentration of sediment than a long slow drizzle. Together with rainfall data representing the site's typical rainfall patterns, sediment loading characteristics play a part in the correct sizing of a stormwater quality device.

Typical Sites

For standard site design of the Stormceptor System, PCSWMM for Stormceptor is utilized to accurately assess the unit's performance. As an integral part of the product's design, the program can be used to meet local requirements for total suspended solid removal. Typical installations of manufactured stormwater treatment devices would occur on areas such as paved parking lots or paved roads. These are considered "stable" surfaces which have non – erodible surfaces.

Unstable Sites

While standard sites consist of stable concrete or asphalt surfaces, sites such as gravel parking lots, or maintenance yards with stockpiles of sediment would be classified as "unstable". These types of sites do not exhibit first flush characteristics, are highly erodible and exhibit atypical sediment loading characteristics and must therefore be sized more carefully. Contact your local Stormceptor representative for assistance in selecting a proper unit sized for such unstable sites.

6. Spill Controls

When considering the removal of total petroleum hydrocarbons (TPH) from a storm sewer system there are two functions of the system: oil removal, and spill capture.

'Oil Removal' describes the capture of the minute volumes of free oil mobilized from impervious surfaces. In this instance relatively low concentrations, volumes and flow rates are considered. While the Stormceptor unit will still provide an appreciable oil removal function during higher flow events and/or with higher TPH concentrations, desired effluent limits may be exceeded under these conditions.

'Spill Capture' describes a manner of TPH removal more appropriate to recovery of a relatively high volume of a single phase deleterious liquid that is introduced to the storm sewer system over a relatively short duration. The two design criteria involved when considering this manner of introduction are overall volume and the specific gravity of the material. A standard Stormceptor unit will be able to capture and retain a maximum spill volume and a minimum specific gravity.

For spill characteristics that fall outside these limits, unit modifications are required. Contact your local Stormceptor Representative for more information.

One of the key features of the Stormceptor technology is its ability to capture and retain spills. While the standard Stormceptor System provides excellent protection for spill control, there are additional options to enhance spill protection if desired.

6.1. Oil Level Alarm

The oil level alarm is an electronic monitoring system designed to trigger a visual and audible alarm when a pre-set level of oil is reached within the lower chamber. As a standard, the oil

level alarm is designed to trigger at approximately 85% of the unit's available depth level for oil capture. The feature acts as a safeguard against spills caused by exceeding the oil storage capacity of the separator and eliminates the need for manual oil level inspection.

The oil level alarm installed on the Stormceptor insert is illustrated in Figure 4.

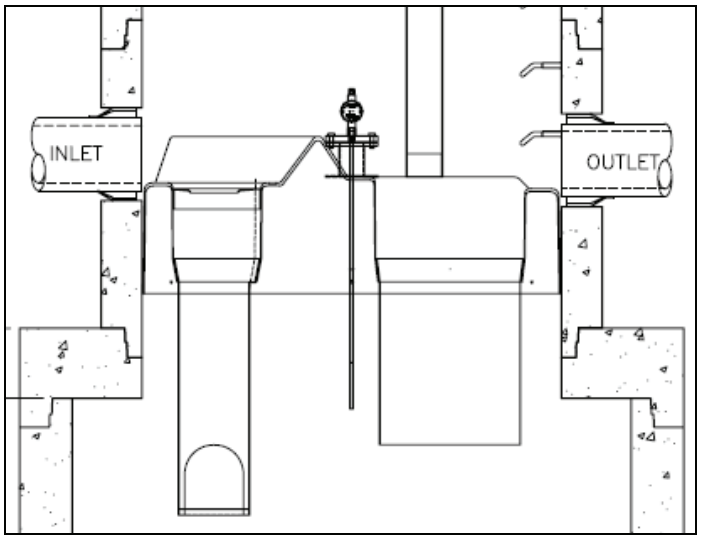


Figure 4. Oil level alarm

6.2. Increased Volume Storage Capacity

The Stormceptor unit may be modified to store a greater spill volume than is typically available. Under such a scenario, instead of installing a larger than required unit, modifications can be made to the recommended Stormceptor model to accommodate larger volumes. Contact your local Stormceptor representative for additional information and assistance for modifications.

7. Stormceptor Options

The Stormceptor System allows flexibility to incorporate to existing and new storm drainage infrastructure. The following section identifies considerations that should be reviewed when installing the system into a drainage network. For conditions that fall outside of the recommendations in this section, please contact your local Stormceptor representative for further guidance.

