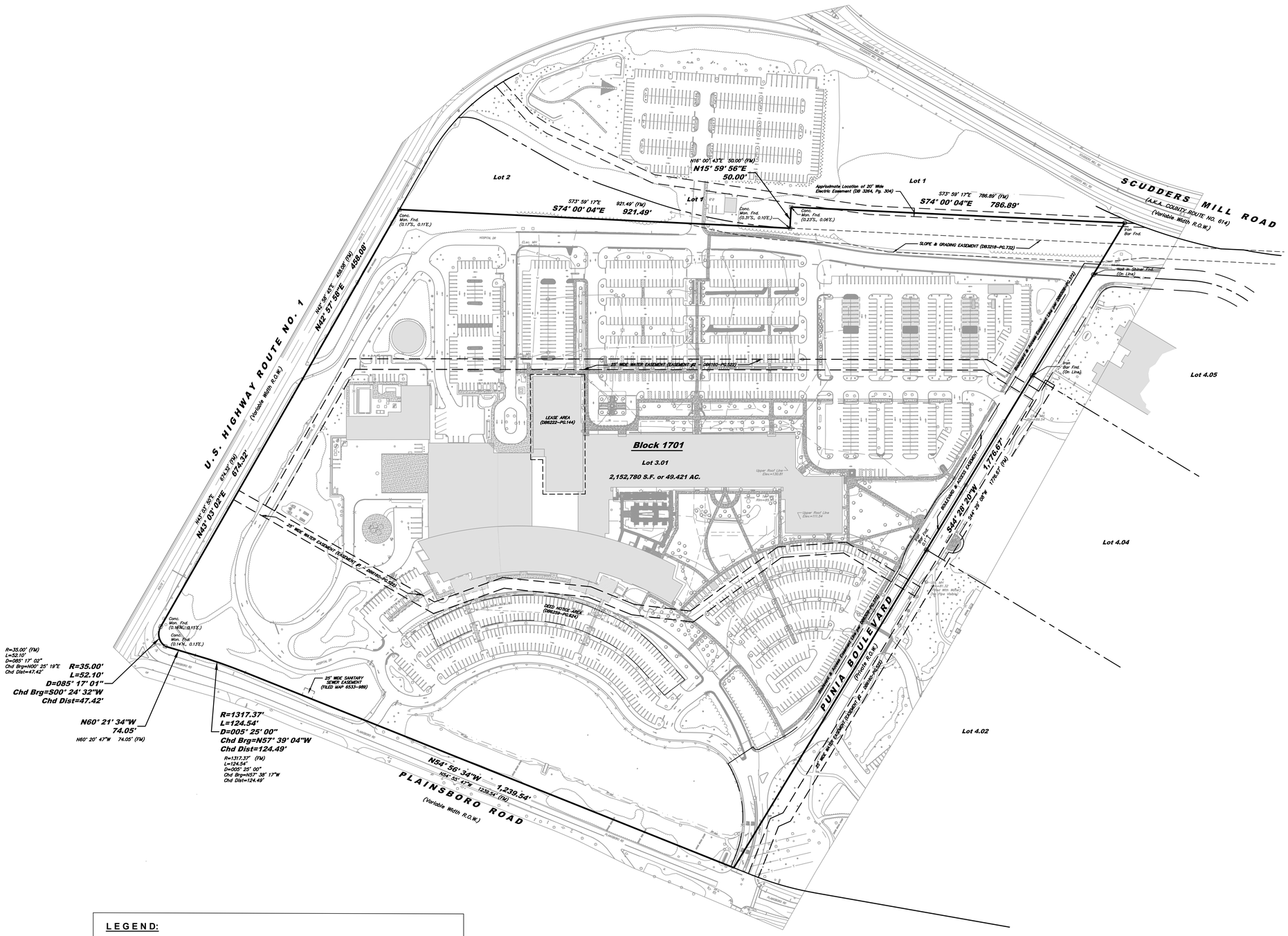

NOTES:

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MAP REFERENCES:

1. MAP ENTITLED, "REDEVELOPMENT - PRINCETON HEALTHCARE FINAL SUBDIVISION PLAT, LOTS 3 & 4, BLOCK 1701, LOTS 1, 2, & 3, BLOCK 1703, LOT 1, BLOCK 1704, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, N.J.", PREPARED BY STIRES ASSOCIATES, P.A., DATED FEBRUARY 12, 2008, REVISED TO JANUARY 8, 2009, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON FEBRUARY 5, 2009 AS MAP NO. 6533, FILE NO. 989, SHEETS 1 AND 2.
2. THE OFFICIAL TAX MAPS FOR THE TOWNSHIP OF PLAINSBORO, SHEET NO. 17.

DEED REFERENCES:

DEED BOOK 5929 - PAGE 527: VESTING DEED INTO CURRENT LOT 3.01, BLOCK 1701

LEGEND:

× 123.45	SPOT ELEVATION	FIRE HYDRANT	MINOR CONTOUR
× TC=123.45	TOP OF CURB	WATER METER	MAJOR CONTOUR
× BC=123.45	BOTTOM OF CURB	GAS VALVE	CHAINLINK FENCE
× TW=123.45	TOP OF WALL	GAS METER	WOOD FENCE
× FF=123.4	FINISHED FLOOR ELEVATION	SIGN	UNDERGROUND STORM DRAINAGE PIPE
	CURB DRAINAGE INLET	UTILITY POLE	UNDERGROUND SANITARY PIPE
	DRAINAGE INLET	GUY WIRE	OVERHEAD ELECTRIC LINE
	DRAINAGE MANHOLE	ELECTRIC METER	GAS LINE MARKOUT
	SANITARY SEWER MANHOLE	ELECTRIC BOX	WATER LINE MARKOUT
	UTILITY MANHOLE	LIGHT POST	ELECTRIC LINE MARKOUT
	ELECTRICAL MANHOLE	FLAG POLE	TELEPHONE LINE MARKOUT
	TELEPHONE MANHOLE	STEEL BOLLARD	FILED MAP INFORMATION
	SANITARY CLEANOUT	IRON BAR FOUND	
	WATER VALVE	MONUMENT FOUND	
		TREE	
		BUSH	

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No.	Date	Revision	Revised By	Checked By

SCALE: 1" = 100 '
SCALE IN U.S. SURVEY FEET

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BOUNDARY SURVEY

PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO

LOT 3.01, BLOCK 1701

SITUATED IN THE

TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
08-04-2022		1" = 100'	06C028T.003
DRAWN BY:	CHECKED BY:	FIELD BOOK	SHEET:
J.C.L.	T.J.E.		1 of 1

L:\SURVEY\CE\2006\06C028T.003 - PENN MEDICAL CENTER BOUNDARY\200 - CAD\06C028T.003 BNDY-L3.01.DWG (30X42)

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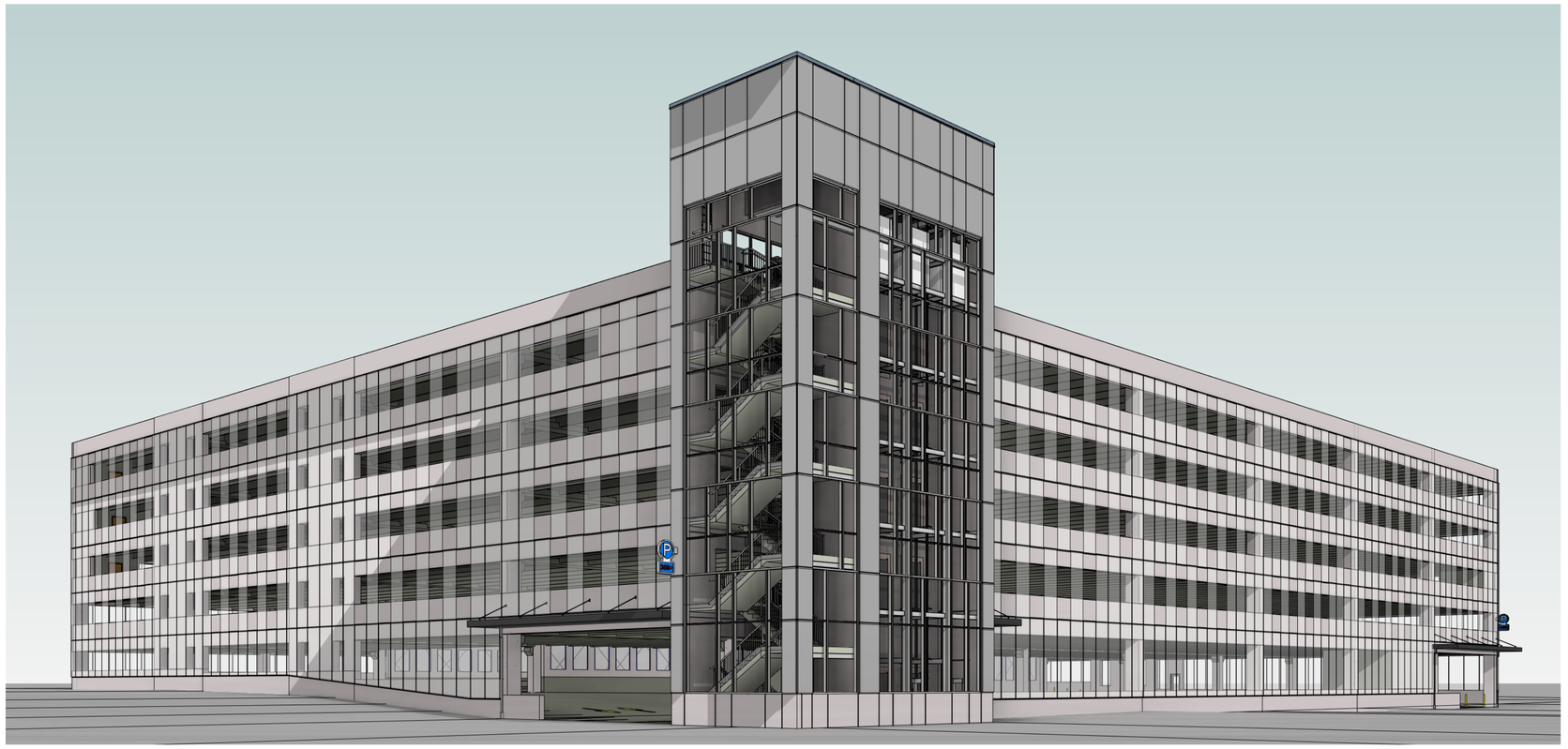
Penn Medicine Princeton Health Cancer Center Garage



DRAWING LIST

SHEET NO.		10/21/22 P/C BID SET	12/16/22 IDP SUBMISSION	4/10/2023 SITE PLAN SUBMISSION
ARCHITECTURAL				
A0.0	COVER	•	•	•
A0.1	CODE ANALYSIS		•	
A0.2	LIFE SAFETY		•	
A0.3	LIFE SAFETY		•	
A0.4	OPENNESS ANALYSIS		•	
A1.1	1ST TIER ARCHITECTURAL PLAN	•	•	•
A1.2	2ND TIER ARCHITECTURAL PLAN	•	•	•
A1.3	3RD TIER ARCHITECTURAL PLAN	•	•	•
A1.4	4TH TIER ARCHITECTURAL PLAN	•	•	•
A1.5	5TH TIER ARCHITECTURAL PLAN	•	•	•
A1.6	6TH TIER ARCHITECTURAL PLAN	•	•	•
A1.7	ENLARGED ARCHITECTURAL PLANS	•	•	
A1.8	ARCHITECTURAL PLAN DETAILS		•	
A2.1	BUILDING ELEVATIONS	•	•	•
A2.1B	FACADE ASSEMBLY ELEVATIONS	•	•	•
A2.1C	FACADE ASSEMBLY ELEVATIONS	•	•	•
A2.2	ENLARGED BUILDING ELEVATIONS	•	•	
A2.3	GARAGE FACADE DESIGN INTENT		•	
A3.1	WALL SECTIONS AND DETAILS	•	•	
A4.1	DOOR & ROOM FINISH SCHEDULES		•	
A4.2	WALL TYPE DETAILS	•	•	
A4.3	STOREFRONT SECTIONS AND DETAILS			
A4.4	CURTAIN WALL SECTION AND DETAILS			
A4.5	CANOPY PLANS SECTIONS AND DETAILS	•	•	
A4.6	METAL PANEL DETAILS			
AS1.1	STAIR/ELEVATOR TOWER A PLANS	•	•	
AS1.2	STAIR/ELEVATOR TOWER A PLANS	•	•	
AS1.3	STAIR/ELEVATOR TOWER A ELEVATIONS	•	•	
AS1.4	STAIR/ELEVATOR TOWER A ELEVATIONS		•	
AS1.5	STAIR/ELEVATOR TOWER A SECTIONS	•	•	
AS1.6	STAIR/ELEVATOR TOWER A FINISH PLANS			
AS2.1	STAIR TOWER B PLANS & ELEVATIONS	•	•	
AS2.2	STAIR TOWER B ELEVATIONS	•	•	
AS2.3	STAIR TOWER B SECTIONS AND DETAILS	•	•	
AS2.4	STAIR TOWER B FINISH PLANS			
AS3.1	STAIR AND ELEVATOR DETAILS	•	•	
AS3.2	STAIR AND ELEVATOR DETAILS	•	•	
G1.1	SIGNAGE SCHEDULE, NOTES AND DETAILS		•	
G1.2	SIGNAGE AND GRAPHICS DETAILS		•	

DRAWING LIST

SHEET NO.		10/21/22 P/C BID SET	12/16/22 IDP SUBMISSION	4/10/2023 SITE PLAN SUBMISSION
G1.3	SIGNAGE AND GRAPHICS DETAILS			•
G1.4	SIGNAGE AND GRAPHICS DETAILS			•
STRUCTURAL				
S0.1	GENERAL STRUCTURAL NOTES	•	•	
S0.2	GENERAL DETAILS	•	•	
S0.3	WATERPROOFING DETAILS	•	•	
S1.0	FOUNDATION PLAN	•	•	
S1.1	GROUND TIER STRUCTURAL PLAN	•	•	
S1.2	SECOND TIER STRUCTURAL PLAN	•	•	
S1.3	THIRD TIER STRUCTURAL PLAN	•	•	
S1.4	FOURTH TIER STRUCTURAL PLAN	•	•	
S1.5	FIFTH TIER STRUCTURAL PLAN	•	•	
S1.6	SIXTH TIER STRUCTURAL PLAN	•	•	
S2.1	FOUNDATION DETAILS	•	•	
S2.2	FOUNDATION SECTIONS	•	•	
S3.1	PRECAST TEE DETAILS	•	•	
S3.2	COLUMN PLANS	•	•	
S3.3	PRECAST SECTIONS	•	•	
S3.4	PRECAST SECTIONS	•	•	
S3.5	SOLAR ARRAY LOADING	•	•	
S3.6	SOLAR ARRAY DETAILS	•	•	
S4.1	PRECAST DETAILS	•	•	
MECHANICAL				
M0.00	HVAC LEGEND AND SCOPE NOTES			•
M0.01	HVAC SHEET LIST			•
M1.01	GROUND TIER - OVERALL MECHANICAL PLAN			•
M1.02	2ND TIER - OVERALL MECHANICAL PLAN			•
M1.03	3RD TIER - OVERALL MECHANICAL PLAN			•
M1.04	4TH TIER - OVERALL MECHANICAL PLAN			•
M1.05	5TH TIER - OVERALL MECHANICAL PLAN			•
M1.06	TOP TIER - OVERALL MECHANICAL PLAN			•
M1.07	STAIR TOWER ROOF - OVERALL MECHANICAL PLAN			•
M2.00	MECHANICAL SCHEDULES			•
ELECTRICAL				
E0.00	ELECTRICAL LEGEND			•
E0.01	ELECTRICAL SHEET LIST			•
E1.00	ELECTRICAL SITE PLAN			•
E2.01	GROUND TIER - LIGHTING PLAN			•
E2.02	2ND TIER - LIGHTING PLAN			•
E2.03	3RD TIER - LIGHTING PLAN			•
E2.04	4TH TIER - LIGHTING PLAN			•
E2.05	5TH TIER - LIGHTING PLAN			•
E2.06	TOP TIER - LIGHTING PLAN			•

DRAWING LIST

SHEET NO.		10/21/22 P/C BID SET	12/16/22 IDP SUBMISSION	4/10/2023 SITE PLAN SUBMISSION
E2.07	STAIR TOWER A - LIGHTING SECTION		•	
E2.08	STAIR TOWER B - LIGHTING SECTION		•	
E3.01	GROUND TIER - POWER PLAN		•	
E3.02	2ND TIER - POWER PLAN		•	
E3.03	3RD TIER - POWER PLAN		•	
E3.04	4TH TIER - POWER PLAN		•	
E3.05	5TH TIER - POWER PLAN		•	
E3.06	TOP TIER - POWER PLAN		•	
E4.00	ELECTRICAL RISER DIAGRAM		•	
E4.10	LIGHTING CONTROL ONE LINE DIAGRAM		•	
E5.00	ELECTRICAL PANEL SCHEDULES		•	
E5.10	LIGHTING FIXTURE SCHEDULE		•	
E7.00	ELECTRICAL DETAILS		•	
E7.01	ELECTRICAL DETAILS		•	
PLUMBING				
P0.00	PLUMBING LEGEND			•
P0.01	PLUM SHEET LIST			•
P1.00	FOUNDATION - NEW PLUMBING PLAN			•
P1.01	GROUND TIER - NEW PLUMBING PLAN			•
P1.02	2ND TIER - NEW PLUMBING PLAN			•
P1.03	3RD TIER - NEW PLUMBING PLAN			•
P1.04	4TH TIER - NEW PLUMBING PLAN			•
P1.05	5TH TIER - NEW PLUMBING PLAN			•
P1.06	6TH TIER - NEW PLUMBING PLAN			•
P2.01	PLUMBING PART PLANS			•
P3.00	PLUMBING DETAILS			•
P4.00	PLUMBING DOMESTIC WATER RISER DIAGRAM			•
P4.01	PLUMBING SANITARY RISER DIAGRAM			•
P4.02	PLUMBING RAINWATER RISER DIAGRAM			•
FIRE PROTECTION				
FP0.00	FIRE PROTECTION LEGEND			•
FP1.00	FOUNDATION - NEW FIRE PROTECTION PLAN			•
FP1.01	GROUND TIER - NEW FIRE PROTECTION PLAN			•
FP1.02	2ND TIER - NEW FIRE PROTECTION PLAN			•
FP1.03	3RD TIER - NEW FIRE PROTECTION PLAN			•
FP1.04	4TH TIER - NEW FIRE PROTECTION PLAN			•
FP1.05	5TH TIER - NEW FIRE PROTECTION PLAN			•
FP1.06	TOP TIER - NEW FIRE PROTECTION PLAN			•
FP2.00	FIRE PROTECTION PART PLANS			•
FP3.00	FIRE PROTECTION DETAILS			•
FP4.00	FIRE PROTECTION RISER DIAGRAM			•
FIRE ALARM				
FA0.00	FIRE ALARM LEGEND			•

DRAWING LIST

SHEET NO.		10/21/22 P/C BID SET	12/16/22 IDP SUBMISSION	4/10/2023 SITE PLAN SUBMISSION
FA0.01	FIRE ALARM SHEET LIST			•
FA1.01	GROUND TIER - FIRE ALARM PLAN			•
FA1.02	2ND TIER - FIRE ALARM PLAN			•
FA1.03	3RD TIER - FIRE ALARM PLAN			•
FA1.04	4TH TIER - FIRE ALARM PLAN			•
FA1.05	5TH TIER - FIRE ALARM PLAN			•
FA1.06	TOP TIER - FIRE ALARM PLAN			•
FA2.00	FIRE ALARM RISER DIAGRAM			•
FA3.00	FIRE ALARM DETAILS			•
SECURITY				
SE0.01	SECURITY LEGEND			•
SE2.01	GROUND TIER - NEW SECURITY PLAN			•
SE2.02	2ND TIER - NEW SECURITY PLAN			•
SE2.03	3RD TIER - NEW SECURITY PLAN			•
SE2.04	4TH TIER - NEW SECURITY PLAN			•
SE2.05	5TH TIER - NEW SECURITY PLAN			•
SE2.06	TOP TIER - NEW SECURITY PLAN			•
SE2.07	STAIR TOWER ROOM			•
SE5.01	SECURITY DETAILS			•
SE5.02	SECURITY DETAILS			•
SE5.03	SECURITY DETAILS			•
TECH				
T0.01	COMMUNICATIONS LEGEND			•
T0.02	TECH SHEET LIST			•
T2.01	GROUND TIER - NEW COMMUNICATIONS PLAN			•
T2.02	2ND TIER - NEW COMMUNICATIONS PLAN			•
T2.03	3RD TIER - NEW COMMUNICATIONS PLAN			•
T2.04	4TH TIER - NEW COMMUNICATIONS PLAN			•
T2.05	5TH TIER - NEW COMMUNICATIONS PLAN			•
T2.06	TOP TIER - NEW COMMUNICATIONS PLAN			•
T4.01	COMMUNICATIONS GARAGE TDR PART PLAN AND ELEVATIONS			•
T5.01	COMMUNICATION FACEPLATE DETAILS			•
T5.02	COMMUNICATION DETAILS			•
T6.01	COMMUNICATIONS CONDUIT RISER DIAGRAM			•
T6.02	COMMUNICATIONS FIBER BACKBONE RISER DIAGRAM			•
T6.03	COMMUNICATIONS VOICE BACKBONE RISER DIAGRAM			•
T6.04	COMMUNICATIONS GROUNDING RISER DIAGRAM			•

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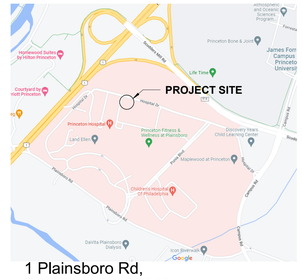
Street Map



1 Plainsboro Rd,
Princeton, NJ 08540

THA CONSULTING

04/10/2023
SITE PLAN SUBMISSION

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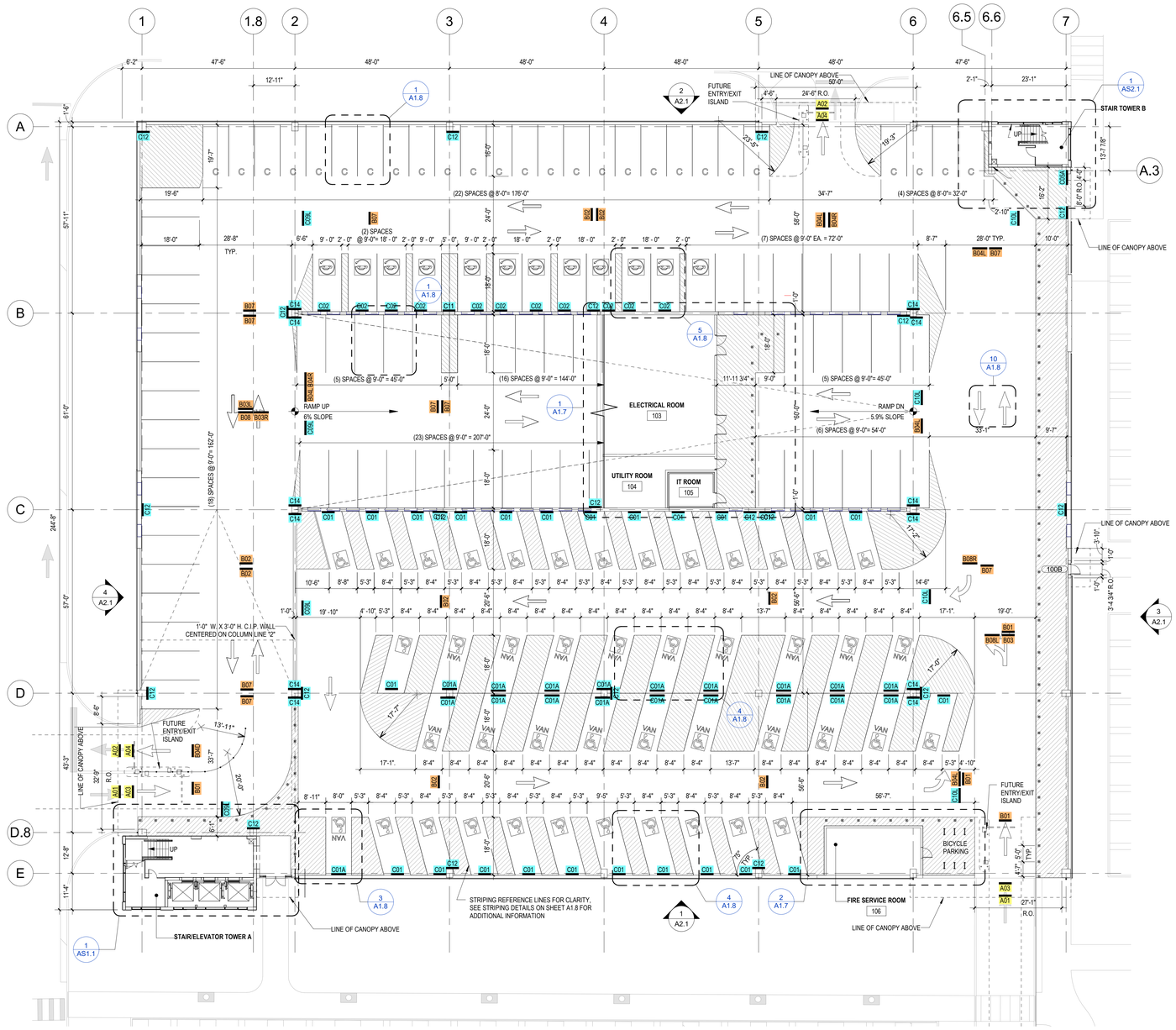


1 A1.1 1ST TIER ARCHITECTURAL PLAN
1/16" = 1'-0"

PARKING SPACE TABULATION								
GARAGE TIER	COMPACT	STANDARD	ADA VAN	ADA	ADA EV	EV	EV READY	TOTAL
TOP TIER	0	199	0	0	0	0	0	**199**
5TH TIER	0	188	0	18	0	0	0	**206**
4TH TIER	0	176	0	18	0	0	12	**206**
3RD TIER	0	175	0	19	0	0	12	**206**
2ND TIER	0	173	1	17	3	0	11	**205**
GROUND TIER	26	57	19	25	0	12	0	**139**
TOTAL SPACES	**26**	**968**	**20**	**97**	**3**	**12**	**35**	**1161**

NOTES:
1. THE PLANS INCLUDE OVER 4% MAKE-READY ELECTRIC VEHICLE (EV) SPACES AS NEEDED TO MEET THE STATE AND LOCAL ORDINANCE FOR A NON- RESIDENTIAL GARAGE. ELECTRICAL PROVISIONS ARE PROVIDED FOR LEVEL 2 CHARGERS. THE PAVEMENT MARKINGS AND SIGNAGE ARE DESIGNED FOR EV CHARGERS TO BE SUPPLIED AT SPACES LABELED AS "ADA EV" AND "EV" PRIOR TO THE INITIAL OCCUPANCY OF THE GARAGE. HOWEVER THE ACTUAL AMOUNT OF EV CHARGERS WILL BE BASED ON DEMAND AND THE PAVEMENT MARKINGS AND SIGNAGE WILL BE ADJUSTED ACCORDINGLY.
2. THE PARKING DIMENSION EXCEPTION AS DESCRIBED IN ADDENDUM #3 TO FORM NO. 4 OF THE SITE PLAN APPLICATION APPLIES TO THE ANGLED PARKING SPACES WITHIN THE TWO-BAYS SOUTH OF GRIDLINE C THAT HAVE 20'-6" WIDE ACCESS AISLES. THIS APPLIES TO EACH TIER OF THE GARAGE AND AFFECTS LESS THAN 50% OF THE PARKING SPACES.