7.1. Installation Depth Minimum Cover

The minimum distance from the top of grade to the crown of the inlet pipe is 24 inches (600 mm). For situations that have a lower minimum distance, contact your local Stormceptor representative.

7.2. Maximum Inlet and Outlet Pipe Diameters

Maximum inlet and outlet pipe diameters are illustrated in Figure 5. Contact your local Stormceptor representative for larger pipe diameters

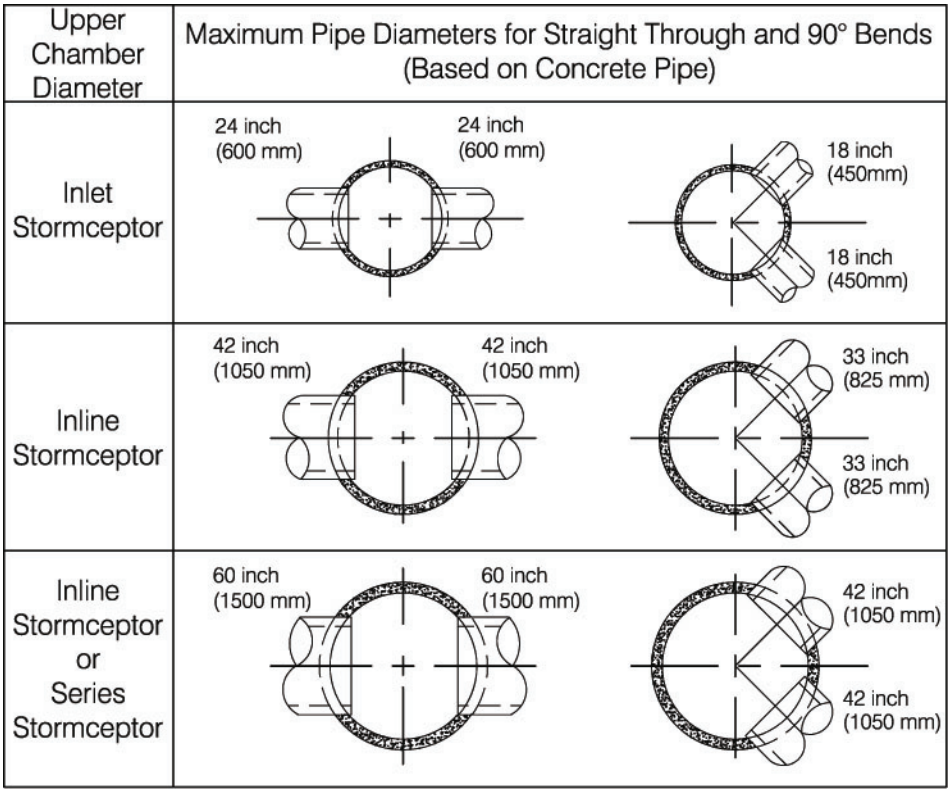


Figure 5. Maximum pipe diameters for straight through and bend applications

*The bend should only be incorporated into the second structure (downstream structure) of the Series Stormceptor System

7.3. Bends

The Stormceptor System can be used to change horizontal alignment in the storm drain network up to a maximum of 90 degrees. Figure 6 illustrates the typical bend situations of the Stormceptor System. Bends should only be applied to the second structure (downstream structure) of the Series Stormceptor System.

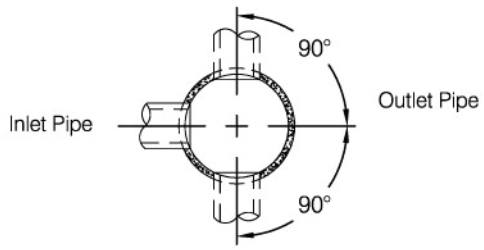
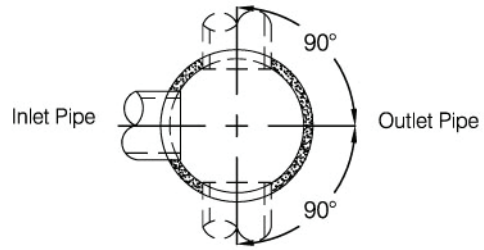
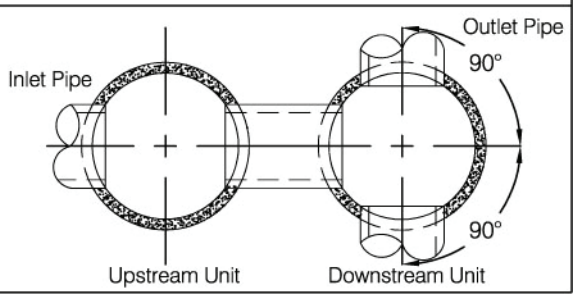
Stormceptor System	Maximum Bend Configurations
Inlet Stormceptor	
Inline Stormceptor	
Series Stormceptor	

Figure 6. Maximum bend angles

7.4. Multiple Inlet Pipes

The Inlet and Inline Stormceptor System can accommodate two or more inlet pipes. The maximum number of inlet pipes that can be accommodated into a Stormceptor unit is a function of the number, alignment and diameter of the pipes and its effects on the structural integrity of the precast concrete. When multiple inlet pipes are used for new developments, each inlet pipe shall have an invert elevation 3 inches (75 mm) higher than the outlet pipe invert elevation.

7.5. Inlet/Outlet Pipe Invert Elevations

Recommended inlet and outlet pipe invert differences are listed in Table 3.

Table 3. Recommended Drops Between Inlet and Outlet Pipe Inverts

Number of Inlet Pipes	Inlet System	In-Line System	Series System
1	3 inches (75 mm)	1 inch (25 mm)	3 inches (75 mm)
>1	3 inches (75 mm)	3 inches (75 mm)	Not Applicable

7.6. Shallow Stormceptor

In cases where there may be restrictions to the depth of burial of storm sewer systems. In this situation, for selected Stormceptor models, the lower chamber components may be increased in diameter to reduce the overall depth of excavation required.

7.7. Customized Live Load

The Stormceptor system is typically designed for local highway truck loading (AASHTO HS- 20). When the project requires live loads greater than HS-20, the Stormceptor System may be customized structurally for a pre-specified live load. Contact your local Stormceptor representative for customized loading conditions.

7.8. Pre-treatment

The Stormceptor System may be sized to remove sediment and for spills control in conjunction with other stormwater BMPs to meet the water quality objective. For pretreatment applications, the Stormceptor System should be the first unit in a treatment train. The benefits of pre-treatment include the extension of the operational life (extension of maintenance frequency) of large stormwater management facilities, prevention of spills and lower total life- cycle maintenance cost.

7.9. Head loss

The head loss through the Stormceptor System is similar to a 60 degree bend at a manhole. The K value for calculating minor losses is approximately 1.3 (minor loss = k*1.3v2/2g).

However, when a Submerged modification is applied to a Stormceptor unit, the corresponding K value is 4.

7.10. Submerged

The Submerged modification, Figure 7, allows the Stormceptor System to operate in submerged or partially submerged storm sewers. This configuration can be installed on all models of the Stormceptor System by modifying the fiberglass insert. A customized weir height and a secondary drop tee are added.

Submerged instances are defined as standing water in the storm drain system during zero flow conditions. In these instances, the following information is necessary for the proper design and application of submerged modifications:

- Stormceptor top of grade elevation
- Stormceptor outlet pipe invert elevation
- Standing water elevation

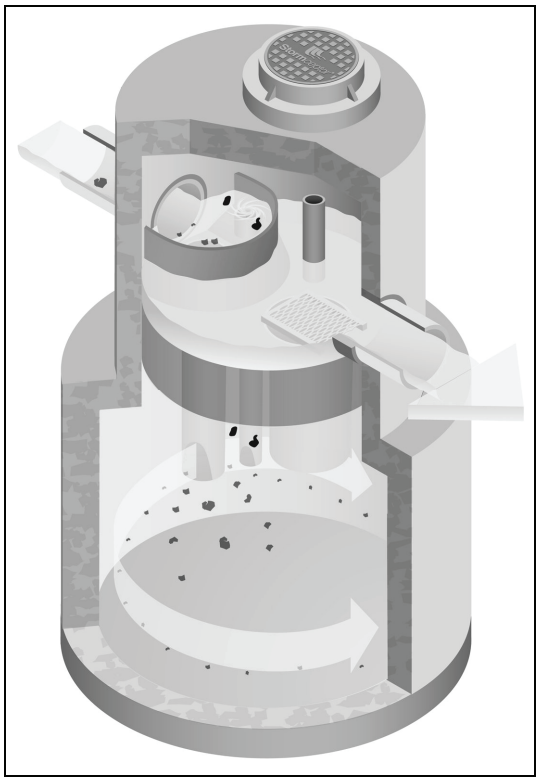


Figure 7. Submerged Stormceptor

8. Comparing Technologies

Designers have many choices available to achieve water quality goals in the treatment of stormwater runoff. Since many alternatives are available for use in stormwater quality treatment it is important to consider how to make an appropriate comparison between "approved alternatives". The following is a guide to assist with the accurate comparison of differing technologies and performance claims.