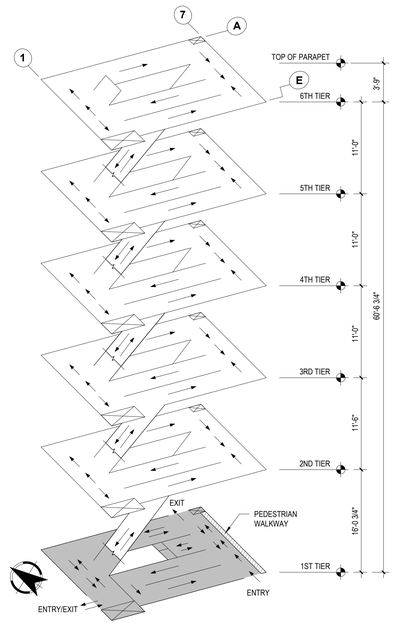
GROSS BUILDING AREA	
TOP TIER	63,505 SF
5TH TIER	68,568 SF
4TH TIER	68,568 SF
3RD TIER	68,568 SF
2ND TIER	68,568 SF
GROUND TIER	68,568 SF
GROSS TOTAL	**406,346 SF**

BUILDING AREAS

Gross Area per Level (1st to 5th Tier) ..... 68,568 sf
Gross Area Top Tier..... 63,505 sf

Gross Building Area..... 406,346 sf

Net Parking Area (Typical Tier)..... 66,385 sf
Parking Efficiency (Typical Tier...66,385 sf / 206 spaces = 322 sf per space



ISOMETRIC

PLAN LEGEND	
	PIPE BOLLARD
	PRECAST BOLLARD
	ACCESSIBLE PARKING SPACE
	4" WIDE STRIPES PAINTED YELLOW @ 1'-6" O.C.
	PAINTED FLOOR ARROW
102	DOOR NUMBER, SEE DOOR SCHEDULE
	WALL TAG
	RATED WALL TAG
C	COMPACT PARKING SPACE - PAINTED
XXX XXX	SIGNAGE KEYNOTE, SEE SHEETS G1.1- G1.4 FOR SCHEDULE AND RELATED DETIALS

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New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

STAMP

KEVIN CARRIGAN, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No GE56462

ISSUANCES

NO.	DATE	DESCRIPTION
3	04/10/23	SITE PLAN SUBMISSION
2	12/16/22	IDP
1	10/21/22	PRECAST BID SET

PROJECT INFORMATION

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

DRAWING INFORMATION

1ST TIER ARCHITECTURAL PLAN

A1.1

04/10/2023 SITE PLAN SUBMISSION

4/17/2023 3:52:02 PM
Autodesk Docs://1SDT Penn Medicine Princeton Health/UPHS PMPH CAAA.rvt
Penn Medicine Princeton Health Cancer Garage

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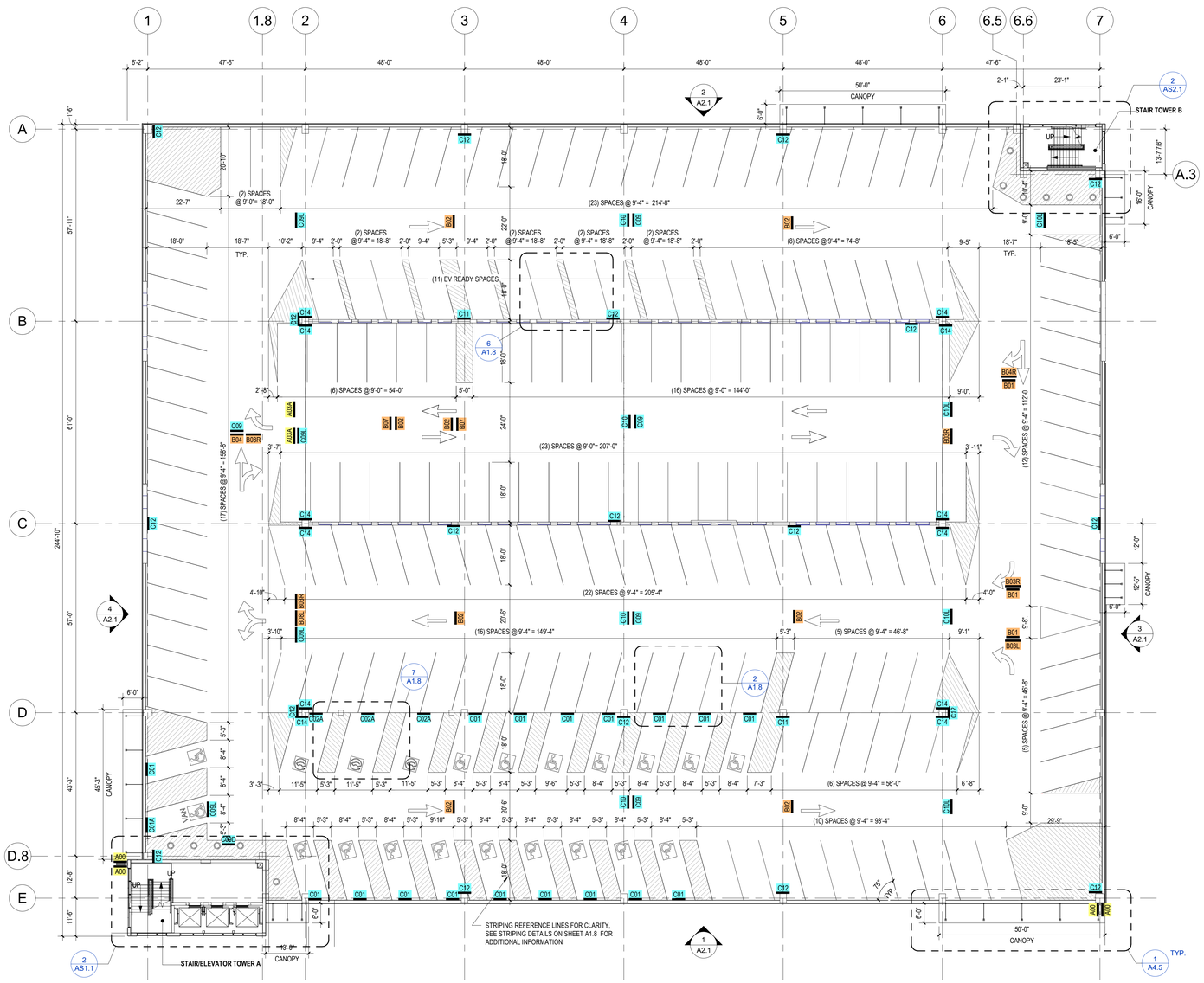
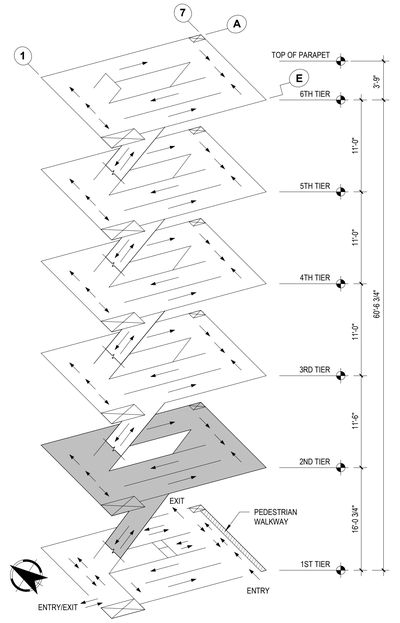


1 A1.2 — 2ND TIER ARCHITECTURAL PLAN
1/16" = 1'-0"



ISOMETRIC

PLAN LEGEND	
	PIPE BOLLARD
	PRECAST BOLLARD
	ACCESSIBLE PARKING SPACE
	4" WIDE STRIPES PAINTED YELLOW @ 1'-6" O.C.
	PAINTED FLOOR ARROW
102	DOOR NUMBER, SEE DOOR SCHEDULE
	WALL TAG
	RATED WALL TAG
C	COMPACT PARKING SPACE - PAINTED
XXX XXX	SIGNAGE KEYNOTE, SEE SHEETS G1.1- G1.4 FOR SCHEDULE AND RELATED DETIALS

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2	12/16/22	IDP
1	10/21/22	PRECAST BID SET

PROJECT INFORMATION

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

DRAWING INFORMATION

2ND TIER ARCHITECTURAL PLAN

A1.2

04/10/2023 SITE PLAN SUBMISSION

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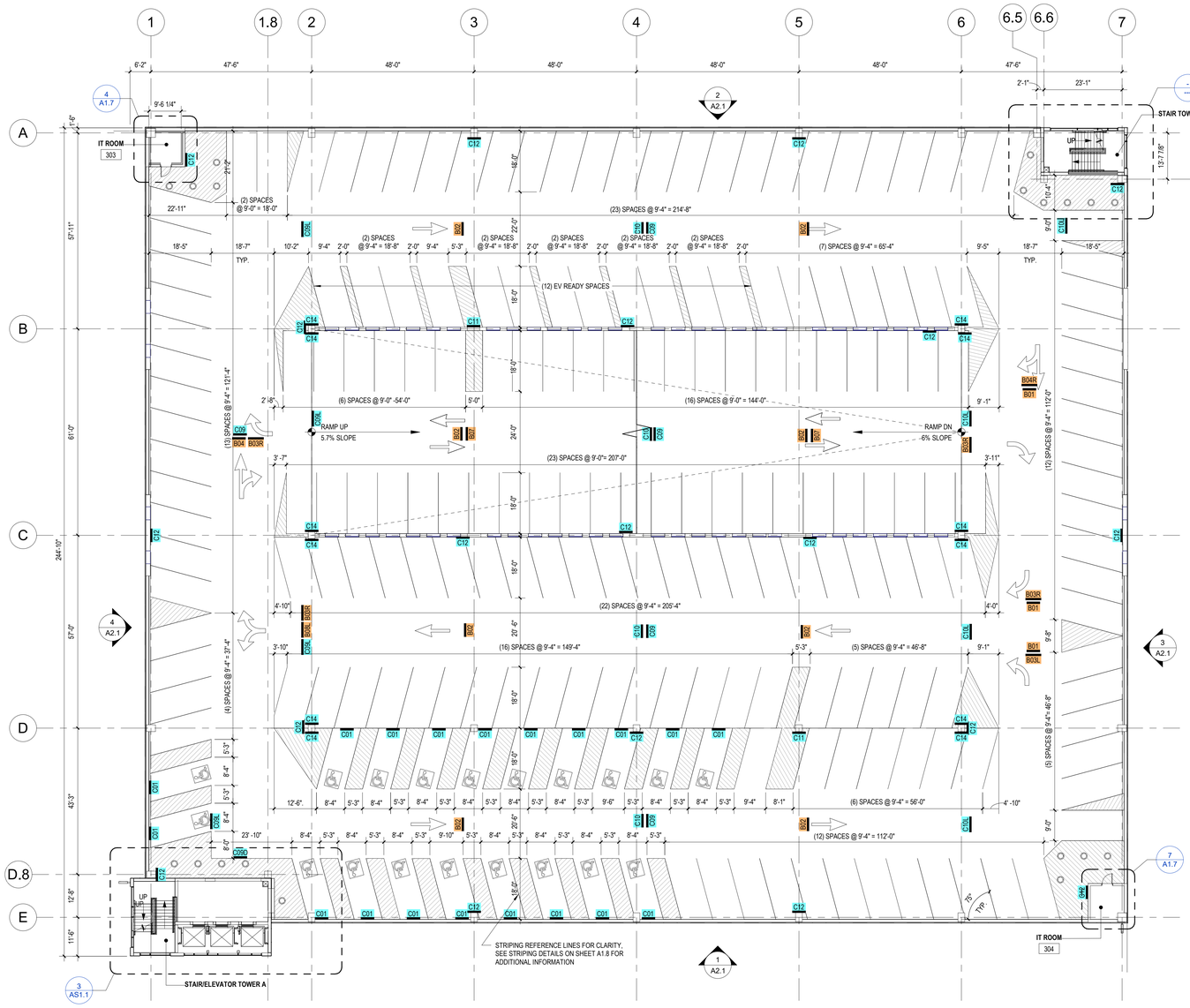
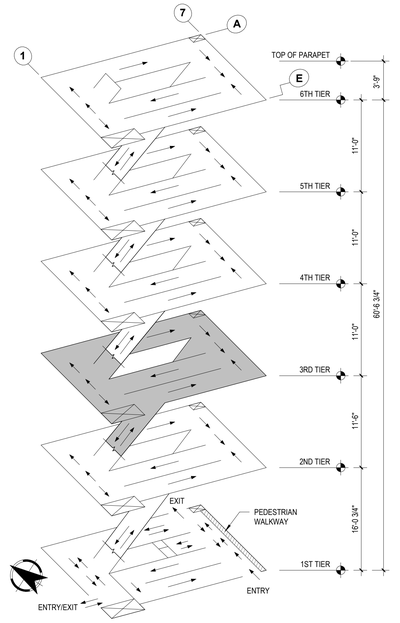


1 3RD TIER ARCHITECTURAL PLAN
1/16" = 1'-0"



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PLAN LEGEND

- PIPE BOLLARD
- PRECAST BOLLARD
- ACCESSIBLE PARKING SPACE
- 4" WIDE STRIPES PAINTED YELLOW @ 1'-6" O.C.
- PAINTED FLOOR ARROW
- 102 — DOOR NUMBER, SEE DOOR SCHEDULE
- WALL TAG
- RATED WALL TAG
- C — COMPACT PARKING SPACE - PAINTED
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3RD TIER ARCHITECTURAL PLAN

A1.3

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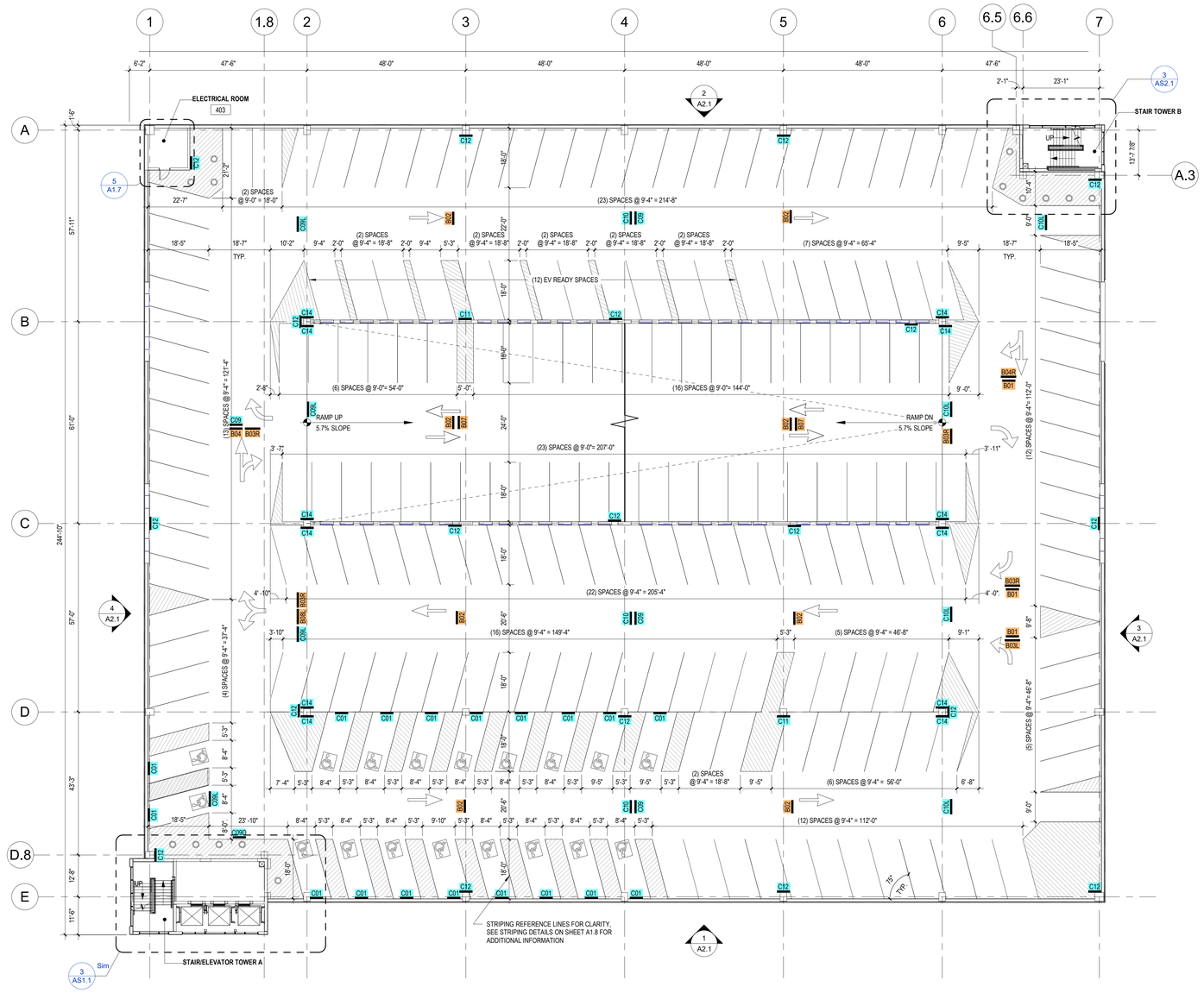
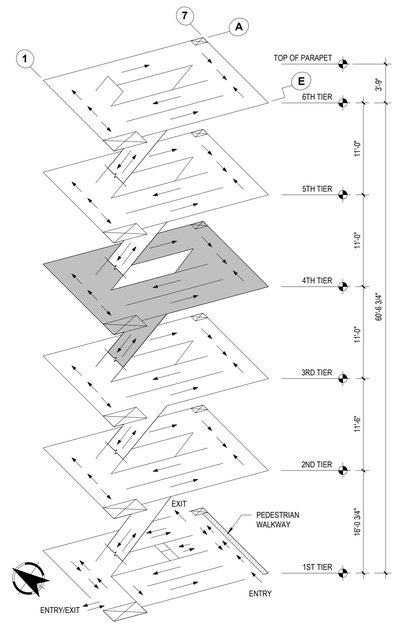


1 A1.4 — 4TH TIER ARCHITECTURAL PLAN
1/16" = 1'-0"



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PLAN LEGEND

	PIPE BOLLARD
	PRECAST BOLLARD
	ACCESSIBLE PARKING SPACE
	4" WIDE STRIPES PAINTED YELLOW @ 1'-6" O.C.
	PAINTED FLOOR ARROW
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4TH TIER ARCHITECTURAL PLAN

A1.4

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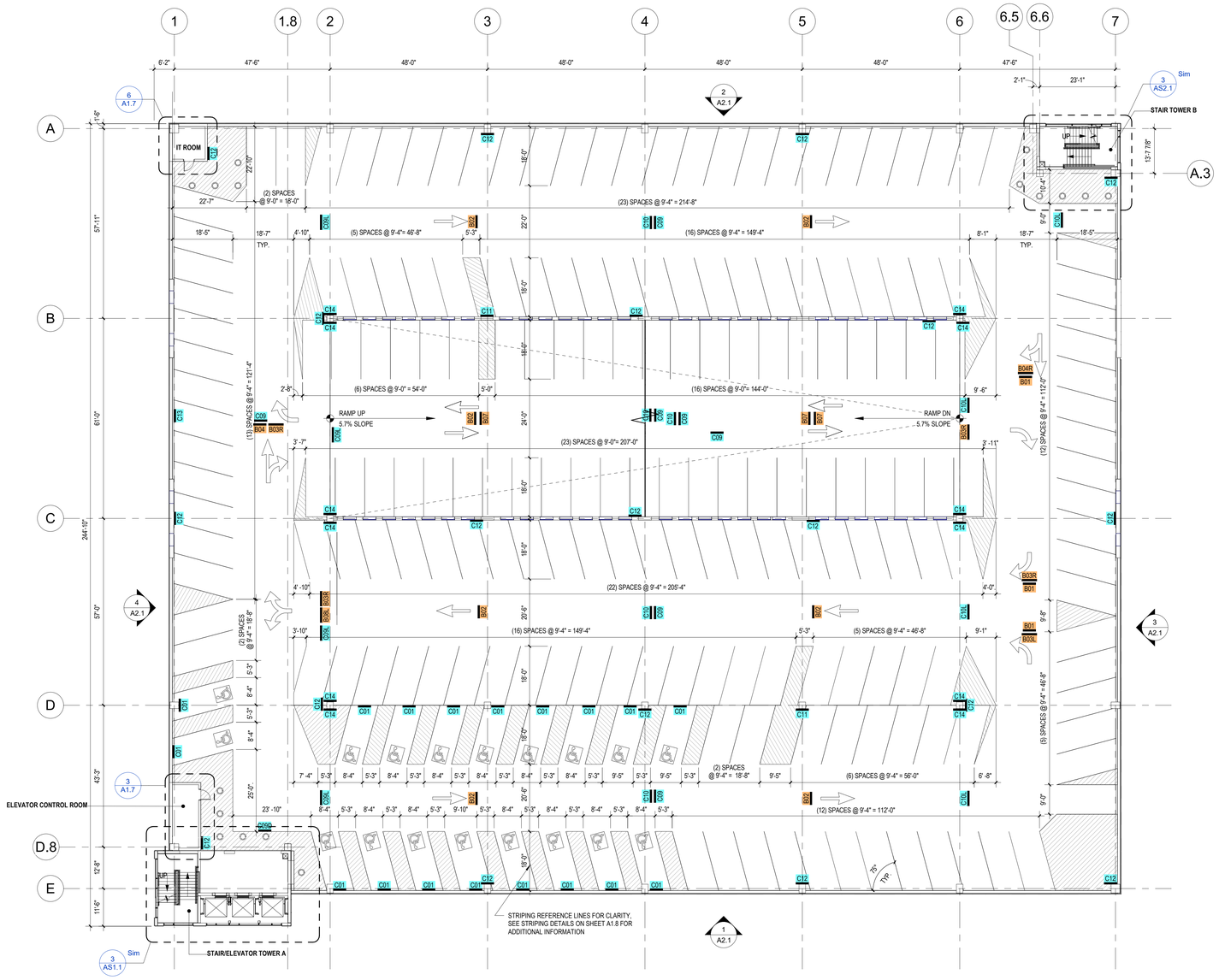
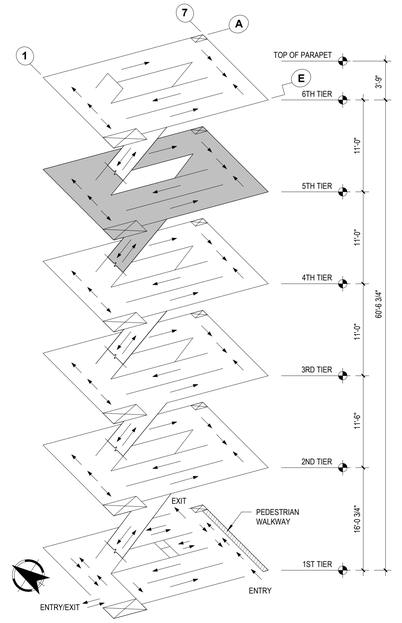


1 A1.5 5TH TIER ARCHITECTURAL PLAN
1/16" = 1'-0"



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PLAN LEGEND

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- PRECAST BOLLARD
- ACCESSIBLE PARKING SPACE
- 4" WIDE STRIPES PAINTED YELLOW @ 1'-6" O.C.
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5TH TIER ARCHITECTURAL PLAN

A1.5

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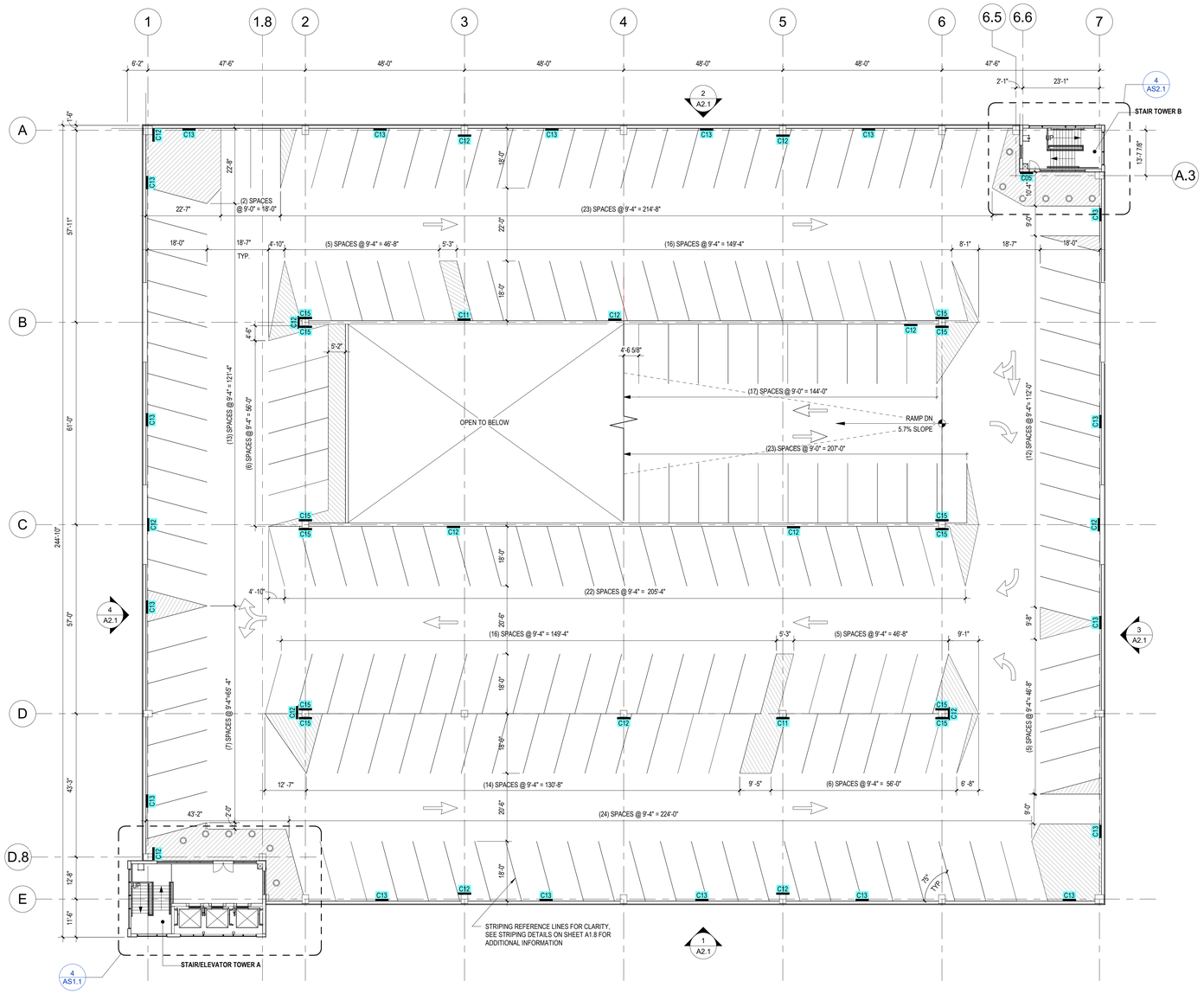
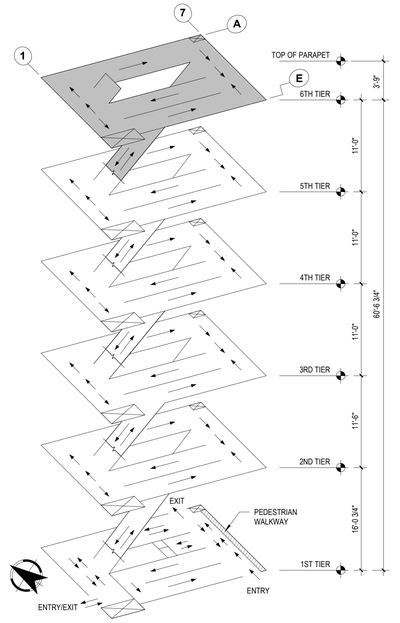


1 A1.6 6TH TIER ARCHITECTURAL PLAN
1/16" = 1'-0"



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PLAN LEGEND

	PIPE BOLLARD
	PRECAST BOLLARD
	ACCESSIBLE PARKING SPACE
	4" WIDE STRIPES PAINTED YELLOW @ 1'-6" O.C.
	PAINTED FLOOR ARROW
102	DOOR NUMBER, SEE DOOR SCHEDULE
	WALL TAG
	RATED WALL TAG
C	COMPACT PARKING SPACE - PAINTED
XXX XXX	SIGNAGE KEYNOTE, SEE SHEETS G1.1- G1.4 FOR SCHEDULE AND RELATED DETIALS