8.1. Particle Size Distribution (PSD)

The most sensitive parameter to the design of a stormwater quality device is the selection of the design particle size. While it is recommended that the actual particle size distribution (PSD) for sites be measured prior to sizing, alternative values for particle size should be selected to represent what is likely to occur naturally on the site. A reasonable estimate of a particle size distribution likely to be found on parking lots or other impervious surfaces should consist of a wide range of particles such as 20 microns to 2,000 microns (Ontario MOE, 1994).

There is no absolute right particle size distribution or specific gravity and the user is cautioned to review the site location, characteristics, material handling practices and regulatory requirements when selecting a particle size distribution. When comparing technologies, designs using different PSDs will result in incomparable TSS removal efficiencies. The PSD of the TSS removed needs to be standard between two products to allow for an accurate comparison.

8.2. Scour Prevention

In order to accurately predict the performance of a manufactured treatment device, there must be confidence that it will perform under all conditions. Since rainfall patterns cannot be predicted, stormwater quality devices placed in storm sewer systems must be able to withstand extreme events, and ensure that all pollutants previously captured are retained in the system.

In order to have confidence in a system's performance under extreme conditions, independent validation of scour prevention is essential when examining different technologies. Lack of independent verification of scour prevention should make a designer wary of accepting any product's performance claims.

8.3. Hydraulics

Full scale laboratory testing has been used to confirm the hydraulics of the Stormceptor System. Results of lab testing have been used to physically design the Stormceptor System and the sewer pipes entering and leaving the unit. Key benefits of Stormceptor are:

- Low head loss (typical k value of 1.3)
- Minimal inlet/outlet invert elevation drop across the structure
- Use as a bend structure
- Accommodates multiple inlets

The adaptability of the treatment device to the storm sewer design infrastructure can affect the overall performance and cost of the site.

8.4. Hydrology

Stormwater quality treatment technologies need to perform under varying climatic conditions. These can vary from long low intensity rainfall to short duration, high intensity storms. Since a treatment device is expected to perform under all these conditions, it makes sense that any system's design should accommodate those conditions as well.

Long-term continuous simulation evaluates the performance of a technology under the varying conditions expected in the climate of the subject site. Single, peak event design does not provide this information and is not equivalent to long-term simulation. Designers should request long-term simulation performance to ensure the technology can meet the long-term water quality objective.

9. Testing

The Stormceptor System has been the most widely monitored stormwater treatment technology in the world. Performance verification and monitoring programs are completed to the strictest standards and integrity. Since its introduction in 1990, numerous independent field tests and studies detailing the effectiveness of the Stormceptor System have been completed.

- Coventry University, UK – 97% removal of oil, 83% removal of sand and 73% removal of peat
- National Water Research Institute, Canada, - scaled testing for the development of the Stormceptor System identifying both TSS removal and scour prevention.
- New Jersey TARP Program – full scale testing of an STC 900 demonstrating 75% TSS removal of particles from 1 to 1000 microns. Scour testing completed demonstrated that the system does not scour. The New Jersey Department of Environmental Protection was followed.
- City of Indianapolis – full scale testing of an STC 900 demonstrating over 80% TSS removal of particles from 50 microns to 300 microns at 130% of the unit's operating rate. Scour testing completed demonstrated that the system does not scour.
- Westwood Massachusetts (1997), demonstrated >80% TSS removal
- Como Park (1997), demonstrated 76% TSS removal
- Ontario MOE SWAMP Program – 57% removal of 1 to 25 micron particles
- Laval Quebec – 50% removal of 1 to 25 micron particles

10. Installation

The installation of the concrete Stormceptor should conform in general to state highway, or local specifications for the installation of manholes. Selected sections of a general specification that are applicable are summarized in the following sections.

10.1. Excavation

Excavation for the installation of the Stormceptor should conform to state highway, or local specifications. Topsoil removed during the excavation for the Stormceptor should be stockpiled in designated areas and should not be mixed with subsoil or other materials.

Topsoil stockpiles and the general site preparation for the installation of the Stormceptor should conform to state highway or local specifications.

The Stormceptor should not be installed on frozen ground. Excavation should extend a minimum of 12 inches (300 mm) from the precast concrete surfaces plus an allowance for shoring and bracing where required. If the bottom of the excavation provides an unsuitable foundation additional excavation may be required.

In areas with a high water table, continuous dewatering may be required to ensure that the excavation is stable and free of water.

10.2. Backfilling

Backfill material should conform to state highway or local specifications. Backfill material should be placed in uniform layers not exceeding 12 inches (300mm) in depth and compacted to state highway or local specifications.

11. Stormceptor Construction Sequence

The concrete Stormceptor is installed in sections in the following sequence:

1. Aggregate base
2. Base slab
3. Lower chamber sections
4. Upper chamber section with fiberglass insert
5. Connect inlet and outlet pipes
6. Assembly of fiberglass insert components (drop tee, riser pipe, oil cleanout port and orifice plate
7. Remainder of upper chamber
8. Frame and access cover

The precast base should be placed level at the specified grade. The entire base should be in contact with the underlying compacted granular material. Subsequent sections, complete with joint seals, should be installed in accordance with the precast concrete manufacturer's recommendations.

Adjustment of the Stormceptor can be performed by lifting the upper sections free of the excavated area, re-leveling the base and re-installing the sections. Damaged sections and gaskets should be repaired or replaced as necessary. Once the Stormceptor has been constructed, any lift holes must be plugged with mortar.

12. Maintenance

12.1. Health and Safety

The Stormceptor System has been designed considering safety first. It is recommended that confined space entry protocols be followed if entry to the unit is required. In addition, the fiberglass insert has the following health and safety features:

- Designed to withstand the weight of personnel
- A safety grate is located over the 24 inch (600 mm) riser pipe opening
- Ladder rungs can be provided for entry into the unit, if required

12.2. Maintenance Procedures

Maintenance of the Stormceptor system is performed using vacuum trucks. No entry into the unit is required for maintenance (in most cases). The vacuum service industry is a well- established sector of the service industry that cleans underground tanks, sewers and catch basins. Costs to clean a Stormceptor will vary based on the size of unit and transportation distances.

The need for maintenance can be determined easily by inspecting the unit from the surface. The depth of oil in the unit can be determined by inserting a dipstick in the oil inspection/cleanout port.

Similarly, the depth of sediment can be measured from the surface without entry into the Stormceptor via a dipstick tube equipped with a ball valve. This tube would be inserted through the riser pipe. Maintenance should be performed once the sediment depth exceeds the guideline values provided in the Table 4.

Table 4. Sediment Depths Indicating Required Servicing*

Particle Size	Specific Gravity
Model	Sediment Depth inches (mm)
450i	8 (200)
900	8 (200)
1200	10 (250)
1800	15 (381)
2400	12 (300)
3600	17 (430)
4800	15 (380)
6000	18 (460)
7200	15 (381)
11000	17 (380)
13000	20 (500)
16000	17 (380)
* based on 15% of the Stormceptor unit's total storage	

Although annual servicing is recommended, the frequency of maintenance may need to be increased or reduced based on local conditions (i.e. if the unit is filling up with sediment more quickly than projected, maintenance may be required semi-annually; conversely once the site has stabilized maintenance may only be required every two or three years).

Oil is removed through the oil inspection/cleanout port and sediment is removed through the riser pipe. Alternatively oil could be removed from the 24 inches (600 mm) opening if water is removed from the lower chamber to lower the oil level below the drop pipes.

The following procedures should be taken when cleaning out Stormceptor:

1. Check for oil through the oil cleanout port
2. Remove any oil separately using a small portable pump
3. Decant the water from the unit to the sanitary sewer, if permitted by the local regulating authority, or into a separate containment tank
4. Remove the sludge from the bottom of the unit using the vacuum truck
5. Re-fill Stormceptor with water where required by the local jurisdiction

12.3. Submerged Stormceptor

Careful attention should be paid to maintenance of the Submerged Stormceptor System. In cases where the storm drain system is submerged, there is a requirement to plug both the inlet and outlet pipes to economically clean out the unit.

12.4. Hydrocarbon Spills

The Stormceptor is often installed in areas where the potential for spills is great. The Stormceptor System should be cleaned immediately after a spill occurs by a licensed liquid waste hauler.

12.5. Disposal

Requirements for the disposal of material from the Stormceptor System are similar to that of any other stormwater Best Management Practice (BMP) where permitted. Disposal options for the sediment may range from disposal in a sanitary trunk sewer upstream of a sewage treatment plant, to disposal in a sanitary landfill site. Petroleum waste products collected in the Stormceptor (free oil/chemical/fuel spills) should be removed by a licensed waste management company.

12.6. Oil Sheens

With a steady influx of water with high concentrations of oil, a sheen may be noticeable at the Stormceptor outlet. This may occur because a rainbow or sheen can be seen at very small oil concentrations (<10 mg/L). Stormceptor will remove over 98% of all free oil spills from storm sewer systems for dry weather or frequently occurring runoff events.