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6TH TIER ARCHITECTURAL PLAN

A1.6

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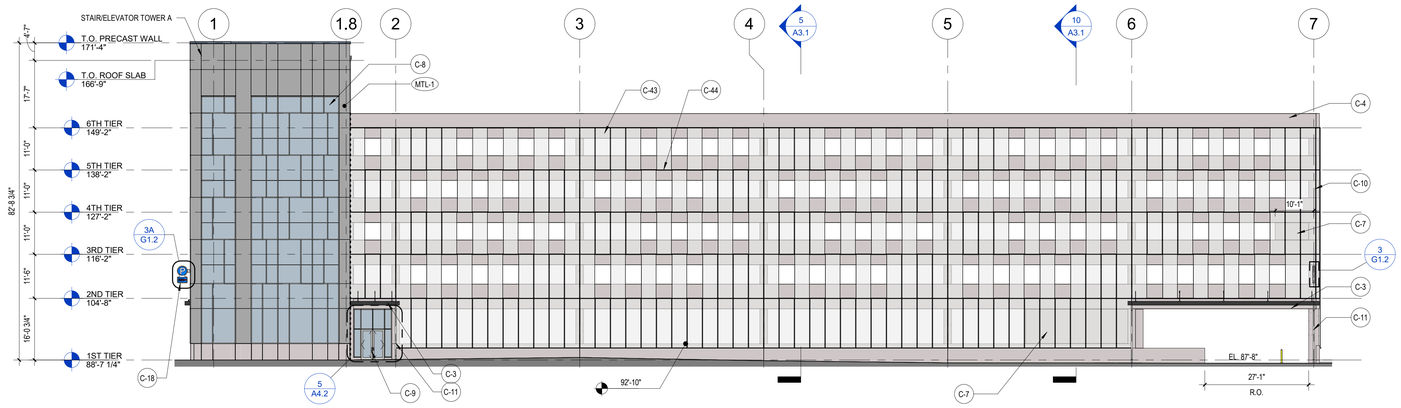
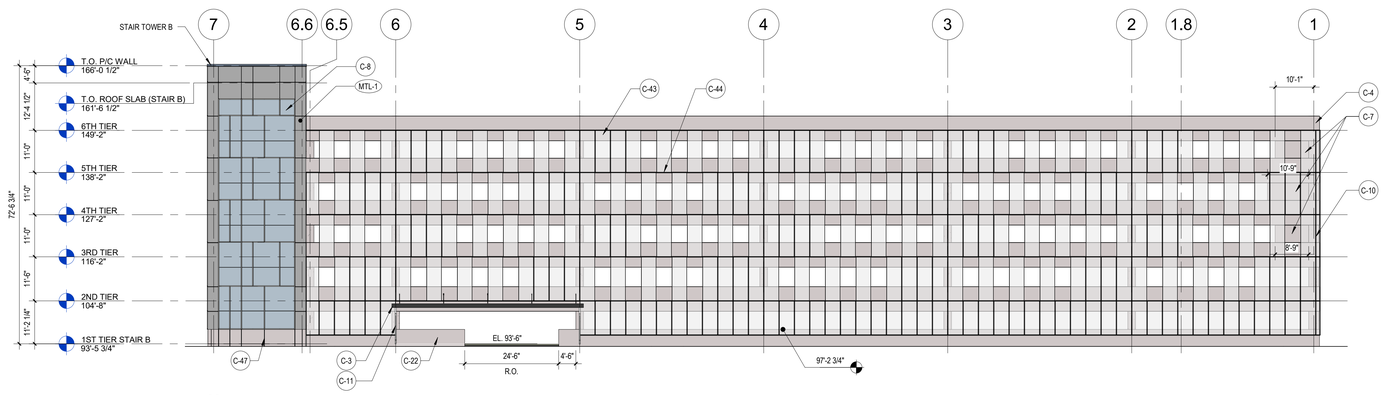
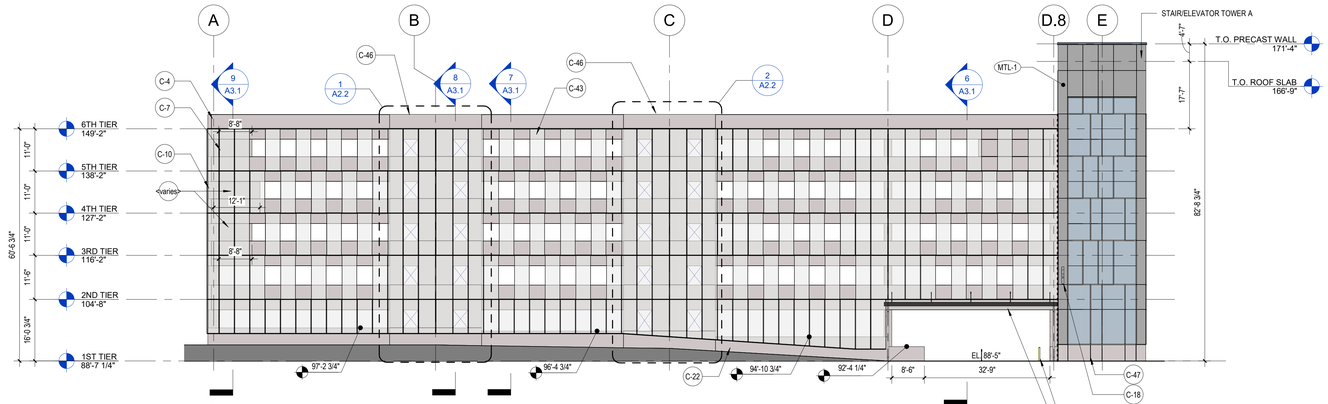


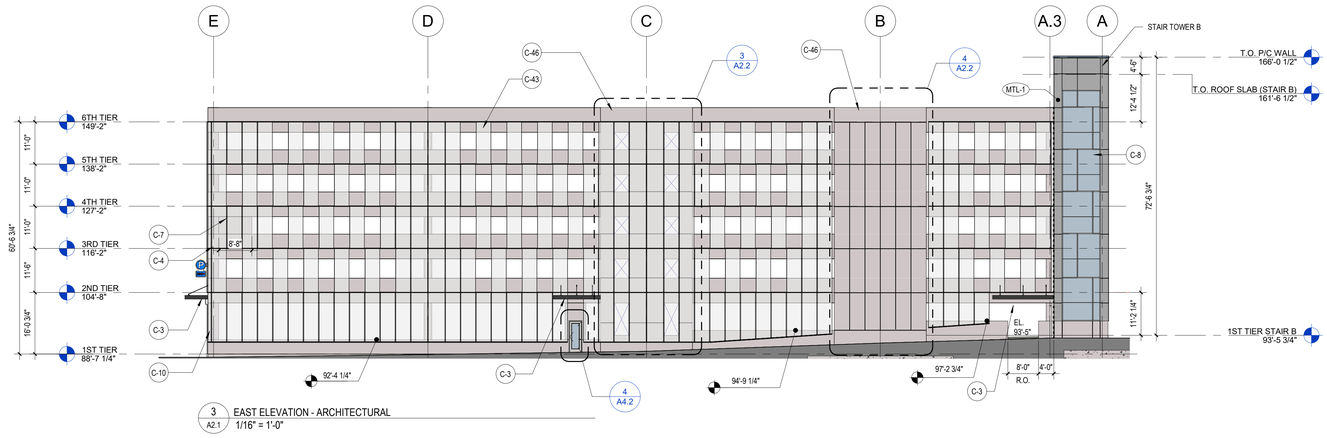
1 A2.1 SOUTH ELEVATION - ARCHITECTURAL
1/16" = 1'-0"



2 A2.1 NORTH ELEVATION - ARCHITECTURAL
1/16" = 1'-0"



4 A2.1 WEST ELEVATION - ARCHITECTURAL
1/16" = 1'-0"



3 A2.1 EAST ELEVATION - ARCHITECTURAL
1/16" = 1'-0"

BASIS OF DESIGN: TENSIONED FABRIC MESH
a. TYPE 2A -VENTILATED "PTFE" COATED FIBERGLASS MESH
b. MANUFACTURER: VERSEIDAG
c. PRODUCT: GFM 4000-32-SILVER
d. OPEN AREA: 52% +/- 2%
e. COLOR: SILVER
f. NON-COMBUSTIBLE -PASSING ASTM E 136
g. FABRIC MESH ATTACHED AT TOP AND BOTTOM TO CONTINUOUS ALUMINUM EXTRUSION (CLEAR) ANODIZED) WITH 3/4" CAPPED REVEAL.
h. SUPPLIER: STRUCTUREFLEX LLC

ARCHITECTURAL KEYNOTES	
C-1	STEEL PIPE BOLLARD, TYP.
C-3	METAL CANOPY
C-4	ARCHITECTURAL PRECAST CONCRETE SPANDREL, TYP.
C-7	ARCHITECTURAL PRECAST CONCRETE INFILL PANEL
C-8	ALUM. CURTAIN WALL W/ SSG SYSTEM WITH CLEAR 1" INSULATED LOW-E GLAZING, TYP. (GRAY ALUM. FINISH TO MATCH THOSE ON CAMPUS)
C-9	ALUM. STOREFRONT SYSTEM WITH CLEAR 1" INSULATED LOW-E GLAZING, TYP. (GRAY ALUM. FINISH TO MATCH THOSE ON CAMPUS)
C-10	ARCHITECTURAL PRECAST CONCRETE COLUMN
C-11	CANOPY DOWNSPOUT
C-18	EXTERIOR SIGNAGE
C-22	PRECAST GRADE SPRANDEL
C-43	TENSIONED FABRIC MESH
C-44	SURFACE MOUNTED ALUMINUM EXTRUSION SYSTEM AT EACH TIER, TYP.
C-46	PRECAST SHEAR WALL
C-47	PRECAST REVEAL

FINISH LEGEND	
<varies>	
MTL-1	METAL PANEL - TYPE A (GRAY FINISH TO MATCH THOSE ON CAMPUS)

KEYNOTE LEGEND	
C-#	CONSTRUCTION KEYNOTE TAG
XX-X	MATERIAL FINISH KEYNOTE TAG
FM-X	TENSION FABRIC MESH TAG

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PROJECT INFORMATION

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
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BUILDING ELEVATIONS

A2.1

04/10/2023 SITE PLAN SUBMISSION

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SW EXTERIOR RENDERING - DAY

DATE	04/14/23
PHASE	GARAGE SITE PLAN SUBMISSION
PROJECT NO	5267

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PMPHCC GARAGE

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SW EXTERIOR RENDERING - NIGHT

DATE	04/14/23
PHASE	GARAGE SITE PLAN SUBMISSION
PROJECT NO	5267

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P23-03 DRC 05/18/23

DTS • PROVIDENT
Intelligent Land Use

TECHNICAL MEMORANDUM
PARKING STUDY

PENN MEDICINE PRINCETON HEALTH CAMPUS
Township Of Plainsboro, Middlesex County, New Jersey

Prepared for
PENN MEDICINE PRINCETON HEALTH
Township Of Plainsboro, New Jersey

Prepared by
DTS Provident Design Engineering, LLP
One North Broadway
White Plains, New York

April 14, 2023
DTS Provident Project No. 0905

_____
Charles (Carlito) S. Holt, P.E.
New Jersey P.E. #24GE04890500
Partner

DTS • PROVIDENT
Intelligent Land Use

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Andrew V. Tung, ASLA, Esq., LEED AP
Gerhard M. Schwalbe, P.E.
Charles 'Carlito' Holt, P.E., PTOE
Brian Dempsey, P.E., PTOE, RSP1

P23-03 DRC 05/18/23

TECHNICAL MEMORANDUM

TO: Ms. Bonnie N. Flynn
Director of Planning & Community Development

DATE: April 14, 2023

FROM: Carlito Holt, P.E., PTOE
Partner

RE: Parking Study
Penn Medicine Princeton Health Campus, Plainsboro, NJ

Introduction

DTS Provident Design Engineering, LLP (DTS Provident) has prepared this Technical Memorandum to summarize the evaluation of existing/future parking conditions at the Penn Medicine Princeton Health (PMPH) Campus located along Plainsboro Road and Campus Road in Plainsboro Township, Middlesex County, New Jersey. The purpose of this evaluation is to verify that the parking provisions are consistent with the Amended Redevelopment Plan.

The parking evaluation contained in this Technical Memorandum considers the number of parking spaces required at the existing Health and Medical Office Complex (HMOC) component of the Campus, which consists of the Hospital, Medical Office Building and the former Health/Fitness Center, as well as the future number of parking spaces required as part of the Cancer Center expansion to the HMOC.

Based upon the information contained herein, it is the considered professional opinion of DTS Provident that the parking ratio contained in the Amended Redevelopment Plan for Medical Office Building (4 spaces per 1,000 sf) will be more than adequate to accommodate the proposed Cancer Center expansion based on the comparison of parking ratios to other sources. Furthermore, the parking currently provided at the HMOC, combined with the additional parking spaces to be constructed, will meet the future overall parking needs of the HMOC.

Existing & Future Parking Requirements

Based on the approved "Amended Preliminary and Final Major Site Plan" prepared by French & Parrello Associates on July 22, 2010, the total number of parking spaces required for the existing HMOC component of the Campus is 1,540 parking spaces. Recently, the approximately 48,000 square foot Health/Fitness Center portion of the HMOC was vacated and will be re-purposed in the future to another healthcare-related space that is currently unknown at this time. In addition, the Applicant is looking to construct a new, approximately 200,000 square foot Cancer Center expansion within the HMOC.

The proposed Cancer Center expansion would require four parking spaces for every 1,000 square feet of floor area. This parking ratio is based on the parking requirements contained in the Amended

Redevelopment Plan for Medical Office space. Although the proposed Cancer Center would equal approximately 200,000 square feet of total floor space, DTS Provident has taken into consideration the Township's interpretation of the parking requirement code that allows the facility sized used in the required parking space calculations to be reduced by the amount of common space area (i.e., accessory/mechanical space). The total usable floor area for the proposed Cancer Center is based on the conceptual floor plans submitted by the Applicant.

DTS Provident took a similar approach with the future repurposing of the recently vacated Health/Fitness Center space. Although the vacated Health/Fitness Center equals approximately 48,000 square feet of total floor space, the Applicant has developed a conceptual clinical program for the vacated Health/Fitness Center space, identifying both usable and unusable space.

Copies of the conceptual layout plans for the proposed Cancer Center and re-purposed Health/Fitness Center are included in Attachment A. As noted in the latest conceptual Health/Fitness Center layout, the total usable square footage has been reduced from prior concepts; however, the larger square footage has been utilized in the analysis contained herein to remain conservative. It is further noted that as the latest Cancer Center layout is refined, the usable square footage for this facility will also likely be reduced.

Therefore, for purposes of this evaluation, DTS Provident utilized a space of 151,555 square feet for the proposed Cancer Center expansion (based on the conceptual floor plans prepared by the Applicant) and 44,200 square feet for the repurposed Health/Fitness Center (based on the conceptual clinical program prepared by the Applicant) in determining the future parking requirements.

Using the required parking space parameters outlined above, the HMOC site would require a future parking space supply total of 2,323 parking spaces. This includes the 1,540 parking spaces that are required for the existing HMOC site and using a parking ratio of 4 parking spaces per 1,000 square feet for the 44,200 square foot re-purposed Health/Fitness Center space and the proposed 151,555 square foot Cancer Center expansion.

Existing & Future Parking Supply

The Total Parking Supply currently provided at the HMOC site is 1,539 parking spaces contained within the various surface parking lots surrounding the HMOC site. As a result of the Cancer Center expansion, a multi-level Parking Garage will be constructed within an existing surface parking lot just north of the existing HMOC building to accommodate both the loss of parking spaces due to the Cancer Center expansion as well as the additional parking demand created by patrons/staff of the proposed Cancer Center. The proposed Parking Garage will consist of a total of 1,161 parking spaces. The number of parking spaces that will be displaced by the Cancer Center expansion is 167 parking spaces and the number of parking spaces that will be displaced by construction of the proposed Parking Garage is 182 parking spaces.

Combining the existing parking space supply at the HMOC site (1,539 spaces) with the additional parking space supply created by the proposed Parking Garage (1,161 spaces), while discounting the number of parking spaces displaced by the Cancer Center expansion (167 spaces) and Parking Garage

construction (182 spaces), results in a total future parking space supply of 2,351 parking spaces for the HMOC site, which exceeds the required future parking space supply as outlined above by 28 parking spaces.

Table No. 1 below summarizes the existing/future parking space requirements and supply as described above.

TABLE NO. 1
PARKING REQUIREMENTS & SUPPLY WITHOUT PARKING LOT P10
PENN MEDICINE PRINCETON HEALTH, PLAINSBORO, NEW JERSEY

Parking Demand/Supply	Number of Parking Spaces
Required HMOC Parking (obtained from "Amended Preliminary and Final Major Site Plan", French & Parrello, 7/22/2010)	1,540
Vacant Fitness Center Space (44,200 SF, obtained from Princeton Forward Memorandum dated 3/7/2023) *[using Amended Redevelopment Plan requirement of 4 spaces per 1,000 SF]*	+177
Required Cancer Center Expansion Parking (Proposed 151,555 SF) *[using Amended Redevelopment Plan requirement of 4 spaces per 1,000 SF]*	+606
Total Parking Required	*2,323*
Existing Parking Supply (excluding Lot P10)	1,539
Additional Supply (Proposed Parking Garage)	+1,161
Displaced Parking Supply (due to Cancer Center expansion)	-167
Displaced Parking Supply (due to Parking Garage structure)	-182
Total Parking Supply	*2,351*
Excess Parking Capacity	*+28*

Although not counted towards the parking space supply requirements contained in the Amended Redevelopment Plan, it is noted that the HMOC site also utilizes Parking Lot P10, typically referred to as the "Crescent Lot", located north of the HMOC in the Hospital Auxiliary District (HAD) to allow additional parking availability on the HMOC site to accommodate atypical surges in parking demand for less frequent hospital events (i.e. school bus accident that may bring a high number of parents to the Hospital).

Parking Lot P10 provides an additional 315 parking spaces, bringing the existing Total Parking Supply available to patrons/staff of the HMOC site to 1,854 parking spaces. In addition, Parking Lot P10 is

approved for an expansion to add an additional 128 parking spaces, bringing the total future parking space supply in Parking Lot P10 to 443 parking spaces and the future Total Parking Supply available to patrons/staff of the HMOC site to 1,982 parking spaces.

Accounting for the utilization of parking spaces within Parking Lot P10, the total future parking space supply for the HMOC site equals 2,794, which exceeds the required future parking space supply by 471 parking spaces.

Table No. 2 below summarizes the existing/future parking space requirements and supply while taking into account utilization of the existing/future parking spaces within Parking Lot P10.

TABLE NO. 2
PARKING REQUIREMENTS & SUPPLY WITH PARKING LOT P10
PENN MEDICINE PRINCETON HEALTH, PLAINSBORO, NEW JERSEY

Parking Demand/Supply	Number of Parking Spaces
Required HMOC Parking (obtained from "Amended Preliminary and Final Major Site Plan", French & Parrello, 7/22/2010)	1,540
Vacant Fitness Center Space (44,200 SF, obtained from Princeton Forward Memorandum dated 3/7/2023) *[using Amended Redevelopment Plan requirement of 4 spaces per 1,000 SF]*	+177
Required Cancer Center Expansion Parking (Proposed 151,555 SF) *[using Amended Redevelopment Plan requirement of 4 spaces per 1,000 SF]*	+606
Total Parking Required	*2,323*
Existing Parking Supply (excluding Lot P10)	1,539
Existing Parking Supply (Lot P10)	315
Additional Supply (Lot P10 Expansion)	+128
Additional Supply (Proposed Parking Garage)	+1,161
Displaced Parking Supply (due to Cancer Center expansion)	-167
Displaced Parking Supply (due to Parking Garage structure)	-182
Total Parking Supply	*2,794*
Excess Parking Capacity	*+471*

Proposed Cancer Center Parking Demand

The Amended Redevelopment Plan identifies a Medical Office Building Parking Ratio of 4 parking spaces for every 1,000 square feet of gross floor area. In order to verify that this Parking Ratio is adequate to support the proposed Cancer Center, the following sources were referenced:

- Actual observed parking ratios at two existing Memorial Sloan Kettering Cancer Center facilities
- Parking Count Demand Model utilizing anticipated staffing and patient visitations

The following is a summary for each of these sources:

Observed Memorial Sloan Kettering Cancer Center Facilities

DTS Provident conducted Parking Accumulation Surveys at two existing Memorial Sloan Kettering Cancer Center facilities located in Middletown, New Jersey and Montvale, New Jersey. The facilities are outpatient cancer care centers similar to the proposed Cancer Center expansion within the HMOC component of the PMPH Campus.

Based on Site Plans obtained for the two facilities, the Middletown, New Jersey facility consists of a 245,080 square foot cancer care center while the Montvale, New Jersey facility consists of a 150,000 square foot cancer care center. The Site Plans are contained in Attachment B for reference. The square footage used for determining the required parking is noted on each Site Plan.

DTS Provident also researched the Township of Middletown's and Borough of Montvale's Zoning Code to determine their off-street parking requirements. Both municipal codes require 1 parking space per 300 square feet. The definitions for 'Floor Area' are contained in Attachment B.

The Applicant filed Open Public Records Act (OPRA) requests with the municipalities to obtain floor plans for each facility to help determine which space is accounted for on the Site Plans; however, the requests were denied due to security concerns. In order to further verify the similarity in uses between the two surveyed facilities and the proposed Cancer Center, the websites for each existing facility were researched. The following lists the services provided at each existing facility:

Middletown, NJ Facility

- surgical, medical, and radiation oncology consultations
- outpatient surgical and endoscopic procedures
- chemotherapy
- immunotherapy
- radiation treatment
- gastroenterology clinic and procedures
- interventional radiology procedures, including image-guided biopsies and venous access placement
- mammography, ultrasound, MRI, CT, and PET imaging
- clinical trials
- services at our specialty breast center, including services for at-risk patients
- a cancer-specific retail pharmacy

- supportive services, including rehabilitation, genetic counseling, pain management, lymphedema therapy, social work, and nutrition
- a thyroid nodule assessment program to look for thyroid cancer and determine whether treatment is needed

Montvale, NJ Facility

- surgical, medical, and radiation oncology consultations
- chemotherapy
- immunotherapy
- radiation treatment
- mammography, ultrasound, MRI, CT, and PET imaging
- clinical trials
- a cancer-specific retail pharmacy
- supportive services, including rehabilitation, lymphedema therapy, genetic counseling, social work, and nutrition

The Parking Accumulation Surveys were conducted at each facility between the hours of 10:00 AM and 8:30 PM at 30-minute intervals. The results of the Parking Accumulation Surveys indicate that the Middletown, New Jersey facility experienced a peak parking demand of 507 parking spaces while the Montvale, New Jersey facility experienced a peak parking demand of 330 parking spaces. Utilizing the square footage indicated on the above-referenced Site Plans, the peak parking demand of 507 occupied parking spaces counted at the Middletown, NJ facility results in a peak parking demand ratio of 2.07 parking spaces per 1,000 square feet while the peak parking demand of 330 occupied parking spaces counted at the Montvale, NJ facility results in a peak parking demand ratio of 2.20 parking spaces per 1,000 square feet.

Copies of the Parking Accumulation Surveys at the existing Memorial Sloan Kettering Cancer Center facilities are contained in Attachment C.

Parking Count Demand Model

A final source considered by DTS Provident is a Parking Count Generator Model prepared by the PMPH Consultant Team. The Model estimates a peak parking demand for the proposed Cancer Center expansion based on assumptions on various patient programming parameters such as the number of program spaces in the expansion, visit/session duration (time in treatment), and session overlap duration (how early a patient arrives prior to a visit), as well as accounting for staff parking accommodations. The Model conservatively assumes a visit/session duration of between 30 – 160 minutes and a session overlap duration of between 10 – 120 minutes, depending on the program visited. Based on the Model, the proposed Cancer Center expansion would require a total of 421 parking spaces, or 2.78 parking spaces per 1,000 square feet of usable floor area. A copy of the Parking Count Generator Model is contained in Attachment D.

Table No. 3 below summarizes a comparison of the parking ratio contained in the Amended Redevelopment Plan for a Medical Office Building to the various other sources of parking ratios outlined above.

TABLE NO. 3
PARKING DEMAND RATIO COMPARISON - CANCER CENTER FACILITY
PENN MEDICINE PRINCETON HEALTH, PLAINSBORO, NEW JERSEY

Source		Parking Demand Ratio (Spaces/1,000sf GFA)	Parking Demand for a 151,555 sf Facility (Spaces)
Amended Redevelopment Plan		4.00	606
Parking Accumulation Surveys (conducted at existing Memorial Sloan Kettering Cancer Center facilities)	Middletown, NJ Facility	2.07	314
	Montvale, NJ Facility	2.20	334
Parking Count Demand Model		2.78	421

As shown in Table No. 3 above, the parking ratios obtained from actual parking accumulation surveys at existing similar facilities and estimates obtained from a Parking Count Demand Model prepared by the PMPH Team all indicate the 4.0 parking ratio will be more than adequate to support the proposed Cancer Center use. Additionally, the future total parking supply of 2,351 parking spaces will provide a surplus of 301 to 320 parking spaces on the HMOC Campus even when considering the repurposing of the Health/Fitness Center and applying the observed parking ratios. The surplus parking when factoring in the additional P10 Lot parking spaces would be 744 to 763 parking spaces. Based on the foregoing, the proposed parking to be provided in association with the Cancer Center expansion will be more than adequate to accommodate the proposed use, as well as create surplus parking to support existing operations and repurposing of the Health/Fitness Center. This is even further supported by the extremely conservative parking demand model.

Conclusions

Based on the foregoing, it is the considered professional opinion of DTS Provident that the parking ratio contained in the Amended Redevelopment Plan for Medical Office Building (4 spaces per 1,000 sf) will be more than adequate to accommodate the proposed Cancer Center expansion based on the comparison of parking ratios to other sources. Furthermore, the parking currently provided at the HMOC, combined with the additional parking spaces to be constructed, will meet the future overall parking needs of the HMOC, which includes the repurposing of the Health/Fitness Center.

cc: Jim Watson, P.E.
Lou Ploskonka, P.E.
Trishka Cecil
Ron Yake
PMPH Team
Tom Letizia

Q:\PROJECTS-DTSP\0905 - Penn Medicine Cancer Center Traffic and Parking Study\Memo\Parking Tech Memo_2023-04-14.docx

ATTACHMENTS

ATTACHMENT 'A'

Conceptual Layout Plans/Program – Proposed Cancer Center & Re-purposed Health/Fitness Center

PMPH – Cancer Center

Cancer Center Floor Area Plans

AREA AVAILABLE FOR TREATMENT CARE

FLOOR	SPACE TYPE	AREA (GSF)	AREA (GSF)	
LOWER LEVEL	CLINICAL	16,020 GSF		
	STORAGE		5,976 GSF	
	UNOCCUPIED		13,271 GSF	
FLOOR 1	CLINICAL	43,016 GSF		
	UNOCCUPIED		2,154 GSF	
FLOOR 2	CLINICAL	32,347 GSF		
	UNOCCUPIED		3,308 GSF	
FLOOR 3	CLINICAL	33,586 GSF		
	UNOCCUPIED		2,098 GSF	
FLOOR 4	CLINICAL	26,585 GSF		
	UNOCCUPIED		2,180 GSF	
PENTHOUSE	UNOCCUPIED		23,734 GSF	
TOTAL		**151,555 GSF**	52,721 GSF	204,276 GSF

LEVEL 1 - TOWNSHIP FLOOR AREA PLAN

SCALE 1/16" = 1'-0"

LOWER LEVEL - TOWNSHIP FLOOR AREA PLAN

SCALE 1/16" = 1'-0"

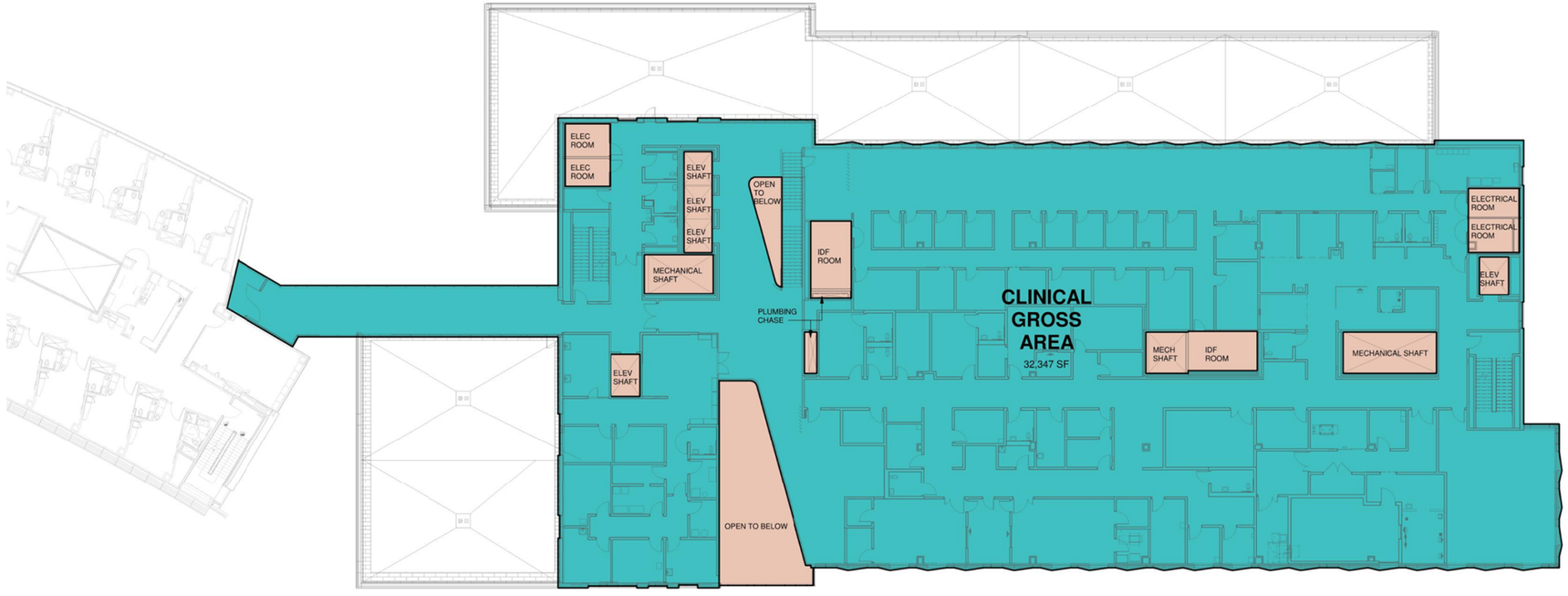
Princeton Forward

April 5, 2023

PMPH – Cancer Center

Cancer Center Floor Area Plans

LEVEL 3 - TOWNSHIP FLOOR AREA PLAN
SCALE 1/16" = 1'-0"



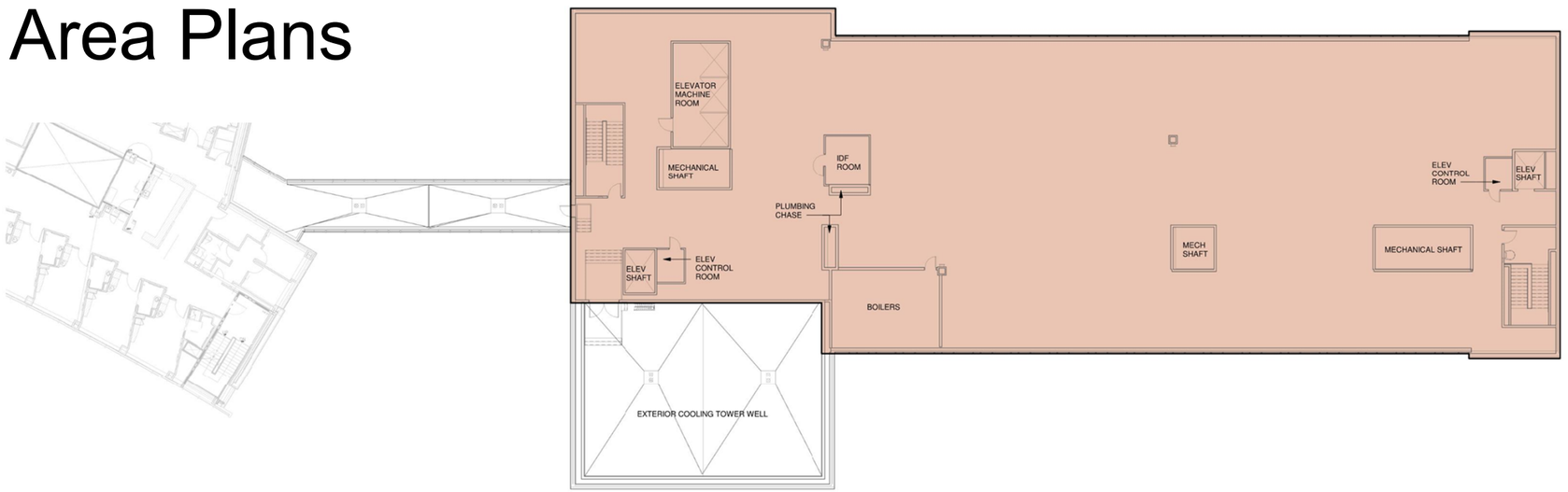
LEVEL 2 - TOWNSHIP FLOOR AREA PLAN
SCALE 1/16" = 1'-0"

Princeton Forward

April 5, 2023

PMPH – Cancer Center

Cancer Center Floor Area Plans



PENTHOUSE - TOWNSHIP FLOOR AREA PLAN

SCALE 1/16" = 1'-0"

LEVEL 4 - TOWNSHIP FLOOR AREA PLAN

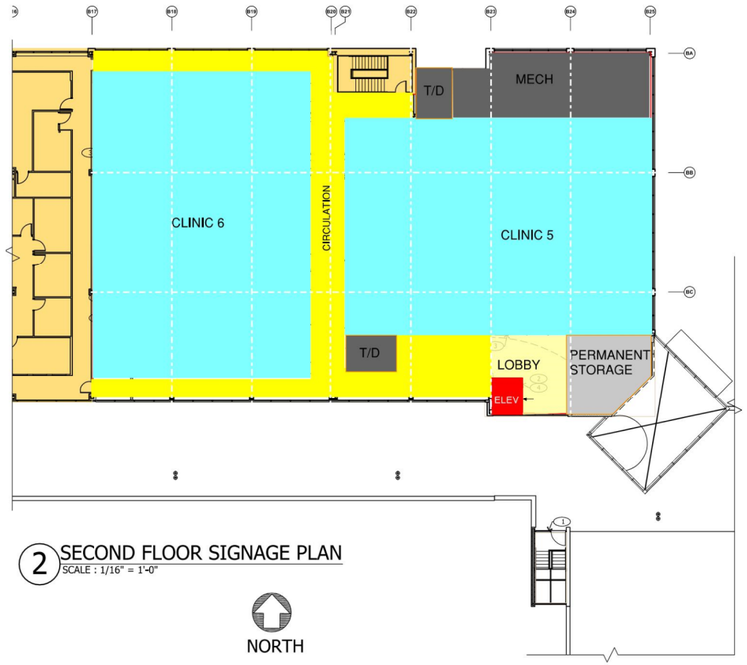
SCALE 1/16" = 1'-0"

Princeton Forward

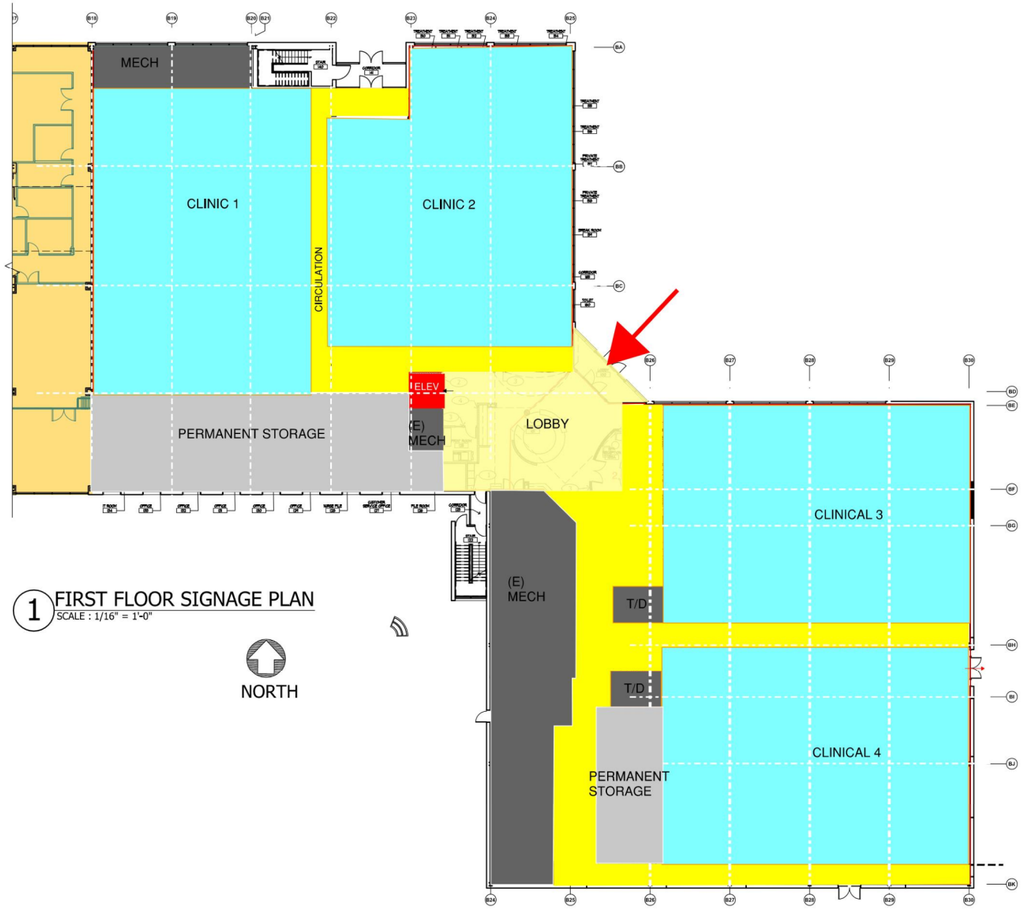
April 5, 2023

PMPH – Cancer Center

Fitness Center Floorplans



2 SECOND FLOOR SIGNAGE PLAN
SCALE : 1/16" = 1'-0"



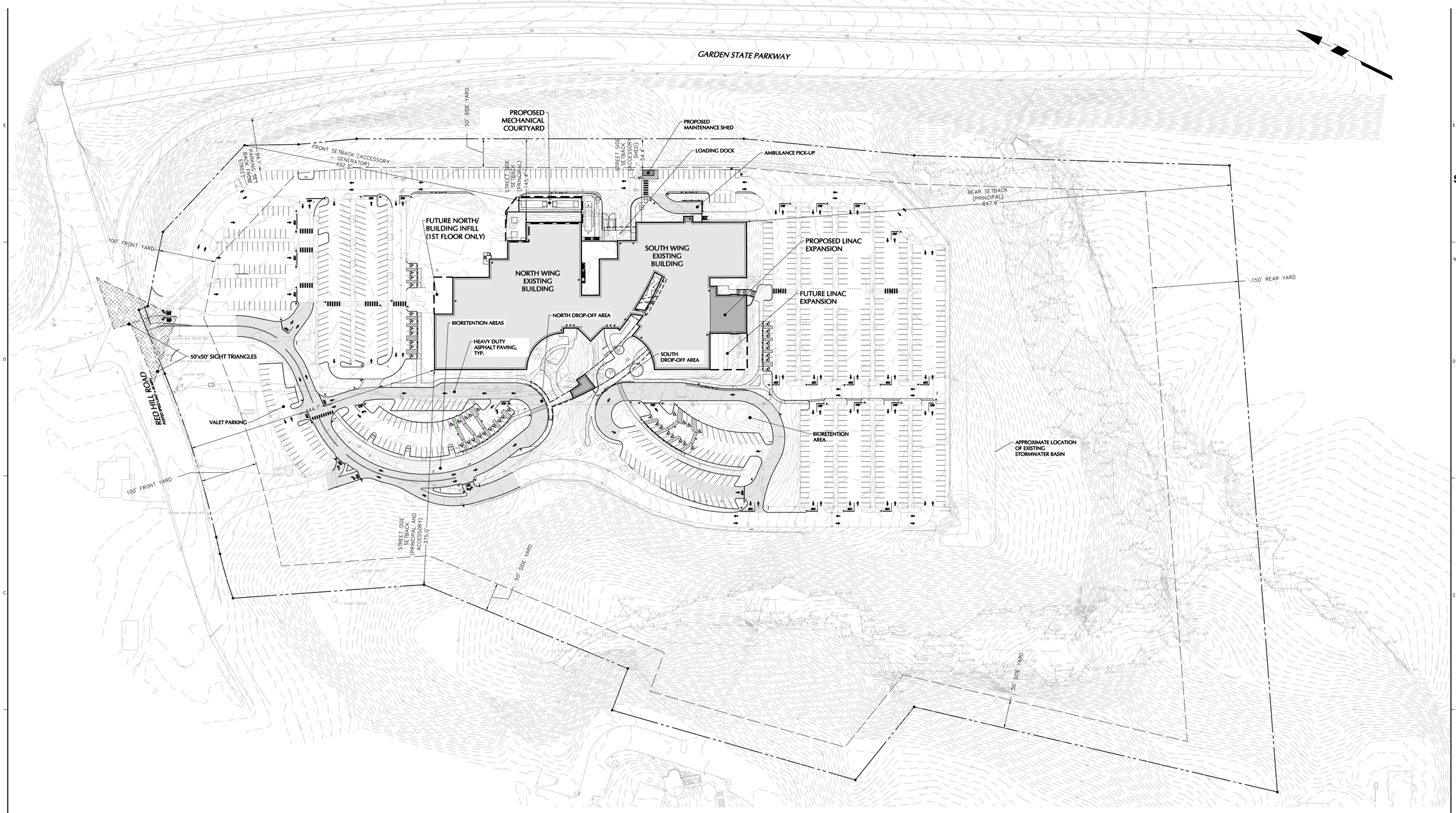
1 FIRST FLOOR SIGNAGE PLAN
SCALE : 1/16" = 1'-0"

AREA AVAILABLE FOR TREATMENT CARE

FLOOR 1	**33,000 SF**
CLINICAL SPACE	20,370 SF
MECHANICAL SPACE	3,120 SF
PERMANENT STORAGE	3,300 SF
BUILDING CIRCULATION	6,210 SF
FLOOR 2	**15,000 SF**
CLINICAL SPACE	10,150 SF
MECHANICAL SPACE	1,205 SF
PERMANENT STORAGE	455 SF
BUILDING CIRCULATION	3,190 SF
TOTAL OF FLOOR 1 & 2	**48,000 SF**
TOTAL USEABLE AREA	**39,920 SF**
TOTAL NON-ACTIVITY AREA	8,080 SF

ATTACHMENT 'B

Site Plans & Zoning Code Definitions – Memorial Sloan Kettering Cancer Center Facilities



ZONING STANDARDS					
APPLICABLE REGULATION	**REQUIRED / ALLOWABLE**	**EXISTING**	**PROPOSED**	**COMPLIANCE**	**VARIANCE/WAIVER REQUIRED**
16-936 - Standards and Regulations Affecting the OR Zone.					
A. Minimum Standards					
1. Lot Area:					
a. Gross Lot Area	167,000 SQ FT	1,760,950 SQ FT (40.43 AC)	1,760,950 SQ FT	YES	NO
b. Buildable Lot Area	2.5 acres	31.09 ACRES	31.09 ACRES (20.68% CLASS II CRITICAL AREAS)	YES	NO
2. Building Setbacks:					
a. Front (Principal and Accessory)	100 FT	444.7 FT	444.7 FT	YES	NO
b. Side (Principal and Accessory)	100 FT	375.0 FT	375.0 FT	YES	NO
c. Street Side (Principal and Accessory)	50 FT	145.4 FT (P), 129.3 FT (A)	145.4 FT (P), 54.4 FT (A)	YES	NO
d. Rear (Principal and Accessory)	150 FT	847.9 FT	847.9 FT	YES	NO
e. Street Rear (Principal and Accessory)	100 FT	N/A	N/A	YES	NO
3. Lot Frontage:	500 FT	530.13 FT	530.13 FT	YES	NO
4. Gross Floor Area:	20,000 SQ FT	285,187 SQ FT	295,080 SQ FT	YES	NO
5. First Floor Area:	20,000 SQ FT	95,000 SQ FT +/-	11,250 SQ FT	YES	NO
B. Maximum Regulations					
1. Dwelling Unit Density	N/A	N/A	N/A	YES	NO
2. Lot Coverage	35%	32.1% (12.98 AC/40.43 AC)	31.8% (12.87 AC/40.43 AC)	YES	NO
3. Floor Area Ratio	22%	16.2% (285,187/1,760,950)	16.8% (295,080/1,760,950)	YES	NO
4. Building Height	3 story; 50 FT	3 story; 43.4 FT	3 story; 43.4 FT	YES	NO
C. Other Regulations					
1. Temporary construction trailers shall be permitted where active construction work is proposed. Such trailers shall not be placed on site until building permits have been issued and in no case more than seven (7) days prior to the commencement of work. Trailers shall not remain on site more than seven (7) days after completion of all work. Temporary construction trailers shall not be placed within the right-of-way of any improved public road.				WILL COMPLY	NO

Parking Requirements- Total Spaces Required

Use	Existing Floor Area (SF)	Proposed Floor Area (SF)	No. Spaces Req'd per Ordinance Ammendment	Total Spaces Req'd	No. Spaces Provided
Health Care Facility	285,187	245,080	GFA/300	817	
Data Center		50,000	GFA/600	83	
Total	**285,187**	**295,080**		**900**	**900**

Parking Requirements- ADA Spaces Required

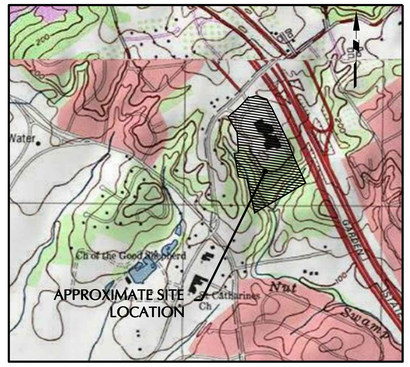
Use	Proposed GFA (SF)	Total Spaces Required	ADA Requirement per IBC	Total ADA Spaces Required
Health Care (Outpatient)	118,400	395	10% of Total Required Spaces for Outpatient Service Use minus number of valet spaces provided for outpatient use*	36
Health Care (Administrative)	30,000	100	2% of Required Spaces	2
Office	96,680	322	2% of Total Required Spaces	6
Data Center	50,000	83	2% of Total Required Spaces	2
Total	**295,080**	**900**		**46**

*Valet spaces provided for outpatient use are excluded in the required ADA parking calculation. ADA Spaces Required = (395 spaces - 34 valet Spaces) * 0.10 = 36 Spaces

ADA Spaces Provided

	Standard	Van Accessible*	Total
ADA Spaces Provided	37	9	46

*1 Van Accessible Space is required for every 6 standard accessible Parking Spaces.



LOCATION MAP
SCALE: 1"=1000'

60 0 20 40 60
SCALE IN FEET

SITE LEGEND

- PROPERTY LINE
- EXISTING CURB
- EXISTING TREE
- EXISTING SIGN
- EXISTING SITE LIGHTING
- EXISTING BUILDING (GROUND LEVEL)
- PROPOSED BUILDING (GROUND LEVEL)
- PROPOSED BUILDING OVERHANG
- PROPOSED 6" CURB
- PROPOSED FLUSH CURB
- DECORATIVE CROSSWALK
- PROPOSED CONCRETE PAVING
- PROPOSED HEAVY DUTY ASPHALT PAVING
- PROPOSED CONCRETE GRASS PAVING
- PROPOSED SIGN (SEE SIGN LEGEND)
- PROPOSED ACCESSIBLE RAMP
- PROPOSED PEDESTRIAN CROSS WALK
- PROPOSED PAVEMENT MARKING
- PROPOSED GUIDERAIL
- PROPOSED RETAINING WALL

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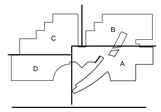
f 717.840.8182

CIVIL AND LANDSCAPE GMP



Revisions

NO	ISSUE	DATE
5	CIVIL AND LANDSCAPE GMP	06.06.2014
4	DCA SCHEMATIC SUBMISSION	04.29.2014
3	SCHEMATIC DOH SUBMISSION	04.16.2014
2	CIVIL AND LANDSCAPE PERMITTING SUBMISSION	01.22.2014
1	FINAL DD SOUTH & NORTH BUILDINGS - CIVIL AND LANDSCAPE	01.17.2014

Sheet Information

Date	01.22.2014
Job Number	032672.000
Drawn	EDH
Checked	KJM
Approved	CMH

Title

OVERALL SITE PLAN

Sheet

C01-10

4 OF 24

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BERGEN REGIONAL

P23-03 DRC 05/18/23

FLOOR AREA

BASEMENT:	22,500	BGSF
1ST FLOOR:	62,000	BGSF
2ND FLOOR:	60,500	BGSF
TOTAL EXISTING AREA:	145,000	BGSF
NEW LINEAR ACCELERATOR ADDITION:	5,000	BGSF
TOTAL PROPOSED		

PARKING

EXISTING SPACES:	558 SPACES
REDUCED FOR LINEAR ACCELERATOR:	-10 SPACES
REDUCED FOR RESTRIPING FROM 8'-6" WIDE SPACES TO 9'-0" WIDE SPACES:	-41 SPACES
TOTAL PARKING SPACES:	507 SPACES

PARKING RATIO:
507 SPACES / 150,000 BGSF =
1 SPACE / 296 BGSF

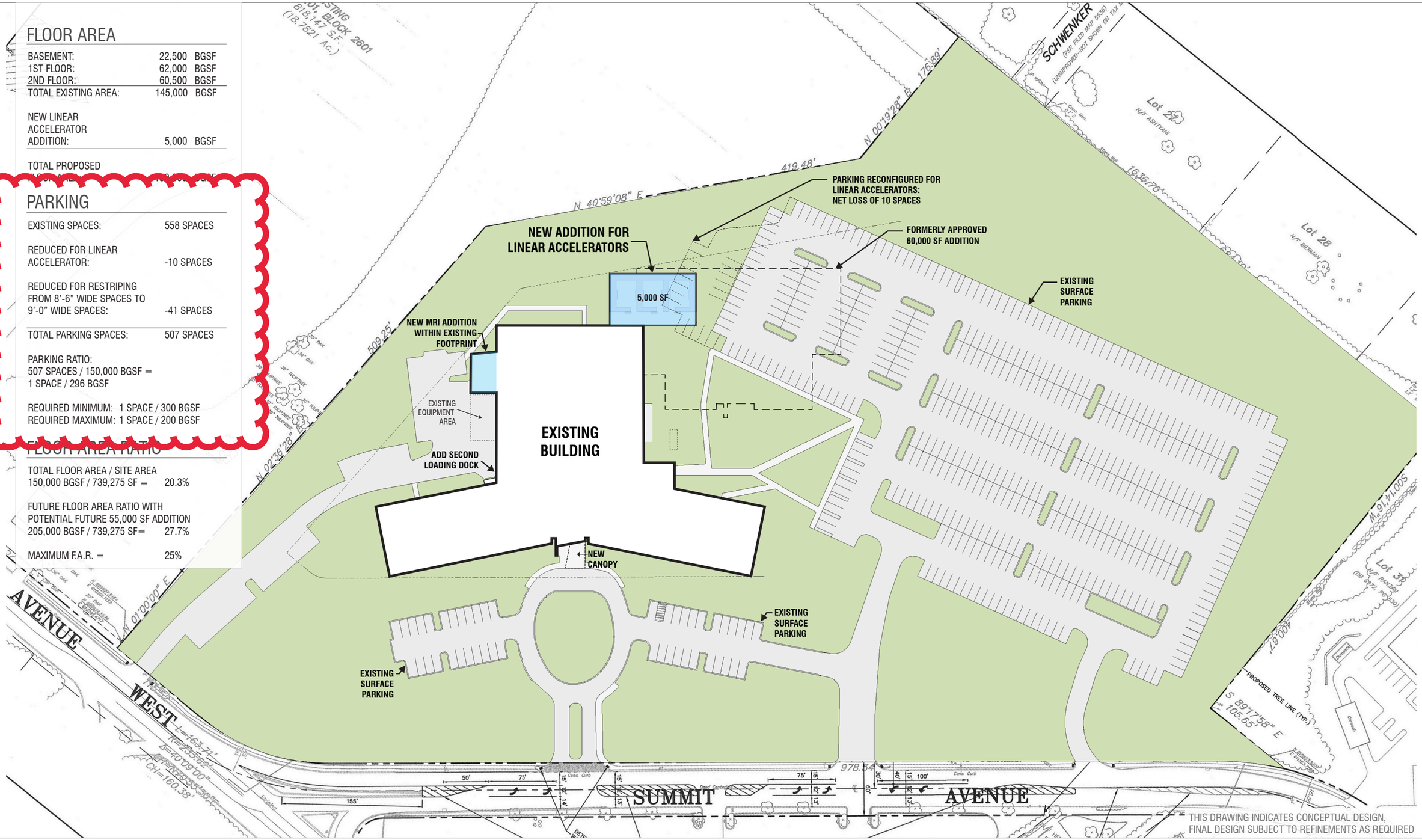
REQUIRED MINIMUM: 1 SPACE / 300 BGSF
REQUIRED MAXIMUM: 1 SPACE / 200 BGSF

FLOOR AREA RATIO

TOTAL FLOOR AREA / SITE AREA
150,000 BGSF / 739,275 SF = 20.3%

FUTURE FLOOR AREA RATIO WITH POTENTIAL FUTURE 55,000 SF ADDITION
205,000 BGSF / 739,275 SF= 27.7%

MAXIMUM F.A.R. = 25%



THIS DRAWING INDICATES CONCEPTUAL DESIGN, FINAL DESIGN SUBJECT TO REFINEMENTS AS REQUIRED

MEMORIAL SLOAN KETTERING CANCER CENTER
DESIGN + CONSTRUCTION DEPARTMENT
FACILITES MANAGEMENT DIVISION
1233 York Avenue SR201 New York NY 10065

APRIL 15, 2015

PROPOSED SITE PLAN
WITH FORMERLY APPROVED ADDITION

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EWING COLE

P23-03 DRC 05/18/23

§ 540-627 Off-street parking.

(47) Data center: one space per 600 square feet of gross floor area.
[Amended 10-15-2012 by Ord. No. 2012-3071]

(48) Health care facility: one space per 300 square feet of gross floor area.
[Amended 10-15-2012 by Ord. No. 2012-3071]

P23-03 DRC 05/18/23

§ 540-203 Definitions.

FLOOR AREA, GROSS

The sum of the gross horizontal areas of the floor or several floors of a building measured between the outside face of exterior walls. In the case of residential structures, such area shall be finished in accordance with the requirements of the building code. Any cellar, garage, crawl space, unfinished attic or space of any nature, or accessory building shall not be included. Any space with a clear ceiling height of four feet or more, but less than the minimum ceiling height prescribed in the building code for the type of building concerned, shall not be included when in excess of 10% of the floor area which complied with such prescribed ceiling heights. In the case of bi-level multistory buildings, the first floor area shall be considered to be the first level or levels of the structure over the full perimeter of the structure which are above the average finished grade of the adjoining ground, and constructed on other than a concrete slab or other such floor. Any floor area which is located at grade or on such a slab may, however, be included in the calculations of total floor area, provided it complies with the other terms of this definition. In the case of all multistory buildings, the first floor area shall be considered to be the first level or levels of the structure extending over the full perimeter of the structure and which is above the average finished grade of the adjoining ground, whether or not such level is constructed on a concrete slab or other such floor.

P23-03 DRC 05/18/23

§ 400-57 Off-street parking in B-1 and B-2 Business Districts.

§ 400-58 Off-street parking in OR-1, OR-2, OR-3 and OR-4 Districts.

[Amended 11-10-1981 by Ord. No. 81-740; 1-31-2012 by Ord. No. 2012-1350]

A. Except for fitness centers and hotels, as pursuant to § **400-59**, and for assisted living residences pursuant to § **400-24E(3)**, all uses in the OR-1, OR-2, OR-3 and OR-4 Office and Research Districts shall provide a minimum of one parking space for each 300 square feet of building floor area and a maximum of one parking space for every 200 square feet of building floor area.
[Amended 2-28-2017 by Ord. No. 2017-1423]

P23-03 DRC 05/18/23

§ 400-8 Definitions and word usage.