The appearance of a sheen at the outlet with high influent oil concentrations does not mean the unit is not working to this level of removal. In addition, if the influent oil is emulsified the Stormceptor will not be able to remove it. The Stormceptor is designed for free oil removal and not emulsified conditions.

SUPPORT

Drawings and specifications are available at www.ContechES.com.

Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, and earth stabilization products. For information, visit www.ContechES.com or call 800.338.1122

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Isolator® Row Plus
O&M Manual

ADS StormTech™

The Isolator® Row Plus

Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row Plus is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

The Isolator Row Plus

The Isolator Row Plus is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row Plus and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row Plus protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row Plus chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

The Isolator Row Plus is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row Plus and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row Plus bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row Plus row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row Plus. After Stormwater flows through the Isolator Row Plus and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

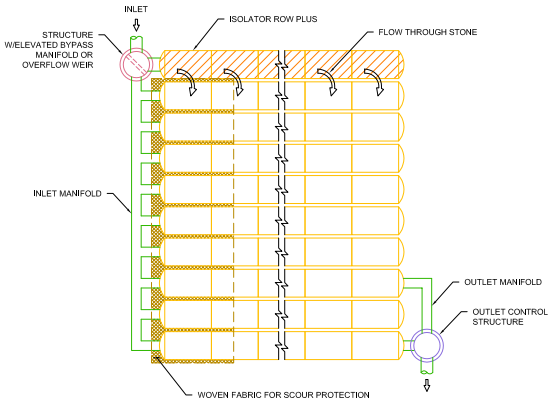
The Isolator Row FLAMP™ (patent pending) is a flared end ramp apparatus attached to the inlet pipe on the inside of the chamber end cap. The FLAMP provides a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance by enhancing outflow of solid debris that would otherwise collect at the chamber's end. It also serves to improve the fluid and solid flow into the access pipe during maintenance and cleaning and to guide cleaning and inspection equipment back into the inlet pipe when complete.

The Isolator Row Plus may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row Plus to minimize maintenance requirements and maintenance costs.

Note: *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row Plus.*

Looking down the Isolator Row PLUS from the manhole opening, ADS PLUS Fabric is shown between the chamber and stone base.

StormTech Isolator Row PLUS with Overflow Spillway (not to scale)



Isolator Row Plus Inspection/Maintenance

Inspection

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row Plus should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

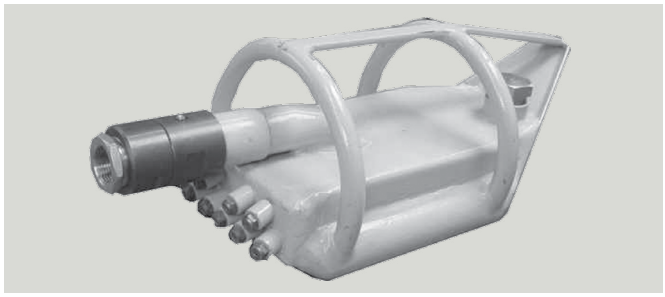
The Isolator Row Plus incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row Plus, clean-out should be performed.

Maintenance

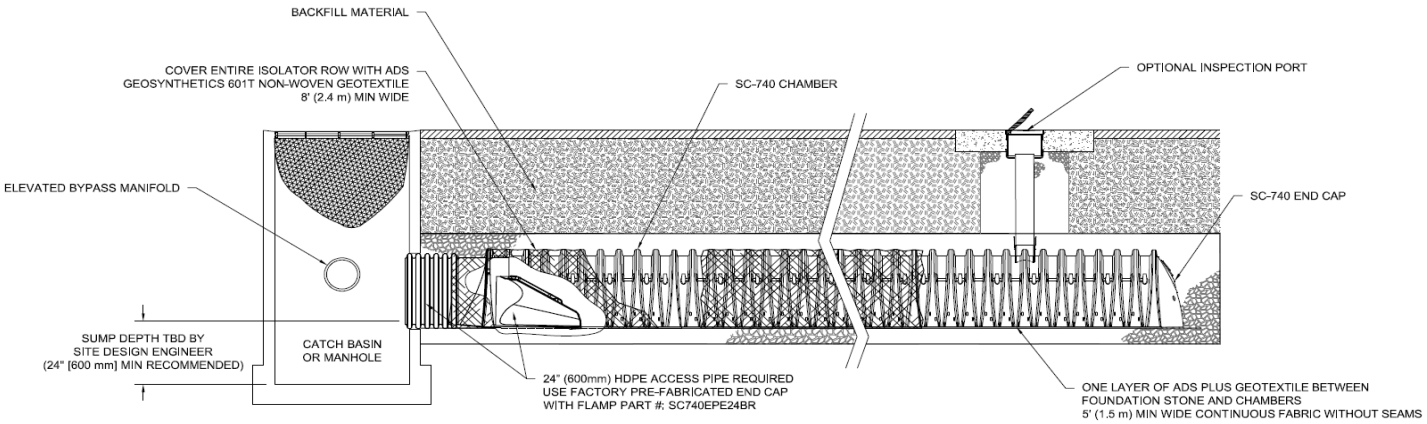
The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row Plus lengths up to 200' (61 m). **The JetVac process shall only be performed on StormTech Isolator Row Plus that have ADS Plus Fabric (as specified by StormTech) over their angular base stone.**