FLOOR AREA

For the purpose of this chapter, the aggregate area of all floors, using the outside wall dimensions of all buildings, including the basement and cellar area. To the extent that the basement space within a building is used for mechanical equipment such as heating and ventilating apparatus or dead storage and is not devoted to the principal use of the building or to the extent that the on-grade level or basement or cellar levels of a parking garage are devoted to off-street parking, such floor areas, including aisles, ramps and maneuvering space, shall be excluded.
[Amended 1-31-2012 by Ord. No. 2012-1350]

ATTACHMENT 'C'

Parking Accumulation Surveys – Memorial Sloan Kettering Cancer Center Facilities

P23-03 DRC 05/18/23

PARKING ACCUMULATION SURVEY
MEMORIAL SLOAN KETTERING CANCER CENTER, MIDDLETOWN, NEW JERSEY

INVENTORY - PARKING SPACE SUPPLY

	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL - SUPPLY
STRIPED SPACES	459	82	73	33	70	119	91	3	**930**

WEDNESDAY, NOVEMBER 30, 2022
OCCUPIED SPACES

START TIME	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL
10:00 AM	202	55	63	22	3	54	45	0	**444**
10:30 AM	201	52	69	20	4	61	55	0	**462**
11:00 AM	206	55	64	17	4	61	55	1	**463**
11:30 AM	206	57	65	12	4	56	53	2	**455**
12:00 PM	209	46	65	13	4	55	51	1	**444**
12:30 PM	210	50	66	9	4	57	49	2	**447**
1:00 PM	205	51	70	10	4	58	49	1	**448**
1:30 PM	208	45	66	13	7	54	46	1	**440**
2:00 PM	204	51	70	13	4	54	47	0	**443**
2:30 PM	197	41	70	16	5	53	49	1	**432**
3:00 PM	197	39	70	18	5	56	46	2	**433**
3:30 PM	192	34	71	15	3	53	41	1	**410**

WEDNESDAY, NOVEMBER 30, 2022
PERCENT OCCUPIED

START TIME	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL
10:00 AM	44%	67%	86%	67%	4%	45%	49%	0%	**48%**
10:30 AM	44%	63%	95%	61%	6%	51%	60%	0%	**50%**
11:00 AM	45%	67%	88%	52%	6%	51%	60%	33%	**50%**
11:30 AM	45%	70%	89%	36%	6%	47%	58%	67%	**49%**
12:00 PM	46%	56%	89%	39%	6%	46%	56%	33%	**48%**
12:30 PM	46%	61%	90%	27%	6%	48%	54%	67%	**48%**
1:00 PM	45%	62%	96%	30%	6%	49%	54%	33%	**48%**
1:30 PM	45%	55%	90%	39%	10%	45%	51%	33%	**47%**
2:00 PM	44%	62%	96%	39%	6%	45%	52%	0%	**48%**
2:30 PM	43%	50%	96%	48%	7%	45%	54%	33%	**46%**
3:00 PM	43%	48%	96%	55%	7%	47%	51%	67%	**47%**
3:30 PM	42%	41%	97%	45%	4%	45%	45%	33%	**44%**

THURSDAY, DECEMBER 01, 2022
OCCUPIED SPACES

START TIME	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL
10:00 AM	188	51	70	23	4	60	49	0	**445**
10:30 AM	196	56	71	30	3	63	49	0	**468**
11:00 AM	204	63	71	24	6	63	75	1	**507**
11:30 AM	200	61	70	27	6	58	48	1	**471**
12:00 PM	192	49	64	19	5	59	48	0	**436**
12:30 PM	200	46	65	15	4	50	47	0	**427**
1:00 PM	203	48	68	16	4	54	47	1	**441**
1:30 PM	200	45	67	17	4	56	43	1	**433**
2:00 PM	198	46	72	18	4	58	50	0	**446**
2:30 PM	191	37	71	13	4	55	43	0	**414**
3:00 PM	189	36	60	16	4	54	55	1	**415**
3:30 PM	192	35	51	11	5	44	42	2	**382**

THURSDAY, DECEMBER 01, 2022
PERCENT OCCUPIED

START TIME	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL
10:00 AM	41%	62%	96%	70%	6%	50%	54%	0%	**48%**
10:30 AM	43%	68%	97%	91%	4%	53%	54%	0%	**50%**
11:00 AM	44%	77%	97%	73%	9%	53%	82%	33%	**55%**
11:30 AM	44%	74%	96%	82%	9%	49%	53%	33%	**51%**
12:00 PM	42%	60%	88%	58%	7%	50%	53%	0%	**47%**
12:30 PM	44%	56%	89%	45%	6%	42%	52%	0%	**46%**
1:00 PM	44%	59%	93%	48%	6%	45%	52%	33%	**47%**
1:30 PM	44%	55%	92%	52%	6%	47%	47%	33%	**47%**
2:00 PM	43%	56%	99%	55%	6%	49%	55%	0%	**48%**
2:30 PM	42%	45%	97%	39%	6%	46%	47%	0%	**45%**
3:00 PM	41%	44%	82%	48%	6%	45%	60%	33%	**45%**
3:30 PM	42%	43%	70%	33%	7%	37%	46%	67%	**41%**

WEDNESDAY, MARCH 15, 2023
OCCUPIED SPACES

START TIME	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL
4:00 PM	169	45	42	9	4	45	33	1	**348**
4:30 PM	191	34	49	8	4	45	25	1	**357**
5:00 PM	176	26	41	6	4	37	22	1	**313**
5:30 PM	124	23	35	4	3	30	19	0	**238**
6:00 PM	95	16	23	3	3	30	19	0	**189**
6:30 PM	65	10	12	3	3	17	18	0	**128**
7:00 PM	49	6	9	2	3	11	16	0	**96**
7:30 PM	41	4	5	0	3	5	16	0	**74**
8:00 PM	40	1	3	0	3	3	15	0	**65**

WEDNESDAY, MARCH 15, 2023
PERCENT OCCUPIED

START TIME	LOT A	LOT B	LOT C	LOT D	LOT E	LOT F	LOT G	LOT H	TOTAL
4:00 PM	37%	55%	58%	27%	6%	38%	36%	33%	**37%**
4:30 PM	42%	41%	67%	24%	6%	38%	27%	33%	**38%**
5:00 PM	38%	32%	56%	18%	6%	31%	24%	33%	**34%**
5:30 PM	27%	28%	48%	12%	4%	25%	21%	0%	**26%**
6:00 PM	21%	20%	32%	9%	4%	25%	21%	0%	**20%**
6:30 PM	14%	12%	16%	9%	4%	14%	20%	0%	**14%**
7:00 PM	11%	7%	12%	6%	4%	9%	18%	0%	**10%**
7:30 PM	9%	5%	7%	0%	4%	4%	18%	0%	**8%**
8:00 PM	9%	1%	4%	0%	4%	3%	16%	0%	**7%**

LEGEND
Overall Peak Hour

P23-03 DRC 05/18/23

PARKING ACCUMULATION SURVEY
MEMORIAL SLOAN KETTERING CANCER CENTER, MONTVALE, NEW JERSEY

INVENTORY - PARKING SPACE SUPPLY

	LOT A (LARGE LOT IN BACK)	LOT B (FRONT OF BUILDING)	LOT C (LOADING DOCK)	TOTAL - SUPPLY
STRIPED SPACES	474	48	3	**525**

WEDNESDAY, JANUARY 11, 2023
OCCUPIED SPACES

START TIME	LOT A	LOT B	LOT C	TOTAL
10:00 AM	294	32	1	**327**
10:30 AM	295	33	1	**329**
11:00 AM	291	32	0	**323**
11:30 AM	286	28	1	**315**
12:00 PM	290	31	1	**322**
12:30 PM	247	32	0	**279**
1:00 PM	265	32	0	**297**
1:30 PM	276	30	0	**306**
2:00 PM	275	32	1	**308**
2:30 PM	260	33	0	**293**
3:00 PM	266	33	0	**299**
3:30 PM	249	35	0	**284**

WEDNESDAY, JANUARY 11, 2023
PERCENT OCCUPIED

START TIME	LOT A	LOT B	LOT C	TOTAL
10:00 AM	62%	67%	33%	**62%**
10:30 AM	62%	69%	33%	**63%**
11:00 AM	61%	67%	0%	**62%**
11:30 AM	60%	58%	33%	**60%**
12:00 PM	61%	65%	33%	**61%**
12:30 PM	52%	67%	0%	**53%**
1:00 PM	56%	67%	0%	**57%**
1:30 PM	58%	63%	0%	**58%**
2:00 PM	58%	67%	33%	**59%**
2:30 PM	55%	69%	0%	**56%**
3:00 PM	56%	69%	0%	**57%**
3:30 PM	53%	73%	0%	**54%**

THURSDAY, JANUARY 12, 2023
OCCUPIED SPACES

START TIME	LOT A	LOT B	LOT C	TOTAL
10:00 AM	252	39	0	**291**
10:30 AM	275	34	0	**309**
11:00 AM	280	39	0	**319**
11:30 AM	287	42	1	**330**
12:00 PM	278	35	0	**313**
12:30 PM	267	32	0	**299**
1:00 PM	263	34	0	**297**
1:30 PM	272	36	0	**308**
2:00 PM	269	37	1	**307**
2:30 PM	260	36	0	**296**
3:00 PM	251	31	0	**282**
3:30 PM	229	35	0	**264**

THURSDAY, JANUARY 12, 2023
PERCENT OCCUPIED

START TIME	LOT A	LOT B	LOT C	TOTAL
10:00 AM	53%	81%	0%	**55%**
10:30 AM	58%	71%	0%	**59%**
11:00 AM	59%	81%	0%	**61%**
11:30 AM	61%	88%	33%	**63%**
12:00 PM	59%	73%	0%	**60%**
12:30 PM	56%	67%	0%	**57%**
1:00 PM	55%	71%	0%	**57%**
1:30 PM	57%	75%	0%	**59%**
2:00 PM	57%	77%	33%	**58%**
2:30 PM	55%	75%	0%	**56%**
3:00 PM	53%	65%	0%	**54%**
3:30 PM	48%	73%	0%	**50%**

WEDNESDAY, MARCH 15, 2023
OCCUPIED SPACES

START TIME	LOT A	LOT B	LOT C	TOTAL
4:00 PM	234	32	0	**266**
4:30 PM	217	31	0	**248**
5:00 PM	188	30	0	**218**
5:30 PM	149	22	0	**171**
6:00 PM	124	20	0	**144**
6:30 PM	97	15	0	**112**
7:00 PM	83	14	0	**97**
7:30 PM	66	11	0	**77**

WEDNESDAY, MARCH 15, 2023
PERCENT OCCUPIED

START TIME	LOT A	LOT B	LOT C	TOTAL
4:00 PM	49%	67%	0%	**51%**
4:30 PM	46%	65%	0%	**47%**
5:00 PM	40%	63%	0%	**42%**
5:30 PM	31%	46%	0%	**33%**
6:00 PM	26%	42%	0%	**27%**
6:30 PM	20%	31%	0%	**21%**
7:00 PM	18%	29%	0%	**18%**
7:30 PM	14%	23%	0%	**15%**

LEGEND
Overall Peak Hour

ATTACHMENT 'D'

Parking Count Generator Model

PMPH Simple Parking Count Generator

Floor	Type	Program Spaces in Building	Vehicles / Session	Session Overlap (min)	Visit Length (min)	Vehicles at Session Transition
4	Infusion	30	30	20	160	60
3	Clinic Exam	36	36	20	60	72
1	Rad Onc Vaults (3 vaults, HDR, CT Sim)	5	5	10	30	10
1	Rad Onc Exam	9	9	20	30	18
1	Conference Center	2	10	20	30	20
2	Integrative Therapy/Lymphodema	6	6	20	30	12
2	IR Shell	1	1	120	60	3
2	Pet/CT	1	1	120	60	3
2	CT	1	1	60	60	2
2	Ultrasound	2	2	30	30	4
2	Chest Xray	1	1	30	30	2
2	MRI	1	1	30	30	2
2	Multipurpose Procedure	1	1	60	30	3

Patient Load	211
Programed Staff	210
Staff accommodated Off Site	0
Net Parking Required	421

Architects | Designers | Planners

1218 Chestnut Street
5th Floor
Philadelphia, PA 19107
267.804.7040

April 14, 2023

Bonnie N. Flynn, PP, AICP, CFM
Director of Planning & Community Development
Plainsboro Township
641 Plainsboro Road
Plainsboro, NJ 08536

FROM: Chris S. Cosenza, AICP, PP, LEED AP
Jim Constantine, PP

RE: Princeton HealthCare System, a New Jersey nonprofit corporation
d/b/a Penn Medicine Princeton Health
Planning Review for Consistency with Redevelopment Plan

Dear Bonnie,

The following planning report was prepared on behalf of Princeton HealthCare System, a New Jersey nonprofit corporation d/b/a Penn Medicine Princeton Health ("PMPH") regarding its site plan application for the proposed Parking Garage and Temporary Parking Lot ("Project") on the PMPH Campus in Plainsboro, New Jersey ("Site").

The purpose of this report is to provide a summary relative to the Project's consistency with the *Amended Redevelopment Plan for the Princeton HealthCare System at Plainsboro Site* ("Redevelopment Plan"), adopted by the Township on March 13, 2013.

1.0 Overview

For several years, the Township sought to redevelop the formerly named FMC Corporation site located on Route 1 between the Millstone River and Scudders Mill Road. Following the site's designation as an "Area in Need of Redevelopment," the Township adopted a redevelopment plan in 2008, and after amending the redevelopment designation to include what is known as the "crescent" parcel, the Township adopted an amended redevelopment plan in 2013.

These redevelopment actions have implemented the Township's vision for the site, by providing for orderly, planned redevelopment to create a world class health care-oriented mixed-use complex. The Redevelopment Plan provides for eight (8) sub-districts, several of which are at least partially developed, including the Hospital Medical Office Complex ("HMOC"), Hospital Auxiliary District ("HAD") and Office Residential Complex ("ORC"), as depicted on **Exhibit A**.

Exhibit A. Aerial Map

Overlay of the several sub-districts derived from Figure 6: Redevelopment Area Land Use Plan of the Redevelopment Plan, on an aerial map depicting existing conditions.

The approved development of the HMOC sub-district includes the following improvements:

- 231-bed, 636,000 SF hospital;
- 48,000 SF fitness center;
- 146,870 SF of medical office space;
- Co-generation facility;
- Surface parking areas; and,
- Stormwater management facilities.

Across Hospital Drive, the HAD sub-district includes the following improvements:

- Auxiliary surface parking area;
- Maintenance building; and,
- Stormwater management facilities.

Across Punia Boulevard, the ORC sub-district includes the following improvements:

- 105-unit, 98,750 SF, 3-story assisted living facility; and,
- Surface parking areas.

Applicant's Proposal

The Redevelopment Plan anticipated a future phase of development within the HMOC sub-district to include a two-story addition to the existing hospital building, consisting of approximately 322,000 square feet, and a 93,000-square-foot addition to the existing Medical Office Building for a total of 415,000 square feet, as well as structured parking.

PMPH has reviewed the current and future needs of the area and determined that, to address the evolving needs of the region, there is a strong need for a Cancer Center facility.

Following internal meetings and coordination with Township staff, PMPH determined that the development of the Cancer Center facility will be submitted as two (2) separate site plan applications. The first site plan application will be for the parking garage, temporary surface parking area, and related site improvements. The second site plan application will be for the future Cancer Center facility and related site improvements.

The first application is comprised of a 1,161-space, six-level free-standing Parking Garage, together with various site improvements, to be located north of the existing hospital building on Lot 3.01 within the HMOC sub-district. Additionally, a Temporary Parking Lot is proposed to be located just east of Punia Boulevard on Lot 4.04 within the ORC sub-district to manage displaced parking during construction of the Parking Garage and future Cancer Center facility.

Parking Garage

The 1,161-space, six-level free-standing Parking Garage is proposed to be located on the north side of the existing hospital building on Lot 3.01 within the HMOC sub-district, which is consistent with the anticipated location as indicated in the Redevelopment Plan, and serves as the main entrance to the existing hospital building. It is noted that the Parking Garage has been designed such that it can accommodate a future expansion of approximately 185 additional parking spaces if needed in the future.

Existing circulation patterns within this area will generally be maintained, with access to the Parking Garage designed not to interfere with vehicular and pedestrian circulation on Hospital Drive. The siting of the Parking Garage provides for an opportunity to improve existing conditions associated with the current drop-off area directly in front of the existing hospital building, and enhance the sense of arrival at the main entrance to the existing hospital building. The drop-off area is being expanded to accommodate additional patient drop-off and valet parking operations as well as additional loading areas for use by USPS, UPS, FedEx and other similar delivery services.

Other site improvements include redesigned landscaping, consisting of shade trees and foundation plantings throughout parking areas and along driveways, landscape plantings along pedestrian walkways, accent lighting, Make-Ready parking spaces including electric vehicle supply equipment (EVSE), various other improvements to improve accessibility, and stormwater

management facilities, including Green Infrastructure elements such as a rain garden within the drop-off area landscape island and a pervious pavement system adjacent to the Parking Garage.

Temporary Parking Lot

The construction of the proposed Parking Garage will result in a loss of approximately 182 parking spaces and the construction of the future Cancer Center facility will displace approximately 167 additional parking spaces. PMPH proposes to construct a 628-space Temporary Parking Lot on Lot 4.04 within the ORC sub-district to manage the displaced parking associated with these projects, mainly for PMPH staff and contractors working on the proposed Parking Garage and future Cancer Center facility.

The parking area will be sited utilizing the existing vehicular access driveway to Punia Boulevard, which aligns with the existing driveway to the existing hospital building, and existing pedestrian crossing. Various other site improvements include additional sidewalks, landscaping, lighting, and stormwater management facilities, including porous pavement with underground storage to provide Green Infrastructure (GI) facilities.

It is noted that upon completion of the proposed Parking Garage and future Cancer Center facility, PMPH will remove the proposed Temporary Parking Lot and restore the area back to its present condition. It is anticipated that parking in the proposed Temporary Parking Lot will continue through December 31, 2026.

Summary Findings

After a detailed review of the Project's site plan, various reports, internal meetings with PMPH's other professional consultants, and coordination meetings with Township staff, we have concluded that the Project is substantially consistent with the Redevelopment Plan.

In addition, we have identified that two (2) minor deviations are required, one pertaining to the perimeter setback of the proposed Parking Garage and the other for parking lot landscaping for the proposed Temporary Parking Lot. A more detailed review regarding the nature of the required deviations, the justification for same, and how PMPH will meet the statutory criteria under N.J.S.A. 40:55D-70.c(1) and/or c(2) are provided under separate cover, specifically as addenda to Form No. 4.

All other aspects of the Project otherwise comply with the goals and objectives of the Redevelopment Plan (Section 2), plan elements (Sections 3 & 4), specific design guidelines and standards (Section 5), and other applicable provisions (Sections 6 through 12) contained in the Redevelopment Plan, as described in greater detail on the following pages.

2.0 Planning Review

Section 2: Relationship to Local Objectives

Goal 1 | Coordinated Redevelopment - The Redevelopment Plan, by its very nature, encourages future redevelopment of the Site. The proposed Project is coordinated with the existing facilities, is part of the already contemplated expansion so that it works with the existing health care campus and future Cancer Center facility. Sustainability will be addressed through a variety of measures, including Green Infrastructure elements.

Goal 2 | Productive Land Uses – The Redevelopment Plan anticipated the need for structured parking, and both the proposed Parking Garage and Temporary Parking Lot are permitted accessory uses. No changes are proposed to the preserved open space. By proactively addressing the parking needs of the health care campus, the Project also addresses the needs of the Township and the region.

Goal 3 | Complementary Uses - The proposed Parking Garage is complementary to the other medical and residential health care facilities and the location of the proposed Parking Garage is consistent with the location anticipated in accordance with the Redevelopment Plan.

Goal 4 | Proper Circulation - There are no changes to the main roadway network or public transportation that already exist within the overall health care campus. Access to the existing roadway network will be provided through the existing access driveways. Connections to existing pedestrian pathways will be provided and will be consistent with the standards in the Redevelopment Plan. The existing drop-off area is being improved to provide additional patient drop-off and valet operations as well as additional loading areas for deliveries.

Goal 5 | Gateway – The proposed Project will consist of high-quality materials, complementing the existing architecture, maintaining the aesthetically-pleasing gateway into Plainsboro that presently exists.

Goal 6 | High-Quality Development – The proposed Project will utilize an interesting and varied architectural design and materials that is compatible with the high-quality design of the overall health care campus.

Goal 7 | Environmental Sensitivity – The proposed Project is sensitive to the environment by providing a parking structure that limits impervious surfaces (by "stacking" surface parking areas) and the proposed development will comply with the maximum permitted 60% impervious coverage. Stormwater runoff from the parking structure and surface parking lot will be treated by manufactured treatment devices, before being discharged to either the existing drainage system or into a stormwater management basin located under porous pavement to comply with the Green Infrastructure (GI) requirements. There are no changes proposed to the open space and the proposed development is not located within the 100-year floodplain of the Millstone River.

Goal 8 | Passive Recreation – The proposed Project is planned within already-developed or planned redevelopment areas as contemplated in the Redevelopment Plan. Passive recreational activities in the floodplain and wetland transition areas are provided within the existing public park located on the south side of Plainsboro Road. No changes are proposed to the existing park.

Goal 9 | World-class Destination - The proposed Project helps accommodate the existing and future parking needs of the overall health care campus, allowing it to remain as a destination for the Township and the region.

Goal 10 | Advance Planning Goals – The proposed Project implements Smart Growth planning objectives held by various agencies by facilitating development and redevelopment within planned areas, preserving open space, and addressing existing and future parking needs of the overall health care campus.

Goal 11 | Plainsboro Road Sensitivity – The proposed Project is planned within already-developed or planned redevelopment areas as contemplated in the Redevelopment Plan. The historic tree-lined environment of Plainsboro Road will remain and not be impacted.

Section 3: Amended Redevelopment Area Land Use Plan

3.1 Overall Plan - The proposed Project is in compliance with the overall FAR (0.35) and overall impervious surface coverage (55%) requirements.

3.2 The Hospital/Medical Office Complex (HMOC) – The proposed Parking Garage is situated within the overall HMOC sub-district, which is "to be developed as a single, integrated and comprehensively designed" health care campus and are being implemented in order to "accommodate expansion and changes" to the health care campus as it adapts to the needs of the community and the changing health care technology. Specifically, the proposed Project serves to proactively serve future development within the HMOC sub-district as contemplated in the Redevelopment Plan.

3.2.1 Permitted Uses in the HMOC – "Off-street parking and loading facilities, including both surface parking and multilevel parking garages" are permitted accessory uses in the HMOC sub-district. The proposed Parking Garage is permitted.

3.2.2 Area, yard and building requirements for the HMOC – The proposed Parking Garage complies with the bulk requirements, except for a minor deviation pertaining to the perimeter setback. A more detailed review regarding the nature of the deviation, the justification for same, and how PMPH will meet the statutory criteria under N.J.S.A. 40:55D-70.c(1) and/or c(2) is provided under separate cover, specifically as Addendum #1 to Form No. 4.

3.8.1 Permitted Uses for the ORC – The proposed Temporary Parking Lot is located in the ORC sub-district. "Off-street parking and loading facilities" are permitted accessory uses in the ORC sub-district. The proposed Temporary Parking Lot will serve the temporary parking needs for the overall health care campus while the proposed Parking Garage and future Cancer Center facility

are under construction and will be removed upon completion of the future Cancer Center facility; therefore, the proposed Temporary Parking Lot is permitted. As previously noted, this use is temporary in nature and is anticipated to continue through December 31, 2026.

3.8.2 Area, yard and building requirements for the ORC – The proposed Temporary Parking Lot complies with the bulk requirements.

Section 4: Redevelopment Area Circulation and Open Space Plan

4.1 Redevelopment Area Circulation Plan – There is generally no impact to the overall circulation of the health care campus. The system of automobile, bus, truck, bicycle and pedestrian circulation is generally being maintained; the proposed Parking Garage is sited as initially contemplated in the Redevelopment Plan, and various improvements are being made to the drop-off area.

4.1.1 Required Primary Streets – For Punia Boulevard, the existing roadway is maintained; the proposed driveway for the proposed Temporary Parking Lot is in alignment with the existing driveway to the existing hospital building, and all other driveways are being maintained. For Hospital Drive, the existing roadway is maintained; a new driveway from the proposed Parking Garage is located where an existing parking lot driveway is presently located.

4.1.2 Secondary Roadways and Driveway - The secondary driveway network will generally remain in the same location as it presently exists, with some minor modifications to improve circulation for the proposed Parking Garage. Also, the drop-off area will be improved to provide better access for patient drop off, valet operations, and loading. The proposed driveway for the proposed Temporary Parking Lot is in alignment with the existing driveway to the existing hospital building.

4.1.3 Transit – No changes to the bus routes or bus stops are proposed.

4.1.4 Bus Rapid Transit (BRT) Stop – No changes to the BRT Stop are proposed.

4.1.5 Bicycle and Pedestrian Connections within and outside the Redevelopment Area – The existing walkways will be maintained. Pathways to the existing walkways will be provided for the proposed Parking Garage and the drop-off area to provide for improved pedestrian circulation. Additionally, under Design of Bikeways and Walkways, the proposed pathways will be six (6) feet in width, at minimum. No new bike paths, combined bike path/walkways, or in-street bike lanes are proposed.

4.2.1 Public Park - No changes to the Public Park are proposed.

4.2.2 Private and Common Open Space - No changes are proposed to the healing gardens and educational gardens associated with the existing hospital building. Additional landscaping, including shade trees and foundation plantings, as well as a rain garden are proposed associated with the changes to the drop-off area between the existing hospital building and the

proposed Parking Garage. These features will continue to provide visual relief to existing impervious surface and the proposed Parking Garage itself serves as appropriate and efficient use of land still within FAR and impervious coverage requirements.

4.2.3 Common Open Space: the Green Corridor – The only impact to the Green Corridor is the access to the proposed Temporary Parking Lot, which will utilize the existing vehicular access driveway to Punia Boulevard that aligns with the existing driveway to the existing hospital building, and existing pedestrian crossing will be maintained.

4.2.4 Water Feature and Berms – No changes to the water feature and berm are proposed.

Section 5: Redevelopment Area Design Guidelines and Standards

It is noted that the Redevelopment Plan anticipates and allows for deviations to provide for flexibility in future redevelopment of the Site.

5.1.1 Hospital/Medical Office Complex (HMOC) – *Figure 16. Conceptual Site Plan for Overall Redevelopment Area* depicts a proposed parking structure to be located within the surface parking area north of the existing hospital building, which allows for standards related to Orientation, Massing, Horizontal Articulation, Materials, Building Loading, Bicycle Facilities to be maintained. As for Structured Parking, the proposed Parking Garage is intended to accommodate the parking needs of any expansion to the HMOC sub-district.

Regarding Subsection F. pertaining to bicycle facilities specifically, it is noted that the hospital complex already provides showers and changing rooms to allow staff to commute by bicycle, and there are multiple bicycle racks provided throughout, including near entrances to the existing hospital building under a protected canopy. Additional bicycle parking will be provided in the proposed Parking Garage as part of this Project.

Regarding Subsection G.2. pertaining to structured parking specifically, it is noted that the proposed Parking Garage as part of this Project will preemptively satisfy this requirement in advance of the future Cancer Center facility, which will be subject to a future site plan submission.

5.1.5. Office/Residential Complex (ORC) – *Figure 16.* depicts an accessory parking lot to be located behind a proposed building and the Green Corridor. While no building is proposed at this time, the proposed Temporary Parking Lot will utilize the area planned for a parking lot to offset the parking displaced during construction of the proposed Parking Garage and future Cancer Center facility.

The proposed Temporary Parking Lot complies with the applicable standards, except for a minor deviation pertaining to the parking lot landscaping. A more detailed review regarding the nature of the deviation, the justification for same, and how PMPH will meet the statutory criteria under N.J.S.A. 40:55D-70.c(1) and/or c(2) is provided under separate cover, specifically as Addendum #2 to Form No. 4. It is noted that given no building is proposed, those standards related to Orientation, Massing, Materials & Transparency, and Bicycle Facilities do not apply at this time.

5.2.1 Parking Ratios – The proposed Parking Garage, and the modifications to the surface parking lots associated with it, and the proposed Temporary Parking Lot provide the required number of parking spaces, prior to, during and after construction of the future Cancer Center facility.

As it relates to this Project, prior to the construction of the future Cancer Center facility, the construction of the proposed Parking Garage will displace approximately 182 parking spaces. The construction of the 1,161-space Parking Garage and 628-space Temporary Parking Lot will result in a net gain of 1,607 parking spaces, whereas no additional parking spaces are required at this time.

It is noted that due to a new State law pertaining to Make-Ready parking spaces and provision of EVSE, large parking lots (in this case, within the proposed Parking Garage) are required to provide 4% of parking spaces as Make-Ready parking spaces, and are to count as "at least" two (2) parking spaces toward the minimum parking requirement, but shall not result in an overall reduction exceeding 10%. Therefore, the parking requirement is actually being partially reduced, while 1,607 additional parking spaces are being provided. In sum, the proposed Project complies with the required parking ratios contained in the Redevelopment Plan.

At the time the future Cancer Center facility is proposed in a subsequent site plan application, the construction of the future Cancer Center facility will displace approximately 167 additional parking spaces and the 628-space Temporary Parking Lot will be removed, which will result in a net gain of 812 parking spaces. It is anticipated that parking in the proposed Temporary Parking Lot will continue through December 31, 2026.

Additionally, PMPH has undertaken a parking study to evaluate the actual observed peak parking demand at the current campus as well as anticipated parking demands for the Project, which show that the parking requirement(s) contained in the Redevelopment Plan is more than adequate, and that the parking currently provided, combined with the additional parking spaces to be constructed, will meet and exceed the parking needs of the Site.

5.2.2 Structured Parking Design – The proposed Parking Garage is freestanding, designed to be naturally ventilated, and will be architecturally compatible with the existing primary buildings. It is the intent that each façade will be architecturally screened from view and will meet the following option as provided for in the Redevelopment Plan: "the garage façade shall be covered with metal architectural mesh or other creative covering that disguises the levels of parking and ramps, preferably creatively lit at night" as more specifically described below.

The naturally ventilated structure will eliminate the need for ductwork and low ceilings. As such, not only does the structure minimize the number of parking spaces given up for its construction, but its use will be identifiable which benefits patients and visitors looking for parking as they approach the health care campus. The proposed Parking Garage has been planned to maximize the number of parking spaces within the prescribed 6 level/75 feet height restriction outlined in the Redevelopment Plan. Therefore, the roof of the structure will serve as the top level of parking. The structure has been designed to accommodate a solar energy canopy system over the top level, if proposed in the future.

The proposed Parking Garage will be architecturally compatible with the primary campus buildings through the use of similar campus materials and color palette: glass curtainwall and metal panels at the elements expressing vertical circulation, and masonry in the form of precast concrete. In conformance with the Redevelopment Plan, bicycle racks will be provided in a dedicated area on the ground level and have been designed to be expandable in response to the demand for additional facilities.

Of the options offered in the Redevelopment Plan, the articulation of the proposed Parking Garage will disguise the sloping ramps by locating them to the interior, while level parking will be provided along the exterior. This structure will be assembled from precast concrete components, and the precast concrete wall panels on each of the façades will be architecturally screened behind a series of separate, silver, woven, mesh screens mounted just off the face of the precast panels. The screens will extend from above the low exterior landscaping to the parapet of the top level. The mesh will be 52% open which is consistent with the requirements for natural ventilation, and it will be stretched between continuous steel clips at the head and sill of each panel, allowing it to flutter slightly or shimmer in the breeze. Because the mesh is silver, it will dynamically reflect sunshine as the sun arcs through the sky. At night, light from inside the structure will permeate the screen, changing its character from reflective to translucent.

5.2.3 Surface Parking Design – Various site improvements associated with the proposed Parking Garage will include some modification to the surface parking lots, for which landscaping, including shade trees and foundation plantings, are proposed. Generally, new or realigned pathways will be at least six feet wide and will provide landscaping on either side of the pathway.