StormTech Isolator Row PLUS (*not to scale*)

Note: *Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row PLUS.*



Isolator Row Plus Step By Step Maintenance Procedures

Step 1

Inspect Isolator Row Plus for sediment.

A) Inspection ports (if present)
- i. Remove lid from floor box frame
- ii. Remove cap from inspection riser
- iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
- iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row Plus
- i. Remove cover from manhole at upstream end of Isolator Row Plus
- ii. Using a flashlight, inspect down Isolator Row Plus through outlet pipe
  1. Mirrors on poles or cameras may be used to avoid a confined space entry
  2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2.
  If not, proceed to Step 3.

Step 2

Clean out Isolator Row Plus using the JetVac process.

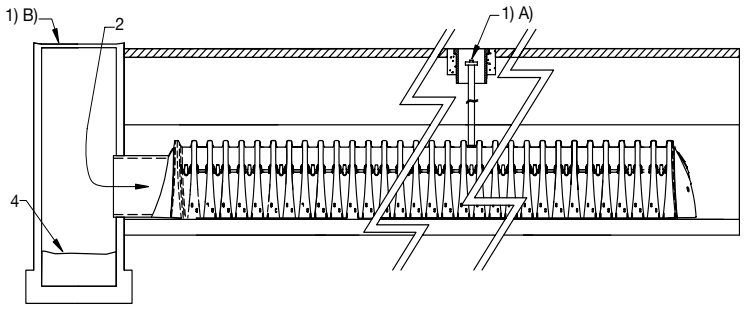
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

Step 3

Replace all caps, lids and covers, record observations and actions.

Step 4

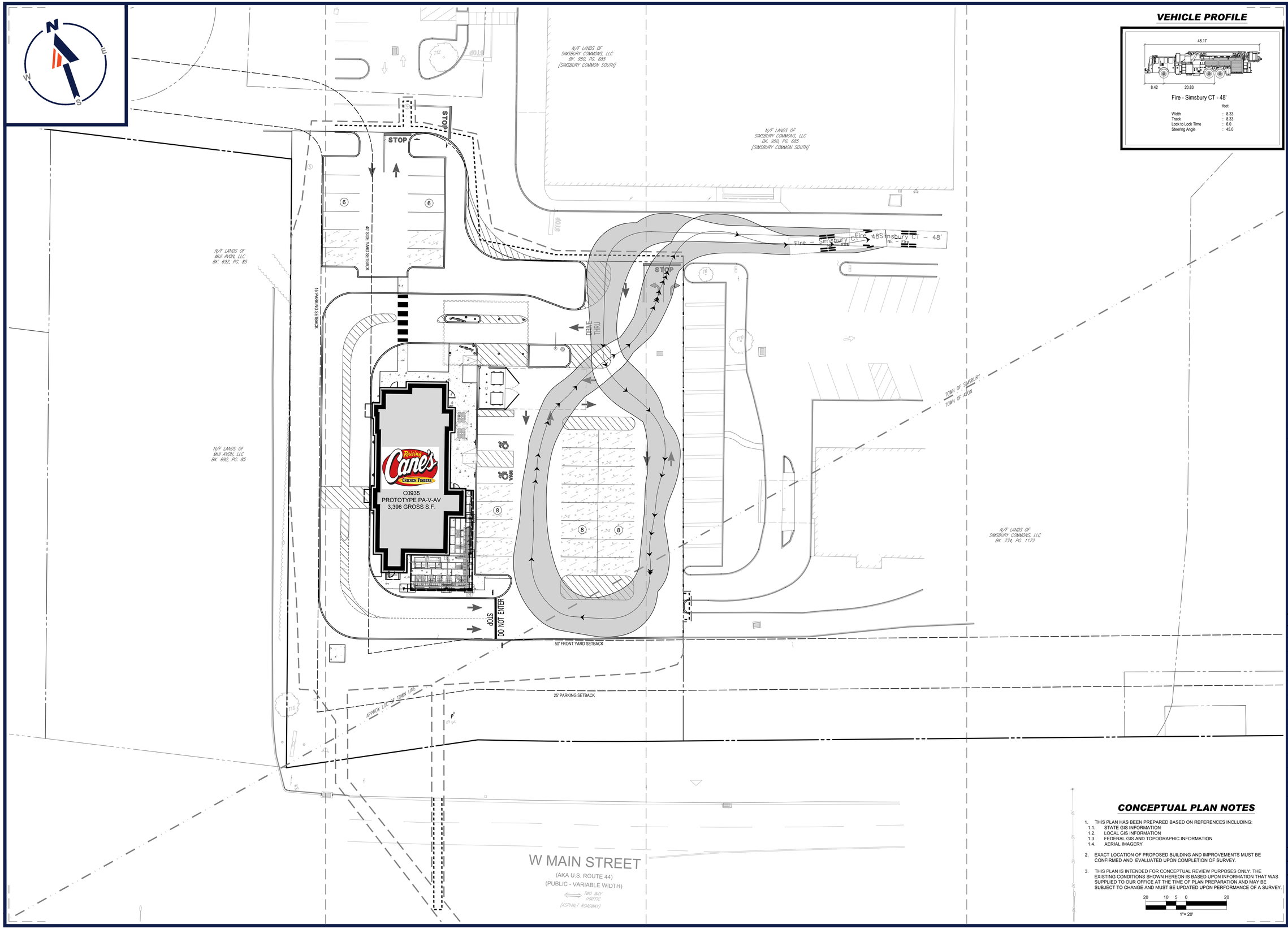
Inspect & clean catch basins and manholes upstream of the StormTech system.



Sample Maintenance Log

Date	Stadia Rod Readings		Sedi-ment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row PLUS, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

adspipe.com
800-821-6710



VEHICLE PROFILE

Fire - Simsbury CT - 48'

	feet
Width	: 8.33
Track	: 8.33
Lock to Lock Time	: 6.0
Steering Angle	: 45.0

CONCEPTUAL PLAN NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:
   - 1.1. STATE GIS INFORMATION
   - 1.2. LOCAL GIS INFORMATION
   - 1.3. FEDERAL GIS AND TOPOGRAPHIC INFORMATION
   - 1.4. AERIAL IMAGERY
2. EXACT LOCATION OF PROPOSED BUILDING AND IMPROVEMENTS MUST BE CONFIRMED AND EVALUATED UPON COMPLETION OF SURVEY.
3. THIS PLAN IS INTENDED FOR CONCEPTUAL REVIEW PURPOSES ONLY. THE EXISTING CONDITIONS SHOWN HEREON IS BASED UPON INFORMATION THAT WAS SUPPLIED TO OUR OFFICE AT THE TIME OF PLAN PREPARATION AND MAY BE SUBJECT TO CHANGE AND MUST BE UPDATED UPON PERFORMANCE OF A SURVEY.

20 10 5 0 20
1"= 20'

Restaurant Support Office
6800 Bishop Road, Plano, TX 75024
Tele: 972-769-3100 Fax: 972-769-3101

PROTOTYPE ISSUE DATE: -

STORE:

RAISING CANE'S RESTAURANT
530 BUSHY HILL ROAD
SIMSBURY, CT
Prototype P4-V-AV
RESTAURANT #C0935

DESIGNERS INFORMATION:

BOHLER
65 LaSALLE ROAD, SUITE 401
WEST HARTFORD, CT 06107
Phone: (860) 333-8900
www.BohlerEngineering.com

PROTOTYPE UPDATE PHASE:	-
UPDATE ISSUE DATE:	-
PROJECT MANAGER:	JGB

FOR CONCEPT PURPOSES ONLY

PROFESSIONAL OF RECORD:

J.G. BORD
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 30414

SHEET REVISIONS: (Sheet Specific per Designer)

	DATE:	DESCRIPTION:

SHEET TITLE:

SIMSBURY FIRE TRUCK EXHIBIT

DATE:	04/03/2023
PROJECT NUMBER:	CTA220075.00
DRAWN BY:	KMB

SHEET NUMBER:

TA-01

P:\2022\CTA220075.00\CAD\DRAWINGS\EXHIBITS\TRUCK TURNING EXHIBITS\CTA220075.00-TRKE-1A-----LAYOUT TA-01 FIRE TRUCK TURN