For the proposed Temporary Parking Lot, the intent is to accommodate all displaced parking in the most efficient way. Creating landscaped islands would result in the removal of the plants almost as soon as they are established. The proposed design allows for a more compact footprint and for the preservation of some existing mature vegetation.

5.3.1 Mechanical and Utilities – For the proposed Parking Garage, any exposed equipment will be fully screened from view behind a parapet or other architectural feature that is integral part of the design of the structure.

5.3.2 Telecommunications Equipment – No additional telecommunications equipment is proposed.

5.4.1 Green Building Design – This section is not applicable to the proposed Parking Garage; however, generally speaking, a comprehensive sustainability plan, incorporating Green Infrastructure elements, which may be associated with proposed Parking Garage and, to the extent practical, Temporary Parking Lot will be implemented throughout the Site.

5.4.2 Green Lighting Design – Any new lighting will be LED cut-off light fixtures that comply with the "Dark Sky" standards that reduce energy use and minimize glare and nighttime light pollution, consistent with existing light fixtures throughout the Site.

5.5 Signage – The Site presently contains a comprehensive exterior wayfinding sign network, including monument signs, vehicular directional signs and parking entry directional signs. The monument signs and several vehicular directional signs will remain without any changes, while the majority of the vehicular directional signs and the parking entry directional signs will be revised and two (2) additional vehicular directional signs will be provided along Punia Boulevard.

Any revisions and new signage will enable clear wayfinding to the proposed Parking Garage, and Temporary Parking Lot, and any changes to the overall site plan layout. Signage will be consistent within the framework of the Redevelopment Plan, will be high quality, and will complement the overall design character of the redevelopment area.

As more specifically described, the sign messages are revised to help direct patients/visitors to the proposed Parking Garage, and improve wayfinding for major destinations. Destinations will be listed in alphabetical order as recommended by wayfinding best practices. The "Emergency" message will be shown larger and as the first listing for quick identification. It is anticipated that the "Punia Parking Lot" message associated with the proposed Temporary Parking Lot will continue through December 31, 2026.

5.6 Street Design – Any reconstructed streets will comply with the Redevelopment Plan.

5.7 Landscape Design – The landscape design of permanent site improvements will comply with the Redevelopment Plan, including those provisions pertaining to building landscaping and trees, where they are applicable as part of the proposed Parking Garage.

5.8.1 Utilities – Utility connections associated with the proposed Parking Garage will comply with the Redevelopment Plan. All connections will be made to the existing utilities within the Site. There are two (2) new utility connections proposed for the proposed Temporary Parking Lot, for electric and communications (emergency services).

5.8.2 Stormwater – Stormwater management design will comply with the most recent Township Ordinance, and will include various Green Infrastructure elements such as porous pavement with underground detention, rain gardens, and manufactured treatment devices.

5.8.3 Solid Waste and Recycling – No new exterior enclosures are proposed; the solid waste and recycling will be managed through the existing hospital loading dock. Generally speaking, solid waste and recycling procedures have been operationalized since its opening.

Section 6: Redevelopment Plan Phasing

It is noted that the Redevelopment Plan anticipates redevelopment to occur in phases, with Phase 3 referring to expansion of the existing hospital building, including structured parking. The proposed Project is consistent with the anticipated phasing, and PMPH is being proactive by proposing to construct the proposed Parking Garage and Temporary Parking Lot prior to the future Cancer Center facility.

Section 7: Redevelopment Actions

This section generally pertains to permitted actions that may be undertaken by the Township and generally does not provide for specific actions to be undertaken by PMPH as part of this Project. Certain linkages encouraged by the Township are either in place or are ongoing.

Section 8: Plan Consistency Review

This section generally pertains to the required statements as to the Redevelopment Plan's consistency with other plans, such as those of adjacent municipalities, Middlesex County and the State, as required by the Local Redevelopment and Housing Law ("LRHL") at N.J.S.A. 40A:12A-1 et seq. There are no specific analysis or actions to be undertaken by PMPH as part of this Project. This application does not change conclusions of this Section of the Redevelopment Plan.

Section 9: General Provisions

This section provides for general or specific provisions pertaining to applications for development submitted to the Township for review, as follows:

9.1 Easements – The proposed Project will not be building on any Township easements.

9.2 Site Plan and Subdivision Review – Various supplemental plans and information as required by the Redevelopment Plan are provided under separate cover.

9.3 Amended Redevelopment Plan and Existing Zoning – This subsection indicates that the zoning standards promulgated by the Redevelopment Plan supersedes the underlying zoning standards of the Township. There are no specific analyses or actions to be undertaken by PMPH as part of this Project.

9.4 Adverse Influences – The proposed Parking Garage and Temporary Parking Lot are permitted accessory uses, and will comply with performance standards contained in the Redevelopment Plan.

9.5 Non-Discrimination Provisions – This subsection indicates that there shall be no restrictions on various protected classes. There are no specific analyses or actions to be undertaken by PMPH as part of this Project.

9.6 Duration of the Plan – This subsection indicates that the Redevelopment Plan is in effect for a period of 35 years beginning from the date of its approval. There are no specific analyses or actions to be undertaken by PMPH as part of this Project. The Redevelopment Plan remains in effect.

9.7 Deviation Requests – This subsection outlines the procedure to allow for the Planning Board to grant deviations from the regulations contained within the Redevelopment Plan. It is noted that the language for the basis of such deviations is taken directly from the powers granted to the Planning Board under the Municipal Land Use Law (MLUL) at N.J.S.A. 40:55D-70.c(1) and c(2), which are commonly referred as to "hardship" and "flexible" "c" variances, respectively.

As previously noted, we have identified two (2) minor deviations required for the Project. A more detailed review regarding the nature of the deviations, the justifications for same, and how PMPH will meet the statutory criteria under N.J.S.A. 40:55D-70.c(1) and/or c(2) is provided in the submission, specifically in Addendum #1 and Addendum #2 to Form 4.

9.8 Affordable Housing – Parking structures associated with a non-residential development and generally any nonresidential construction resulting from an on-site improvement to a nonprofit hospital are exempt from the imposition of the non-residential development fee set forth in the "Statewide Non-residential Development Fee Act" at N.J.S.A. 40:55D-8.1 to 8.8.

9.9.1 Availability of Utilities – This subsection indicates that utility agencies have already indicated that they have the capacity and are willing to serve. There are no specific analyses or actions to be undertaken by PMPH as part of this Project.

9.9.2 Sanitary Sewer System Assessment – This subsection indicates that sufficient sanitary sewer capacity exists to accept and treat additional flow resulting from the anticipated phasing in the Redevelopment Plan. The proposed Parking Garage and Temporary Parking Lot do not increase the demand, and this subsection is otherwise applicable only to the future Cancer Center facility application. There are no specific analysis or actions to be undertaken by PMPH as part of this Project.

10 Other Provisions – This section provides for a number of statements and offers guidance for the redevelopment of those portions of the Site not yet redeveloped or completed, requiring that applications are to be submitted for approval to the Planning Board. By virtue of submission of this application for development, PMPH is in compliance with this section.

11 Redevelopment Agreement(s) Required – The Applicant has previously entered into a Redevelopment Agreement.

12 Procedure for Amending the Approved Plan – This section provides for the procedure necessary in order to further amend the Redevelopment Plan. There are no specific analyses or actions to be undertaken by PMPH as part of this Project.

Sincerely,

Jim Constantine, PP
LRK

Chris S. Cosenza, AICP, PP, LEED AP
LRK

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p:\ph-b\2022\032203000-sb-penn medicine cancer center\project data\2. site plan submission (garage)\22030_planning-consistency-review_phase-1_parking-garage_230414.docx

~~P23-03 DRC 05/18/23~~

PHOTO No. 1

East facing view from next to building.

PHOTO No. 2

Northwest facing view of the parking area from building.

FRENCH & PARRELLO ASSOCIATES

PARKING GARAGE
ON THE PRINCETON HEALTHCARE CAMPUS
BLOCK 1703, LOT 3.01
PLAINSBORO TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	**April 14, 2023**	**06C028T.003**	**1 & 2**

PHOTO No. 3

Overall View of Proposed Parking Garage Location

PHOTO No. 4

Northeast facing view of Temporary Parking Lot

FRENCH & PARRELLO ASSOCIATES

PARKING GARAGE
ON THE PRINCETON HEALTHCARE CAMPUS
BLOCK 1703, LOT 3.01
PLAINSBORO TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY

SCALE:	DATE:	JOB No.	PHOTO No.
N.T.S.	**April 14, 2023**	**06C028T.003**	**3 & 4**

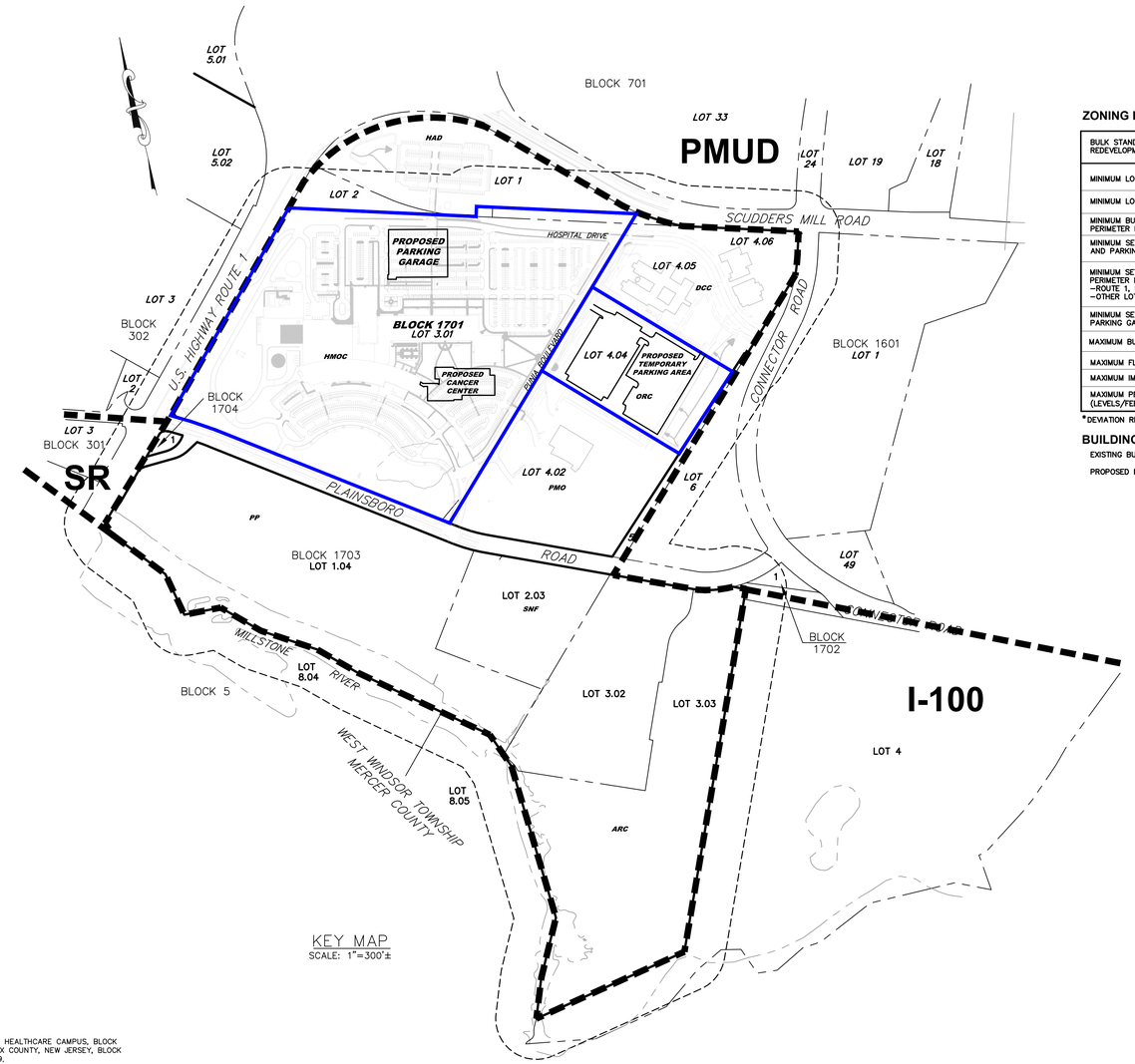
P23-03 DRC 05/18/23

PRELIMINARY AND FINAL MAJOR SITE PLAN
FOR
PENN MEDICINE PRINCETON HEALTH
CANCER CENTER GARAGE

BLOCK 1701, LOTS 3.01 & 4.04

TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C.1.01	OVERALL COVER SHEET
C.1.02	PHASING PLAN
TEMPORARY PARKING AREA - PHASE 1A:	
C.1A.01	COVER SHEET
C.1A.02	EXISTING CONDITIONS PLAN
C.1A.03	SITE LAYOUT AND DIMENSION PLAN
C.1A.04	GRADING AND DRAINAGE PLAN
C.1A.05	TEMPORARY ACCESSIBLE PARKING RELOCATION PLAN
C.1A.06	SOIL EROSION AND SEDIMENT CONTROL PLAN
C.1A.07	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C.1A.08	LIGHTING PLAN
C.1A.09	LIGHTING DETAILS
C.1A.10	CONSTRUCTION DETAILS - 1
C.1A.11	CONSTRUCTION DETAILS - 2
UTILITY RELOCATION - PHASE 1B	
C.1B.01	EXISTING CONDITIONS PLAN
C.1B.02	DEMOLITION PLAN FOR PARKING GARAGE
C.1B.03	ELECTRICAL AND TELECOMMUNICATIONS RELOCATION PLAN PARKING GARAGE
C.1B.04	SOIL EROSION AND SEDIMENT CONTROL PLAN
C.1B.05	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C.1B.06	CONSTRUCTION DETAILS - 1
PARKING GARAGE - PHASE 1C	
C.1C.01	COVER SHEET
C.1C.02	EXISTING CONDITIONS AND DEMOLITION PLAN
C.1C.03	SITE AND LAYOUT PLAN
C.1C.04	UTILITY PLAN
C.1C.05	GRADING AND DRAINAGE PLAN
C.1C.06	STORMWATER PROFILES
C.1C.07	SOIL EROSION AND SEDIMENT CONTROL PLAN
C.1C.08	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C.1C.09	EXISTING LIGHTING PLAN
C.1C.10	PROPOSED LIGHTING PLAN
C.1C.11	LIGHTING DETAIL
C.1C.12	LANDSCAPING PLAN
C.1C.13	LANDSCAPING DETAILS - 1
C.1C.14	LANDSCAPING DETAILS - 2
C.1C.15	WOODLAND MAANAGEMENT PLAN
C.1C.16	MOTOR VEHICLE SURFACE REMOVAL PLAN
C.1C.17	CONSTRUCTION DETAILS - 1
C.1C.18	CONSTRUCTION DETAILS - 2
C.1C.19	CONSTRUCTION DETAILS - 3



KEY MAP
SCALE: 1"=300'±

MIDDLESEX COUNTY GENERAL NOTES:

1. A STORMWATER MAINTENANCE AGREEMENT WILL BE FILED WHICH SETS FORTH DOCUMENTATION THAT ANY PROPOSED DRAINAGE SYSTEM AND ANY AND ALL STORMWATER (DRAINAGE WALES/DETENTION/RETENTION/RECHARGE FACILITIES) WILL BE ADEQUATELY MAINTAINED IN ACCORDANCE WITH THE STANDARDS OF MIDDLESEX COUNTY. REFER TO THE PARAGRAPH IN THE STORMWATER MAINTENANCE AGREEMENT ENTITLED 'RIGHT OF COUNTY OF MIDDLESEX TO MAINTAIN DRAINAGE BASINS'. CONDITIONS THAT AFFECT NON-COUNTY FACILITIES SHOULD BE REVIEWED AND APPROVED BY THE APPROPRIATE JURISDICTIONAL AGENCY.
2. SHOULD ANY WORK BE CONTEMPLATED WITHIN THE COUNTY RIGHT-OF-WAY AND/OR ANY SPECIFIC AREA UNDER THE MIDDLESEX COUNTY'S JURISDICTION, A COUNTY ROAD OPENING PERMIT SHALL BE OBTAINED FROM THE MIDDLESEX COUNTY DEPARTMENT OF HIGHWAYS AND BRIDGES.

MAP REFERENCES:

1. A PLAN ENTITLED, A PLAN ENTITLED, "PRELIMINARY AND FINAL MAJOR SITE PLAN OF PRINCETON HEALTHCARE SYSTEM, HEALTHCARE CAMPUS, BLOCK 1701, LOT 3.01, BLOCK 1703, LOT 1.01, BLOCK 1704, LOT 1, TAX MAP SHEET 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY, BLOCK 1701 LOT 3.01", PREPARED BY FRENCH & PARRELLO ASSOCIATES DATED 08/21/2007 AND LAST REVISED 09/11/2009.
2. A PLAN ENTITLED, "UTILITY ASBUILT (UNIVERSITY MEDICAL CENTER) AT PRINCETON, PLAINSBORO, NEW JERSEY, BLOCK 1701 LOT 3.01", PREPARED BY VOLLERS EXCAVATING & CONSTRUCTING, INC. DATED 06/28/2011.
3. A PLAN ENTITLED, "UTILITY EXHIBIT PLAN FOR PRELIMINARY AND FINAL MAJOR SITE PLAN OF MAPLEWOOD AT PRINCETON ON THE PRINCETON HEALTHCARE CAMPUS, BLOCK 1701, LOT 4.05, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY, , PREPARED BY FRENCH & PARRELLO ASSOCIATES DATED 07/25/2016.
4. MAP ENTITLED, "PROPOSED PSE&G EASEMENT ON LOTS 4.04, 4.05, & 4.06, BLOCK 1701, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY FRENCH & PARRELLO ASSOCIATES , DATED JULY 13, 2016.
5. MAP ENTITLED, "REDEVELOPMENT – PRINCETON HEALTHCARE FINAL SUBDIVISION PLAT, LOTS 3 & 4, BLOCK 1701, LOTS 1, 2, & 3, BLOCK 1703, LOT 1, BLOCK 1704, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, N.J.", PREPARED BY STIRES ASSOCIATES, P.A., DATED FEBRUARY 12, 2008, REVISED TO JANUARY 8, 2009, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON FEBRUARY 5, 2009 AS MAP NO. 6533, FILE NO. 989, SHEETS 1 AND 2.
6. MAP ENTITLED, "FINAL MAJOR SUBDIVISION OF LOT 4.03, BLOCK 1701, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY FRENCH & PARRELLO ASSOCIATES , DATED NOVEMBER 13, 2013, REVISED NOVEMBER 24, 2014, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON JUNE 24, 2015 AS MAP NO. 6708, FILE NO. 989.
7. THE OFFICIAL TAX MAP SHEET OF THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY SHEET NO. 17.

ZONING AREAS:

REDEVELOPMENT AREA	-	FMC CORPORATION / PRINCETON HEALTHCARE SYSTEM REDEVELOPMENT AREA
SR	-	SERVICE RESIDENTIAL
PMUD	-	PLANNED UNIT DEVELOPMENT
I-100	-	LIMITED INDUSTRIAL

GENERAL NOTES:

APPLICANT/OWNER:

PRINCETON HEALTHCARE SYSTEM
A NEW JERSEY NON-PROFIT CORPORATION
D/B/A PENN MEDICINE PRINCETON HEALTH
1 PLAINSBORO ROAD
PLAINSBORO, NJ 08536
(609) 430-7101

I HEREBY CERTIFY THAT I AM THE OWNER OF RECORD OF THE PROPERTY HEREIN DEPICTED AND THAT I CONCUR WITH THE FILING OF THIS PLAN.

MR. JAMES DEMETRIADES, PRESIDENT OF PENN MEDICINE PRINCETON HEALTH

1. THE PROJECT TRACT IS KNOWN AS BLOCK 1701, LOTS 3.01 & 4.04, LOCATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY. LOT 3.01 CONTAINS APPROXIMATELY 49.42 +/- ACRES AND CURRENTLY CONTAINS THE HOSPITAL WITH ASSOCIATED PARKING LOTS. LOT 4.04 CONTAINS APPROXIMATELY 8.80 +/- ACRES AND IS CURRENTLY VACANT.
2. TOPOGRAPHIC INFORMATION SHOWN TAKEN FROM MAPS ENTITLED "TOPOGRAPHIC SURVEY PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO LOTS 3.01 & 4.04, BLOCK 1701 SITUATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY," PREPARED BY FRENCH AND PARRELLO ASSOCIATES, DATED 08/04/2022. REVISED TO 09/06/2022. THE VERTICAL DATUM IS NAVD 88.
3. BOUNDARY INFORMATION SHOWN TAKEN FROM MAPS ENTITLED "BOUNDARY SURVEY PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO LOT 3.01, BLOCK 1701 SITUATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY," PREPARED BY FRENCH AND PARRELLO ASSOCIATES, DATED 08/04/2022.
4. THIS PROPERTY IS LOCATED IN THE HMOC (HOSPITAL/MEDICAL OFFICE COMPLEX), AND ORC, OFFICE AND RESIDENTIAL COMPLEX ZONES, AS PER THE "AMENDED REDEVELOPMENT PLAN FOR THE PRINCETON HEALTHCARE SYSTEM AT PLAINSBORO SITE" PREPARED BY PHILLIPS PREISS GRYGIEL LLC, ADOPTED MARCH 13, 2013. ALSO, THE PROPERTY HAS BEEN DESIGNATED FOR REDEVELOPMENT BY THE TOWNSHIP OF PLAINSBORO AS PER THE JANUARY 23, 2008 REPORT PREPARED BY PHILLIPS PREISS SHAPIRO ASSOCIATES, INC. PLANNING AND REAL ESTATE CONSULTANTS.
5. PENN MEDICINE PRINCETON HEALTHCARE SYSTEM IS DEVELOPING A PLAN FOR A NEW CANCER CENTER AS PART OF THE SECOND PHASE OF DEVELOPMENT OF THE HMOC SITE. THE APPLICANT IS PROPOSING TO PHASE THE WORK FOR THE CANCER CENTER AND PARKING GARAGE INTO TWO SEPARATE SITE PLAN APPLICATIONS, ONE TO ADDRESS THE NEW PARKING STRUCTURE AND ONE TO ADDRESS THE NEW CANCER CENTER. THE PURPOSE OF SEPARATING THE OVERALL PROJECT INTO TWO SITE PLAN APPLICATIONS IS TO ALLOW THE CONSTRUCTION SEQUENCING OF THE PARKING GARAGE FIRST AND THEN THE CANCER CENTER TO MINIMIZE THE IMPACT ON THE EXISTING OPERATION OF THE HMOC. THIS SITE PLAN APPLICATION IS FOR THE PROPOSED CANCER CENTER PARKING GARAGE ON LOT 3.01 AND THE UTILITY RELOCATION WORK ON LOT 3.01 TO FACILITATE THE CONSTRUCTION OF THE PARKING GARAGE. ALSO, THE APPLICANT IS PROPOSING A TEMPORARY PARKING AREA ON LOT 4.04 TO MANAGE THE PARKING THAT SHALL BE DISPLACED DURING THE CONSTRUCTION OF THE CANCER CENTER PARKING GARAGE. TO MITIGATE THE IMPACT OF THE CONSTRUCTION ACTIVITIES ON THE EXISTING HOSPITAL OPERATIONS, THE APPLICANT IS PROPOSING TO PHASE THE CONSTRUCTION AND HAS DEVELOPED A PHASING PLAN TO DETAIL THE SPECIFIC SEQUENCE OF CONSTRUCTION WHICH INCLUDES THE TEMPORARY PARKING AREA ON LOT 4.04, RELOCATION OF THE EXISTING UTILITIES AND THEN THE CONSTRUCTION OF THE PARKING GARAGE. A SEPARATE SITE PLAN APPLICATION WILL BE SUBMITTED TO THE TOWNSHIP FOR THE CANCER CENTER.

ZONING DATA TABLE - CANCER CENTER

BULK STANDARDS BASED ON REDEVELOPMENT PLAN	REQUIREMENTS HOSPITAL/MEDICAL OFFICE COMPLEX	EXISTING HOSPITAL/MEDICAL OFFICE COMPLEX	PROPOSED PARKING GARAGE
MINIMUM LOT AREA	40 ACRES	49.42 ACRES	NO CHANGE
MINIMUM LOT FRONTAGE	700 FEET	1,438.13 FEET	NO CHANGE
MINIMUM BUILDING SETBACKS FROM PERIMETER LOT LINES	75 FEET	116.83 FEET	69.0 FEET*
MINIMUM SETBACK OF BUILDING TO DRIVEWAYS AND PARKING LOTS	5 FEET	5 FEET	N/A
MINIMUM SETBACK OF PARKING AREAS FROM PERIMETER LOT LINES: -ROUTE 1, PLAINSBORO ROAD AND PUNIA BOULEVARD -OTHER LOT LINES	50 FEET 25 FEET	100 FEET 50 FEET	> 50 FEET 69.0 FEET
MINIMUM SETBACKS BETWEEN BUILDINGS AND PARKING GARAGE	10 FEET	N/A	67.6 FEET
MAXIMUM BUILDING HEIGHT (FEET/STORIES)	175 FEET/10 STORIES	121 FEET/7 STORIES	N/A
MAXIMUM FLOOR AREA RATIO (FAR)	0.60	0.39 (TOTAL 846,652)	NO CHANGE
MAXIMUM IMPERVIOUS COVERAGE ON LOT	60%	56.21% (27.78 AC)	57.16% (28.25 AC)
MAXIMUM PERMITTED HEIGHT OF PARKING GARAGE (LEVELS/FEET)	6 LEVELS/75 FEET	N/A	6 LEVELS/61.25 FEET

*DEVIATION REQUIRED

BUILDING COVERAGE

EXISTING BUILDING COVERAGE FOR LOT 3.01 = 5.58 A.C. (243,037.72 S.F.) 11.3%

PROPOSED BUILDING COVERAGE FOR LOT 3.01 WITH PARKING GARAGE = 7.15 A.C. (311,626.69 S.F.) 14.48%

6. PARKING REQUIREMENTS

   DISPLACED PARKING FROM CANCER CENTER PROJECT: 167 SPACES
   DISPLACED PARKING FROM PARKING GARAGE: 182 SPACES
   TOTAL DISPLACED: 349 SPACES
   REQUIRED PARKING FOR CANCER CENTER PROJECT (TO ESTABLISH THE NUMBER OF PROPOSED GARAGE SPACES:
   4 PER 1,000 SF OF GFA
   151,555 GFA REQUIRES 606 SPACES
   TOTAL REQUIRED = 349 + 606 = 955 SPACES
   TOTAL PARKING SPACES PROVIDED IN THE GARAGE 1,161 SPACES

   THE PARKING GARAGE WILL PROVIDE A TOTAL OF 117 ADA ACCESSIBLE PARKING SPACES. THE DISPLACED SURFACE ADA ACCESSIBLE SPACES WILL BE RELOCATED WITHIN SURFACE PARKING LOTS. SURFACE PARKING PROPOSED = 140 SPACES. ADA SPACES REQUIRED = 10% = 14. ADA SPACES PROVIDED = 23
7. ALL UTILITIES ARE TO BE PLACED UNDERGROUND IN ACCORDANCE WITH SECTION 85-29 OF TOWNSHIP ORDINANCE. ALSO ALL UTILITIES SHALL BE INSTALLED UNDERGROUND PRIOR TO THE PLACEMENT OF THE FINAL PAVEMENT.
8. ALL STORM SEWER SHALL BE RCP CLASS III UNLESS OTHERWISE NOTED.
9. THE SITE IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH ADA AND NEW JERSEY BARRIER FREE CODE REQUIREMENTS.
10. ALL CONSTRUCTION SHALL CONFORM WITH TOWNSHIP OF PLAINSBORO REQUIREMENTS.
11. SOIL EROSION AND SEDIMENT CONTROL SHALL FALL UNDER THE JURISDICTION OF THE FREEHOLD SOIL CONSERVATION DISTRICT.
12. ALL EASEMENTS ARE DEDICATED TO THE TOWNSHIP OF PLAINSBORO UNLESS OTHERWISE NOTED.
13. ALL SIGNS SHALL BE DESIGNED IN ACCORDANCE WITH "THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS.
14. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSE OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED ON THE DRAWINGS AND EACH DRAWING HAS BEEN REVISED TO INDICATE "ISSUED FOR CONSTRUCTION".
15. ALL DESIGN FEATURES DEPICTED HEREON WERE BASED ON CONSTRAINTS AND REGULATIONS IN EFFECT AT THE TIME OF PREPARATION AND INITIAL PRESENTATION OF THIS PLAN. ALL CURRENT DEVELOPMENT CONSTRAINTS SHOULD BE INVESTIGATED PRIOR TO COMMENCEMENT OF ANY ACTIVITY BASED ON THIS PLAN.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES FOR GAS, ELECTRIC, PHONE AND TV SERVICE LOCATIONS. LOCATION OF UTILITIES AS SHOWN ON THESE PLANS ARE PLOTTED FROM AVAILABLE DATA ON FILE WITH THE UTILITY COMPANIES AND IS NOT GUARANTEED AS TO EXACTNESS. THE CONTRACTOR IS TO CONTACT UTILITY COMPANIES 72 HOURS PRIOR TO CONSTRUCTION TO DETERMINE EXACT LOCATION. THE CONTRACTOR SHALL USE THE UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS ONLY. CONTRACTOR SHALL CALL "NJ ONE CALL" 811 OR (800-272-1000) PRIOR TO CONSTRUCTION.
17. SANITARY SEWER LINES SHALL BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY OR THE PIPES SHALL BE IN SEPARATE TRENCHES WITH THE SEWER AT LEAST 18 INCHES BELOW THE WATER MAIN. WHERE APPROPRIATE SEPARATION FROM THE WATER MAIN IS NOT POSSIBLE, THE SEWER SHALL BE ENCASED IN CONCRETE OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR AWAY FROM THE WATER LINE AS POSSIBLE.
18. TRASH AND WASTE DISPOSAL SHALL BE MANAGED BY THE OWNER THE SAME AS THE CURRENT OPERATION. THE EXISTING LOADING AREA ON TEH WEST SIDE OF THE HOSPITAL SHALL BE USED FOR THE PICKUP AND MANAGEMENT OF TRASH AND WASTE DISPOSAL. TRASH AND WASTE DISPOSAL SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE TOWNSHIP OF PLAINSBORO. TRASH AND WASTE DISPOSAL SHALL BE PROVIDED BY A PRIVATE CARRIER.
19. ALL PROPOSED SOD AND LAWN AREAS MUST BE GRADED WITH LIGHTWEIGHT CONSTRUCTION EQUIPMENT.
20. ALL GRADING SHALL BE A MINIMUM OF 2% AND A MAXIMUM OF 3' HORIZONTALLY TO 1' VERTICALLY ACROSS ALL LAWN AREAS AND AWAY FROM THE PROPOSED BUILDING. ALL STREET AND ACCESS DRIVES SHALL HAVE A MINIMUM CROSS SLOPE (CROWN) OF 2%
21. ALL SIDEWALKS ADJACENT TO 90 DEGREE PARKING SHALL BE TWO (2) FEET FROM CURB LINE OR 6 FEET IN WIDTH.

APPROVED AS A PRELIMINARY AND FINAL MAJOR SITE PLAN BY THE TOWNSHIP OF PLAINSBORO PLANNING BOARD ON

CHAIRMAN _____ DATE _____

SECRETARY _____ DATE _____

300 0 300 600
SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH
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Architect / Structural Engineer / Parking Consultant

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New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

OVERALL COVER SHEET

C.1.01

04/14/2023 SITE PLAN SUBMISSION

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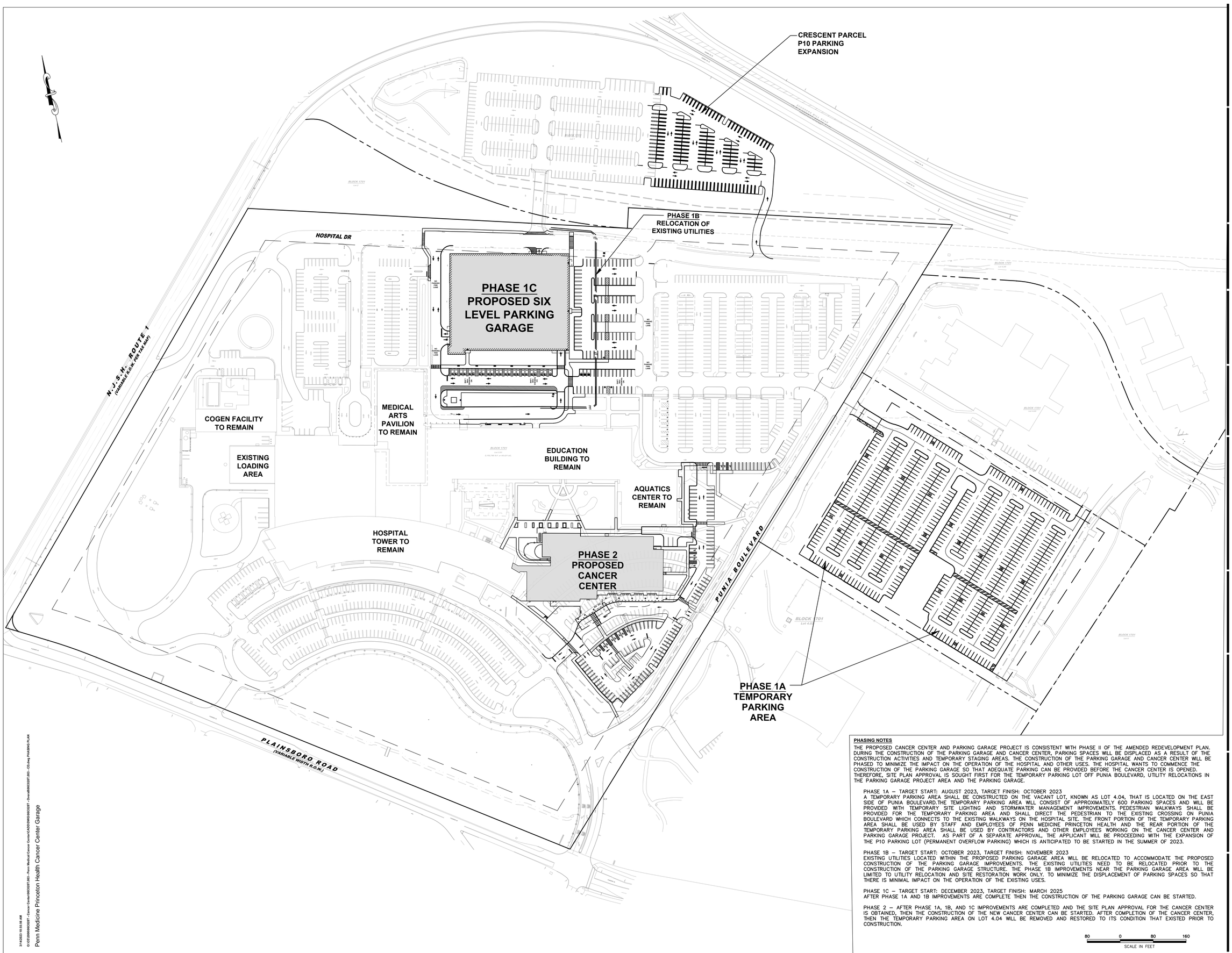
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.



PHASING NOTES

THE PROPOSED CANCER CENTER AND PARKING GARAGE PROJECT IS CONSISTENT WITH PHASE II OF THE AMENDED REDEVELOPMENT PLAN. DURING THE CONSTRUCTION OF THE PARKING GARAGE AND CANCER CENTER, PARKING SPACES WILL BE DISPLACED AS A RESULT OF THE CONSTRUCTION ACTIVITIES AND TEMPORARY STAGING AREAS. THE CONSTRUCTION OF THE PARKING GARAGE AND CANCER CENTER WILL BE PHASED TO MINIMIZE THE IMPACT ON THE OPERATION OF THE HOSPITAL AND OTHER USES. THE HOSPITAL WANTS TO COMMENCE THE CONSTRUCTION OF THE PARKING GARAGE SO THAT ADEQUATE PARKING CAN BE PROVIDED BEFORE THE CANCER CENTER IS OPENED. THEREFORE, SITE PLAN APPROVAL IS SOUGHT FIRST FOR THE TEMPORARY PARKING LOT OFF PUNIA BOULEVARD, UTILITY RELOCATIONS IN THE PARKING GARAGE PROJECT AREA AND THE PARKING GARAGE.

PHASE 1A – TARGET START: AUGUST 2023, TARGET FINISH: OCTOBER 2023
A TEMPORARY PARKING AREA SHALL BE CONSTRUCTED ON THE VACANT LOT, KNOWN AS LOT 4.04, THAT IS LOCATED ON THE EAST SIDE OF PUNIA BOULEVARD.THE TEMPORARY PARKING AREA WILL CONSIST OF APPROXIMATELY 600 PARKING SPACES AND WILL BE PROVIDED WITH TEMPORARY SITE LIGHTING AND STORMWATER MANAGEMENT IMPROVEMENTS. PEDESTRIAN WALKWAYS SHALL BE PROVIDED FOR THE TEMPORARY PARKING AREA AND SHALL DIRECT THE PEDESTRIAN TO THE EXISTING CROSSING ON PUNIA BOULEVARD WHICH CONNECTS TO THE EXISTING WALKWAYS ON THE HOSPITAL SITE. THE FRONT PORTION OF THE TEMPORARY PARKING AREA SHALL BE USED BY STAFF AND EMPLOYEES OF PENN MEDICINE PRINCETON HEALTH AND THE REAR PORTION OF THE TEMPORARY PARKING AREA SHALL BE USED BY CONTRACTORS AND OTHER EMPLOYEES WORKING ON THE CANCER CENTER AND PARKING GARAGE PROJECT. AS PART OF A SEPARATE APPROVAL, THE APPLICANT WILL BE PROCEEDING WITH THE EXPANSION OF THE P10 PARKING LOT (PERMANENT OVERFLOW PARKING) WHICH IS ANTICIPATED TO BE STARTED IN THE SUMMER OF 2023.

PHASE 1B – TARGET START: OCTOBER 2023, TARGET FINISH: NOVEMBER 2023
EXISTING UTILITIES LOCATED WITHIN THE PROPOSED PARKING GARAGE AREA WILL BE RELOCATED TO ACCOMMODATE THE PROPOSED CONSTRUCTION OF THE PARKING GARAGE IMPROVEMENTS. THE EXISTING UTILITIES NEED TO BE RELOCATED PRIOR TO THE CONSTRUCTION OF THE PARKING GARAGE STRUCTURE. THE PHASE 1B IMPROVEMENTS NEAR THE PARKING GARAGE AREA WILL BE LIMITED TO UTILITY RELOCATION AND SITE RESTORATION WORK ONLY. TO MINIMIZE THE DISPLACEMENT OF PARKING SPACES SO THAT THERE IS MINIMAL IMPACT ON THE OPERATION OF THE EXISTING USES.

PHASE 1C – TARGET START: DECEMBER 2023, TARGET FINISH: MARCH 2025
AFTER PHASE 1A AND 1B IMPROVEMENTS ARE COMPLETE THEN THE CONSTRUCTION OF THE PARKING GARAGE CAN BE STARTED.

PHASE 2 – AFTER PHASE 1A, 1B, AND 1C IMPROVEMENTS ARE COMPLETED AND THE SITE PLAN APPROVAL FOR THE CANCER CENTER IS OBTAINED, THEN THE CONSTRUCTION OF THE NEW CANCER CENTER CAN BE STARTED. AFTER COMPLETION OF THE CANCER CENTER, THEN THE TEMPORARY PARKING AREA ON LOT 4.04 WILL BE REMOVED AND RESTORED TO ITS CONDITION THAT EXISTED PRIOR TO CONSTRUCTION.

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SCALE IN FEET

3/14/2023 10:55:58 AM
O:\CE\2006\06CS05T - Cancer Center\06CS05T.001 - Penn Medical Cancer Center\CAD\DWG\06CS05T - Overall\06CS05T.001 - CD.dwg PHASING PLAN

Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.

Princeton Forward

Penn Medicine
Princeton Health
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Plainsboro, NJ 08536
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New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

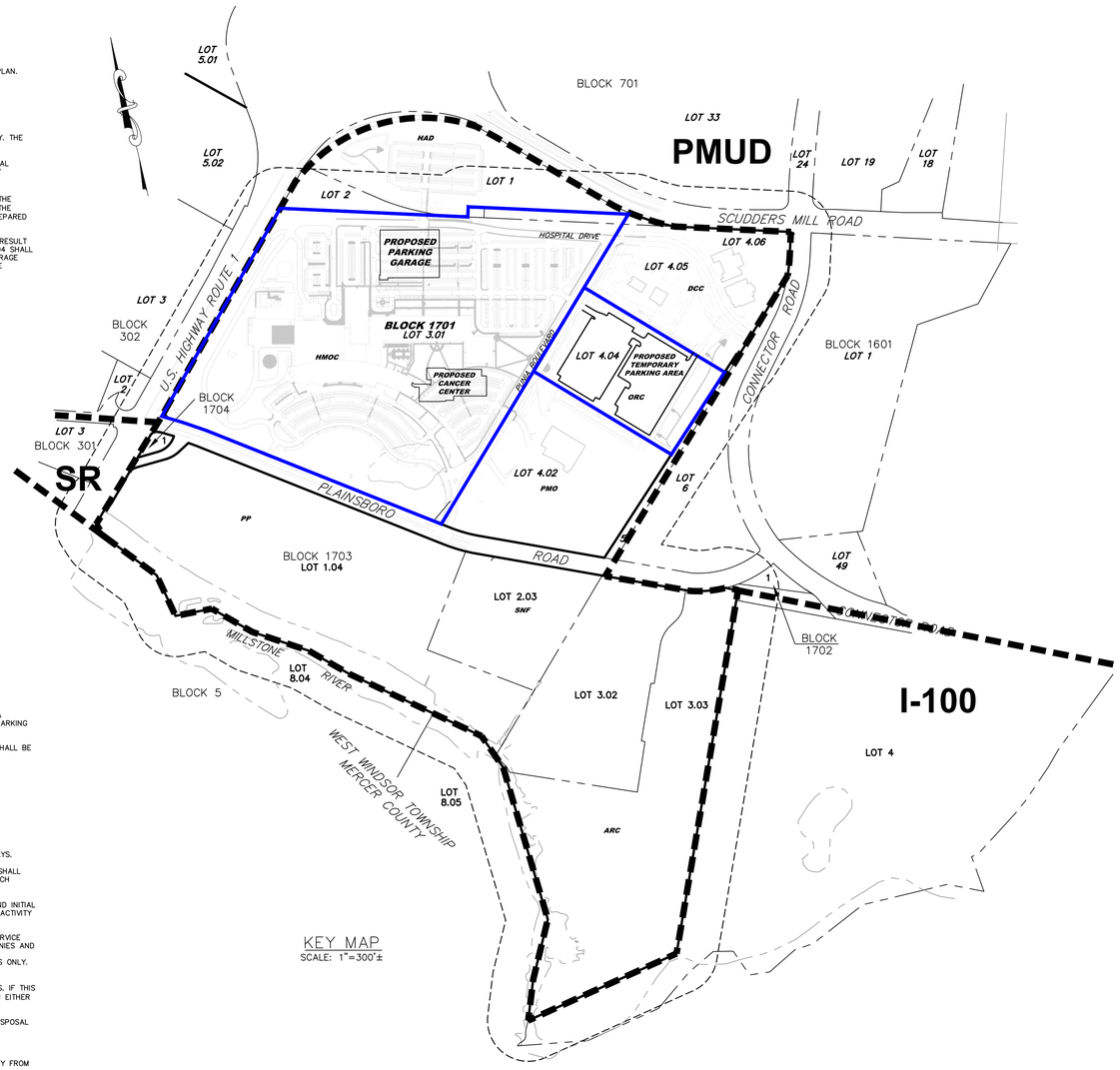
1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASING PLAN

C.1.02

04/14/2023 SITE PLAN SUBMISSION

PRELIMINARY AND FINAL MAJOR SITE PLAN
FOR
PENN MEDICINE PRINCETON HEALTH
PUNIA BOULEVARD PARKING
BLOCK 1701, LOTS 3.01 & 4.04
TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY



KEY MAP
SCALE: 1"=300'±

GENERAL NOTES:

APPLICANT/OWNER:

PRINCETON HEALTHCARE SYSTEM
A NEW JERSEY NONPROFIT CORPORATION
D/B/A PENN MEDICINE PRINCETON HEALTH
1 PLAINSBORO ROAD
PLAINSBORO, NJ 08536
(609) 430–7101

I HEREBY CERTIFY THAT I AM THE OWNER OF RECORD OF THE PROPERTY HEREIN DEPICTED AND THAT I CONCUR WITH THE FILING OF THIS PLAN.

MR. JAMES DEMETRIADES, PRESIDENT OF PENN MEDICINE PRINCETON HEALTH

1. THE PROJECT TRACT IS KNOWN AS BLOCK 1701, LOT 4.04, LOCATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY. THE PROJECT TRACT CONTAINS APPROXIMATELY 8.80 +/– ACRES AND IS CURRENTLY OPEN SPACE.
2. BOUNDARY & TOPOGRAPHIC INFORMATION SHOWN TAKEN FROM MAPS ENTITLED "TOPOGRAPHIC SURVEY PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO LOTS 3.01 & 4.04, BLOCK 1701 SITUATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY," PREPARED BY FRENCH AND PARRELLO ASSOCIATES, DATED 08/04/2022. REVISED TO 09/06/2022. THE VERTICAL DATUM IS NAVD 88.
3. THIS PROPERTY IS LOCATED IN THE ORC, OFFICE AND RESIDENTIAL COMPLEX ZONE, AS PER THE "AMENDED REDEVELOPMENT PLAN FOR THE PRINCETON HEALTHCARE SYSTEM AT PLAINSBORO SITE" PREPARED BY PHILLIPS PREISS GRYGIEL LLC, ADOPTED MARCH 13, 2013. ALSO, THE PROPERTY HAS BEEN DESIGNATED FOR REDEVELOPMENT BY THE TOWNSHIP OF PLAINSBORO AS PER THE JANUARY 23, 2008 REPORT PREPARED BY PHILLIPS PREISS SHAPIRO ASSOCIATES, INC. PLANNING AND REAL ESTATE CONSULTANTS.
4. THE APPLICANT IS PROPOSING TO CONSTRUCT A TEMPORARY PARKING LOT TO MANAGE THE DISPLACEMENT OF EXISTING PARKING AS A RESULT OF THE CONSTRUCTION OF THE PROPOSED CANCER CENTER AND PARKING GARAGE PROJECT. THE TEMPORARY PARKING AREA IN LOT 4.04 SHALL BE USED BY EMPLOYEES OF PENN MEDICINE AND PERSONNEL THAT ARE WORKING ON THE PROPOSED CANCER CENTER AND PARKING GARAGE PROJECT. ON LOT 3.01 THE APPLICANT IS PROPOSING TO PROVIDE HANDICAP PARKING TO OFFSET THE HANDICAP PARKING THAT WILL BE DISPLACED BY THE CONSTRUCTION OF THE CANCER CENTER AND PARKING GARAGE.

ZONING DATA TABLE

BULK STANDARDS BASED ON REDEVELOPMENT PLAN	REQUIREMENTS OFFICE AND RESIDENTIAL COMPLEX	PROPOSED TEMPORARY PARKING LOT 4.04
MINIMUM LOT AREA	4 ACRES	NO CHANGE
MINIMUM LOT FRONTAGE	250 FEET	NO CHANGE
MINIMUM BUILDING SETBACKS FROM: –CENTERLINE OF PUNIA BOULEVARD –CENTERLINE OF HOSPITAL DRIVE –OTHER LOT LINES	50 FEET	N/A
MINIMUM SETBACK OF BUILDING TO DRIVEWAYS AND PARKING LOTS	5 FEET	N/A
MINIMUM SETBACK OF PARKING AREAS FROM: –CENTERLINE OF PUNIA BOULEVARD –CENTERLINE OF HOSPITAL DRIVE –OTHER LOT LINES	 50 FEET 25 FEET	 107.52 FEET 25.6 FEET
MINIMUM SETBACKS BETWEEN BUILDINGS AND PARKING GARAGE	10 FEET	N/A
MAXIMUM BUILDING HEIGHT (FEET/STORIES)	175 FEET/10 STORIES	N/A
MAXIMUM FLOOR AREA RATIO (FAR)	0.60	N/A
MAXIMUM IMPERVIOUS COVERAGE ON LOT	60%	52.88% (4.65 AC)

5. PARKING REQUIREMENTS

DISPLACED PARKING FROM CANCER CENTER PROJECT:	167 SPACES
DISPLACED PARKING FROM PARKING GARAGE:	182 SPACES
TOTAL DISPLACED:	349 SPACES
PARKING PROVIDED:	628 SPACES

6. HANDICAP PARKING AS A RESULT OF THE CONSTRUCTION OF THE CANCER CENTER AND PARKING GARAGE PROJECTS, THERE SHALL BE A DISPLACEMENT OF 19 EXISTING HANDICAP PARKING SPACES. THEREFORE THE APPLICANT IS PROPOSING TO PROVIDE 20 NEW HANDICAP PARKING SPACES INCLUDING NEW HANDICAP STRIPING, MARKING AND SIGNAGE ON LOT 3.01, PLEASE SEE SHEET 5 OF 11.
7. ALL UTILITIES ARE TO BE PLACED UNDERGROUND IN ACCORDANCE WITH SECTION 85–29 OF TOWNSHIP ORDINANCE. ALSO ALL UTILITIES SHALL BE INSTALLED UNDERGROUND PRIOR TO THE PLACEMENT OF THE FINAL PAVEMENT.
8. ALL STORM SEWER SHALL BE RCP CLASS III UNLESS OTHERWISE NOTED.
9. THE SITE IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH ADA AND NEW JERSEY BARRIER FREE CODE REQUIREMENTS.
10. ALL CONSTRUCTION SHALL CONFORM WITH TOWNSHIP OF PLAINSBORO REQUIREMENTS.
11. SOIL EROSION AND SEDIMENT CONTROL SHALL FALL UNDER THE JURISDICTION OF THE FREEHOLD SOIL CONSERVATION DISTRICT.
12. ALL EASEMENTS ARE DEDICATED TO THE TOWNSHIP OF PLAINSBORO UNLESS OTHERWISE NOTED.
13. ALL SIGNS SHALL BE DESIGNED IN ACCORDANCE WITH "THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS.
14. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSE OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED ON THE DRAWINGS AND EACH DRAWING HAS BEEN REVISED TO INDICATE "ISSUED FOR CONSTRUCTION".
15. ALL DESIGN FEATURES DEPICTED HEREON WERE BASED ON CONSTRAINTS AND REGULATIONS IN EFFECT AT THE TIME OF PREPARATION AND INITIAL PRESENTATION OF THIS PLAN. ALL CURRENT DEVELOPMENT CONSTRAINTS SHOULD BE INVESTIGATED PRIOR TO COMMENCEMENT OF ANY ACTIVITY BASED ON THIS PLAN.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES FOR GAS, ELECTRIC, PHONE AND TV SERVICE LOCATIONS. LOCATION OF UTILITIES AS SHOWN ON THESE PLANS ARE PLOTTED FROM AVAILABLE DATA ON FILE WITH THE UTILITY COMPANIES AND IS NOT GUARANTEED AS TO EXACTNESS. THE CONTRACTOR IS TO CONTACT UTILITY COMPANIES 72 HOURS PRIOR TO CONSTRUCTION TO DETERMINE EXACT LOCATION. THE CONTRACTOR SHALL USE THE UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS ONLY. CONTRACTOR SHALL CALL "NJ ONE CALL" 811 OR (800–272–1000) PRIOR TO CONSTRUCTION.
17. A MINIMUM OF ONE AND ONE–HALF (1 1/2) FEET OF CLEARANCE SHALL BE PROVIDED AT ALL WATER MAIN AND SEWER MAIN CROSSINGS. IF THIS CLEARANCE CANNOT BE MAINTAINED, THE WATER AMIN SHALL BE ENCASED IN CONCRETE. CONCRETE ENCASEMENT SHALL EXTEND 10' ON EITHER SIDE.
18. TRASH AND WASTE DISPOSAL SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE TOWNSHIP OF PLAINSBORO. TRASH AND WASTE DISPOSAL SHALL BE PROVIDED BY A PRIVATE CARRIER.
19. ALL PROPOSED SOD AND LAWN AREAS MUST BE GRADED WITH LIGHTWEIGHT CONSTRUCTION EQUIPMENT.
20. ALL GRADING SHALL BE A MINIMUM OF 2% AND A MAXIMUM OF 3' HORIZONTALLY TO 1' VERTICALLY ACROSS ALL LAWN AREAS AND AWAY FROM THE PROPOSED BUILDING. ALL STREET AND ACCESS DRIVES SHALL HAVE A MINIMUM CROSS SLOPE (CROWN) OF 2%.
21. ALL SIDEWALKS ADJACENT TO 90 DEGREE PARKING SHALL BE TWO (2) FEET FROM CURB LINE OR 6 FEET IN WIDTH.

ZONING AREAS:

REDEVELOPMENT AREA	-	FMC CORPORATION / PRINCETON HEALTHCARE SYSTEM REDEVELOPMENT AREA
SR	-	SERVICE RESIDENTIAL
PMUD	-	PLANNED UNIT DEVELOPMENT
I-100	-	LIMITED INDUSTRIAL

SHEET INDEX

DRAWING NUMBER	DRAWING TITLE
C.1A.01	COVER SHEET
C.1A.02	EXISTING CONDITIONS PLAN
C.1A.03	SITE LAYOUT AND DIMENSION PLAN
C.1A.04	GRADING AND DRAINAGE PLAN
C.1A.05	TEMPORARY ACCESSIBLE PARKING RELOCATION PLAN
C.1A.06	SOIL EROSION AND SEDIMENT CONTROL PLAN
C.1A.07	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C.1A.08	LIGHTING PLAN
C.1A.09	LIGHTING DETAILS
C.1A.10	CONSTRUCTION DETAILS–1
C.1A.11	CONSTRUCTION DETAILS–2

MIDDLESEX COUNTY GENERAL NOTES:

1. A STORMWATER MAINTENANCE AGREEMENT WILL BE FILED WHICH SETS FORTH DOCUMENTATION THAT ANY PROPOSED DRAINAGE SYSTEM AND ANY AND ALL STORMWATER (DRAINAGE WALES/DETENTION/RETENTION/RECHARGE FACILITIES) WILL BE ADEQUATELY MAINTAINED IN ACCORDANCE WITH THE STANDARDS OF MIDDLESEX COUNTY. REFER TO THE PARAGRAPH IN THE STORMWATER MAINTENANCE AGREEMENT ENTITLED 'RIGHT OF COUNTY OF MIDDLESEX TO MAINTAIN DRAINAGE BASINS'. CONDITIONS THAT AFFECT NON–COUNTY FACILITIES SHOULD BE REVIEWED AND APPROVED BY THE APPROPRIATE JURISDICTIONAL AGENCY.
2. SHOULD ANY WORK BE CONTEMPLATED WITHIN THE COUNTY RIGHT–OF–WAY AND/OR ANY SPECIFIC AREA UNDER THE MIDDLESEX COUNTY'S JURUSDICTION, A COUNTY ROAD OPENING PERMIT SHALL BE OBTAINED FROM THE MIDDLESEX COUNTY DEPARTMENT OF HIGHWAYS AND BRIDGES.

APPROVED AS A PRELIMINARY AND FINAL MAJOR SITE PLAN BY THE TOWNSHIP OF PLAINSBORO PLANNING BOARD ON

CHAIRMAN _____ DATE _____

SECRETARY _____ DATE _____

300 0 300 600
SCALE IN FEET

Princeton Forward

Penn Medicine
Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

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ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

COVER SHEET

C.1A.01

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
D:\22\2200602\26\T - Cancer Center\26\2201.003 - Penn Medical Cancer Center\CAD\DWG\REDEV - Temporary Parking Lot\REDEV.003 - CVR.dwg C.1A.01 COVER
Penn Medicine Princeton Health Cancer Center Garage

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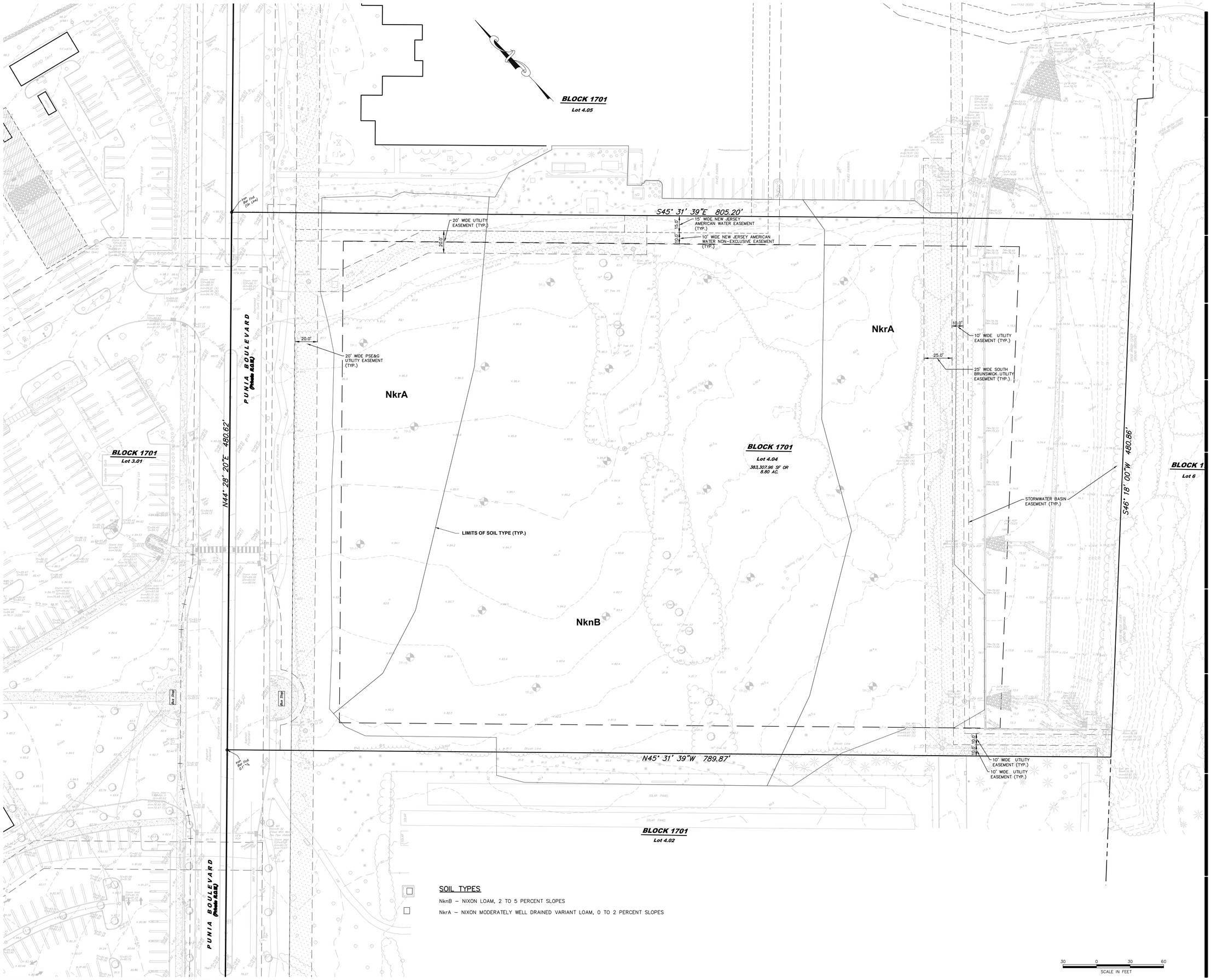

3/14/2023 10:55:56 AM
O:\C23\BNBK\C2387.003 - Cancer Center\DRC\C2387.003 - Penn Medicial Cancer Center\CAD\DWG\BC2387 - Temporary Parking Lot\BC2387.003 - SP-TPLot_Reg C.1A.02 EXISTING
Penn Medicine Princeton Health Cancer Center Garage

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Princeton Forward

Penn Medicine Princeton Health

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NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

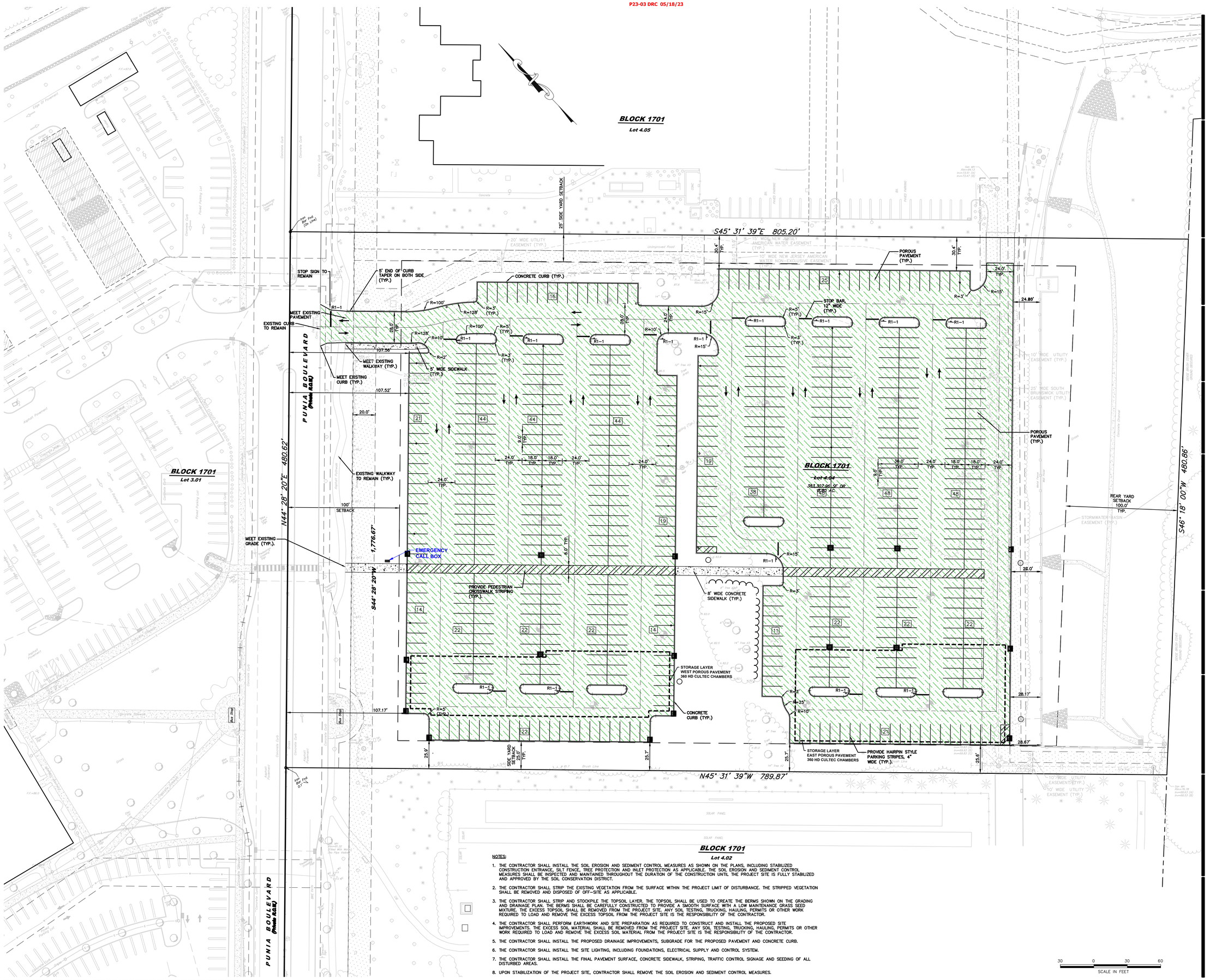
PHASE 1A

EXISTING CONDITIONS PLAN

C.1A.02

04/14/2023 SITE PLAN SUBMISSION

P23-03 DRC 05/18/23



BLOCK 1701
Lot 4.02

NOTES:

1. THE CONTRACTOR SHALL INSTALL THE SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLANS, INCLUDING STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, TREE PROTECTION AND INLET PROTECTION AS APPLICABLE. THE SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED THROUGHOUT THE DURATION OF THE CONSTRUCTION UNTIL THE PROJECT SITE IS FULLY STABILIZED AND APPROVED BY THE SOIL CONSERVATION DISTRICT.
2. THE CONTRACTOR SHALL STRIP THE EXISTING VEGETATION FROM THE SURFACE WITHIN THE PROJECT LIMIT OF DISTURBANCE. THE STRIPPED VEGETATION SHALL BE REMOVED AND DISPOSED OF OFF-SITE AS APPLICABLE.
3. THE CONTRACTOR SHALL STRIP AND STOCKPILE THE TOPSOIL LAYER. THE TOPSOIL SHALL BE USED TO CREATE THE BERMS SHOWN ON THE GRADING AND DRAINAGE PLAN. THE BERMS SHALL BE CAREFULLY CONSTRUCTED TO PROVIDE A SMOOTH SURFACE WITH A LOW MAINTENANCE GRASS SEED MIXTURE. THE EXCESS TOPSOIL SHALL BE REMOVED FROM THE PROJECT SITE. ANY SOIL TESTING, TRUCKING, HAULING, PERMITS OR OTHER WORK REQUIRED TO LOAD AND REMOVE THE EXCESS TOPSOIL FROM THE PROJECT SITE IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL PERFORM EARTHWORK AND SITE PREPARATION AS REQUIRED TO CONSTRUCT AND INSTALL THE PROPOSED SITE IMPROVEMENTS. THE EXCESS SOIL MATERIAL SHALL BE REMOVED FROM THE PROJECT SITE. ANY SOIL TESTING, TRUCKING, HAULING, PERMITS OR OTHER WORK REQUIRED TO LOAD AND REMOVE THE EXCESS SOIL MATERIAL FROM THE PROJECT SITE IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE CONTRACTOR SHALL INSTALL THE PROPOSED DRAINAGE IMPROVEMENTS, SUBGRADE FOR THE PROPOSED PAVEMENT AND CONCRETE CURB.
6. THE CONTRACTOR SHALL INSTALL THE SITE LIGHTING, INCLUDING FOUNDATIONS, ELECTRICAL SUPPLY AND CONTROL SYSTEM.
7. THE CONTRACTOR SHALL INSTALL THE FINAL PAVEMENT SURFACE, CONCRETE SIDEWALK, STRIPING, TRAFFIC CONTROL SIGNAGE AND SEEDING OF ALL DISTURBED AREAS.
8. UPON STABILIZATION OF THE PROJECT SITE, CONTRACTOR SHALL REMOVE THE SOIL EROSION AND SEDIMENT CONTROL MEASURES.

30 0 30 60
SCALE IN FEET

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NO.	DATE	DESCRIPTION

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO. NBR2119.00

PHASE 1A

SITE LAYOUT AND DIMENSION PLAN

C.1A.03

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:58 AM
O:\CES\2000\NBR2000ST - Cancer Center\NBR2000ST.001 - Penn Medical Cancer Center\CAD\SD\NBR2000ST - Temporary Parking Lot\NBR2000ST-001 - SP-TPL.dwg BP

Penn Medicine Princeton Health Cancer Center Garage

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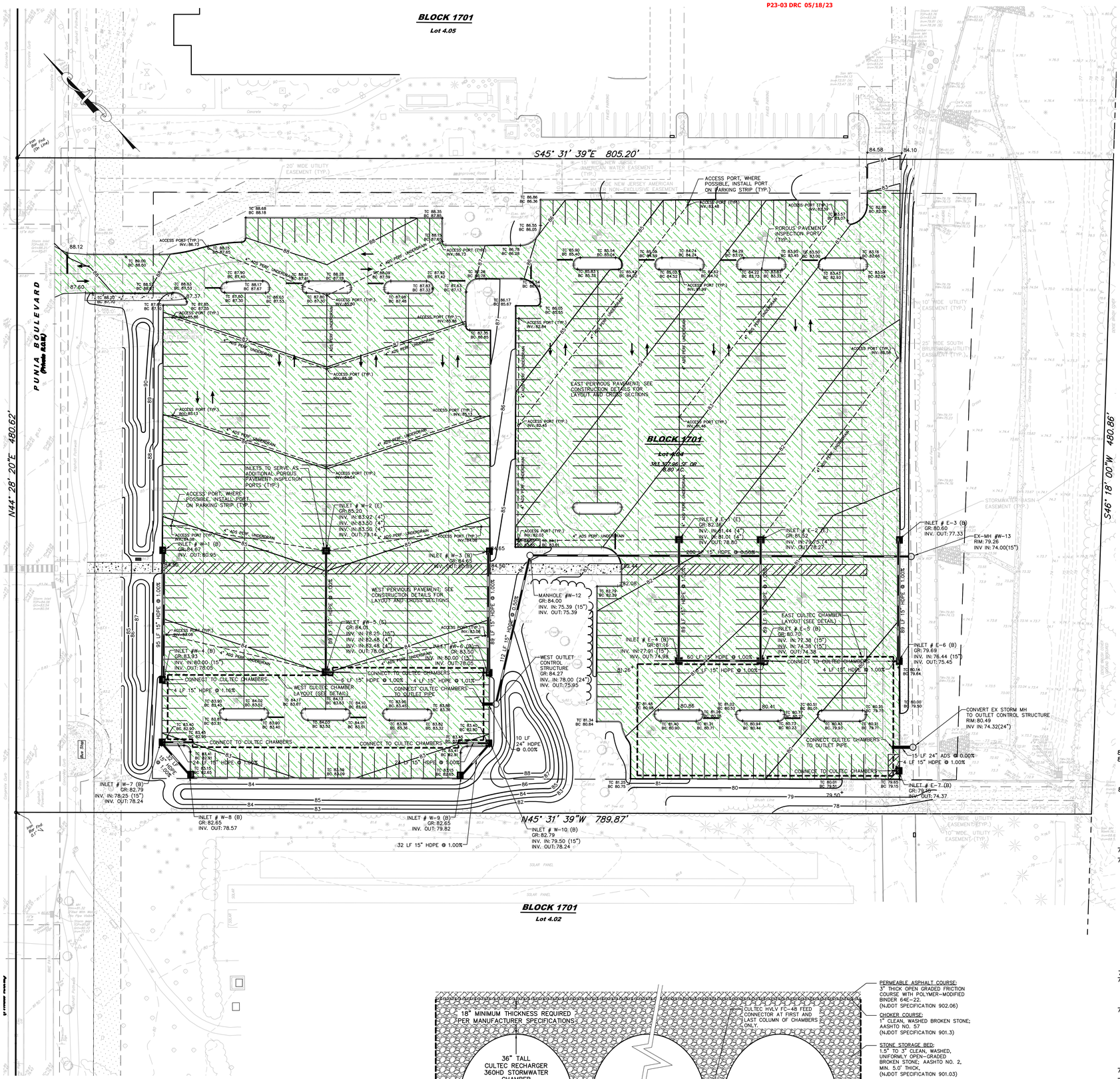
P23-03 DRC 05/18/23


BLOCK 1701
Lot 4.05
S45° 31' 39"E 805.20'
N44° 28' 20"E 480.62'
S46° 18' 00"W 480.86'
N45° 31' 39"W 789.87'
PUNIA BOULEVARD
(Private Road)
20' WIDE UTILITY EASEMENT (TYP.)
AMERICAN WATER EASEMENT (TYP.)
NEW JERSEY AMERICAN WATER CO. NON-EXCLUSIVE EASEMENT
10' WIDE SOUTH BRUNSWICK UTILITY EASEMENT (TYP.)
STORMWATER BASIN EASEMENT (TYP.)
ACCESS PORT, WHERE POSSIBLE, INSTALL PORT ON PARKING STRIP (TYP.)
ACCESS PORT (TYP.)
ADS PERF. UNDERDRAIN
POROUS PAVEMENT INSPECTION PORT (TYP.)
EAST PERVIOUS PAVEMENT, SEE CONSTRUCTION DETAILS FOR LAYOUT AND CROSS SECTIONS
INLETS TO SERVE AS ADDITIONAL POROUS PAVEMENT INSPECTION PORTS (TYP.)
WEST PERVIOUS PAVEMENT, SEE CONSTRUCTION DETAILS FOR LAYOUT AND CROSS SECTIONS
INLET # W-1 (B) GR: 84.67 INV. OUT: 80.95
INLET # W-2 (E) GR: 85.20 INV. IN: 83.92 (4") INV. IN: 83.50 (4") INV. IN: 83.50 (4") INV. OUT: 79.14
INLET # W-3 (B) GR: 84.65 INV. OUT: 80.65
INLET # W-4 (B) GR: 83.93 INV. IN: 80.00 (15") INV. OUT: 78.05
INLET # W-5 (E) GR: 84.01 INV. IN: 78.25 (15") INV. IN: 82.48 (4") INV. IN: 82.48 (4") INV. OUT: 78.05
INLET # W-6 (B) GR: 83.50 INV. IN: 80.00 (15") INV. OUT: 78.05
INLET # W-7 (B) GR: 82.79 INV. IN: 78.25 (15") INV. OUT: 78.24
INLET # W-8 (B) GR: 82.65 INV. OUT: 78.57
INLET # W-9 (B) GR: 82.65 INV. OUT: 79.82
INLET # W-10 (B) GR: 82.79 INV. IN: 79.50 (15") INV. OUT: 78.24
INLET # E-1 (E) GR: 82.36 INV. IN: 81.44 (4") INV. IN: 81.01 (4") INV. OUT: 78.80
INLET # E-2 (E) GR: 81.52 INV. IN: 79.75 (4") INV. OUT: 78.27
INLET # E-3 (B) GR: 80.60 INV.: OUT: 77.33
EX-MH #W-13 RIM: 79.26 INV IN: 74.00(15")
INLET # E-4 (B) GR: 81.16 INV. IN: 77.91 (15") INV. OUT: 74.96
INLET # E-5 (B) GR: 80.70 INV. IN: 77.38 (15") INV. IN: 74.38 (15") INV. OUT: 74.38
INLET # E-6 (B) GR: 79.69 INV. IN: 76.44 (15") INV. OUT: 75.45
INLET # E-7 (B) GR: 79.46 INV. OUT: 74.37
MANHOLE #W-12 GR: 84.00 INV. IN: 75.39 (15") INV. OUT: 75.39
WEST OUTLET CONTROL STRUCTURE GR: 84.27 INV. IN: 78.00 (24") INV. OUT: 75.95
CONVERT EX STORM MH TO OUTLET CONTROL STRUCTURE RIM: 80.49 INV IN: 74.32(24")
WEST CULTEC CHAMBER LAYOUT (SEE DETAIL)
EAST CULTEC CHAMBER LAYOUT (SEE DETAIL)
CONNECT TO CULTEC CHAMBERS
CONNECT CULTEC CHAMBERS TO OUTLET PIPE
4 LF 15" HDPE @ 1.00%
4 LF 15" HDPE @ 1.16%
95 LF 15" HDPE @ 1.00%
89 LF 15" HDPE @ 1.00%
112 LF 15" HDPE @ 1.00%
32 LF 15" HDPE @ 1.00%
10 LF 24" HDPE @ 0.00%
15 LF 24" ADS @ 0.00%
4 LF 15" HDPE @ 1.00%
Bar Rack
Per Prof. Eng.
Gravel Cart Path
Concrete Curb
Asphalt Driveway
Concrete Walk
Fence
Guide Rail
Wood Fence
Overhead Wires
Utility Pole
Fire Hydrant
Water Valve
Gas Valve
Sanitary Manhole
Storm Manhole
Light Pole
Sign
Deciduous Tree
Evergreen Tree
Shrub
Bollard
Curb Inlet
Area Inlet
Roof Drain
Cleanout
Gas Meter
Electric Meter
Telephone Pedestal
Cable TV Pedestal
Electric Transformer
Electric Manhole
Telephone Manhole
Cable TV Manhole
Gas Manhole
Traffic Signal Box
Traffic Signal Pole
Traffic Signal Mast Arm
Traffic Signal Pedestrian Push Button
Traffic Signal Pedestrian Signal
Traffic Signal Vehicular Signal
Traffic Signal Loop Detector
Traffic Signal Camera
Traffic Signal Controller
Traffic Signal Cabinet
Traffic Signal Conduit
Traffic Signal Junction Box
Traffic Signal Pull Box
Traffic Signal Pull Box with Cover
Traffic Signal Pull Box with Cover and Conduit
Traffic Signal Pull Box with Cover and Conduit and Wire
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire
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Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing
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Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector
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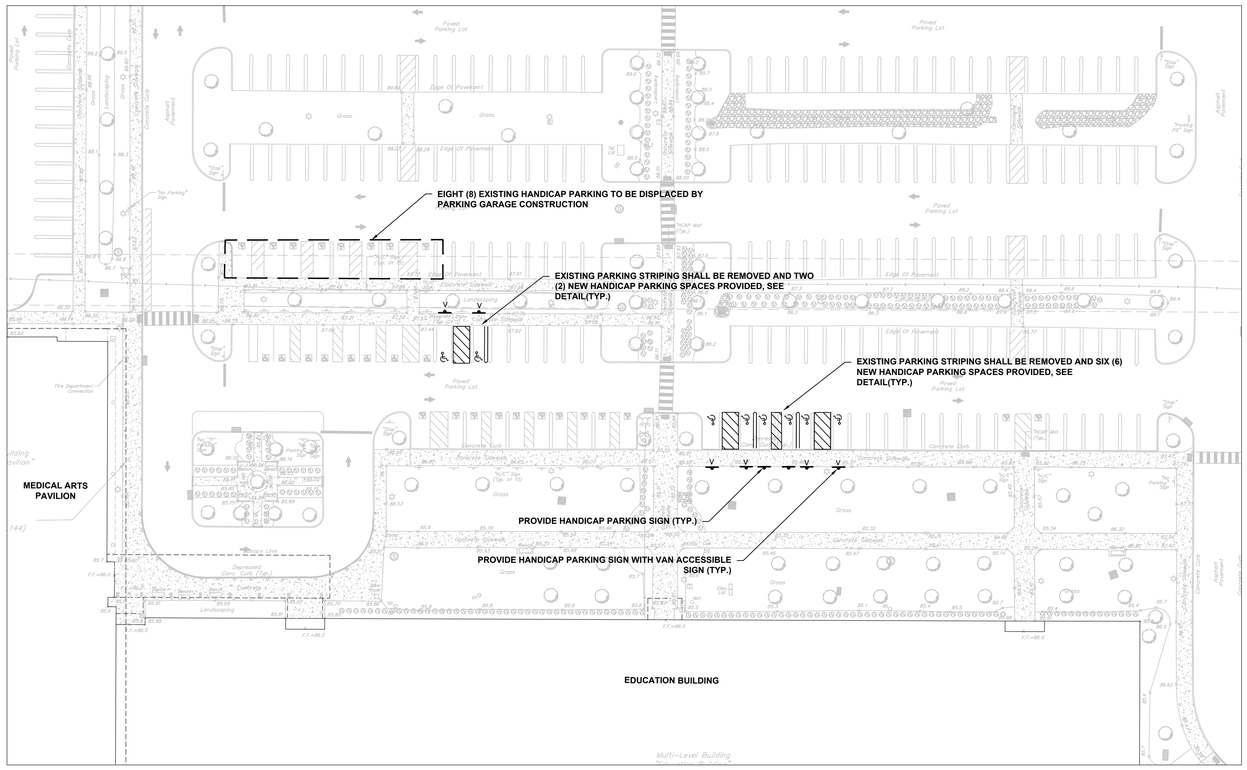
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate and Grounding Rod and Grounding Wire
Traffic Signal Pull Box with Cover and Conduit and Wire and Ground and Bond and Grounding Rod and Grounding Wire and Grounding Clamp and Grounding Bushing and Grounding Nut and Grounding Washer and Grounding Lug and Grounding Terminal and Grounding Connector and Grounding Plate



PARKING GARAGE AREA

HANDICAP PARKING MUST BE RELOCATED AND OPERATIONAL PRIOR TO REMOVAL OF DISPLACED HANDICAP PARKING SPACES.

CANCER CENTER AREA

HANDICAP PARKING MUST BE RELOCATED AND OPERATIONAL PRIOR TO REMOVAL OF DISPLACED HANDICAP PARKING SPACES.

NOTES:
1. THE PAVEMENT SURFACE SLOPE OF THE PROPOSED HANDICAP PARKING MUST NOT EXCEED 2% IN ANY DIRECTION.
2. TEMPORARY HANDICAP ACCESSIBLE PARKING TO BE REMOVED UPON COMPLETION AND OPERATION OF THE CANCER CENTER & PARKING GARAGE PROJECT

TEMPORARY H/C ACCESSIBLE PARKING SPACES: 20 TOTAL

SCALE IN FEET

3/14/2023 10:55:59 AM
O:\CE\20999\BC0387 - Cancer Center\BC0387.MD - Penn Medical Cancer Center\CAD\DWG\BC0387 - Temporary Parking Lot\BC0387.MD - TWCP-TPL.dwg WCP

Penn Medicine Princeton Health Cancer Center Garage

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N

Penn Medicine Princeton Health Temporary Parking Lot

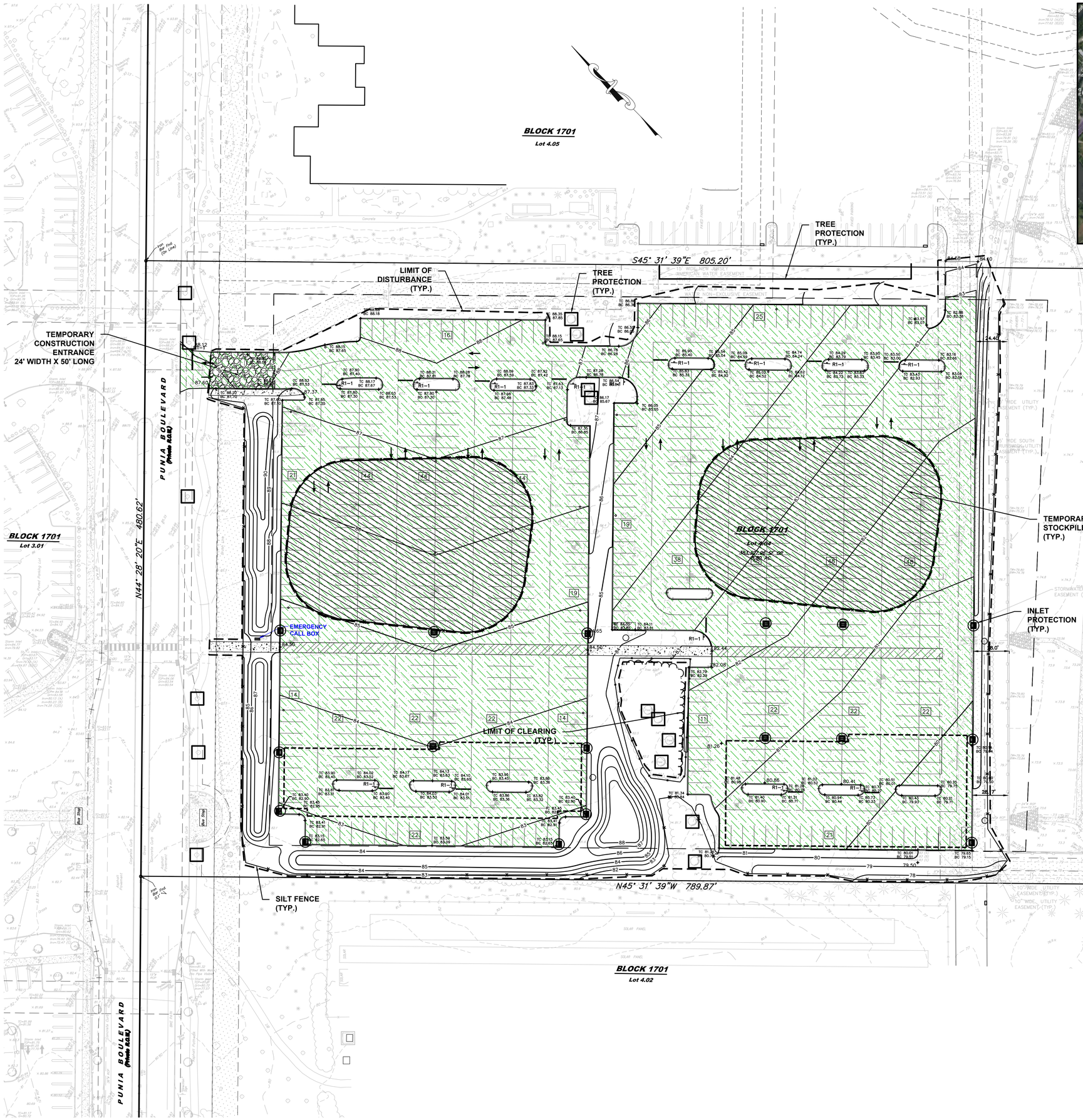
1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

TEMPORARY ACCESSIBLE PARKING RELOCATION PLAN

C.1A.05

04/14/2023 SITE PLAN SUBMISSION



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NO.	DATE	DESCRIPTION

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

SOIL EROSION AND SEDIMENT CONTROL PLAN

C.1A.06

04/14/2023 SITE PLAN SUBMISSION

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SCALE IN FEET

3/14/2023 10:55:58 AM
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Penn Medicine Princeton Health Cancer Center Garage

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SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE FREEHOLD SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY SOIL DISTURBING ACTIVITY.
2. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
4. N.J.S.A 4:24-39 ET. SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THE DISTRICT DETERMINES THAT A PROJECT OR PORTION THEREOF IS IN FULL COMPLIANCE WITH THE CERTIFIED PLAN AND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY AND A REPORT OF COMPLIANCE HAS BEEN ISSUED. UPON WRITTEN REQUEST FROM THE APPLICANT, THE DISTRICT MAY ISSUE A REPORT OF COMPLIANCE WITH CONDITIONS ON A LOT-BY-LOT OR SECTION-BY-SECTION BASIS, PROVIDED THAT THE PROJECT OR PORTION THEREOF IS IN SATISFACTORY COMPLIANCE WITH THE SEQUENCE OF DEVELOPMENT AND TEMPORARY MEASURES FOR SOIL EROSION AND SEDIMENT CONTROL HAVE BEEN IMPLEMENTED, INCLUDING PROVISIONS FOR STABILIZATION AND SITE WORK.
5. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN SIXTY (60) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF 2 TO 2 ½ TONS PER ACRE, ACCORDING TO STATE STANDARD FOR STABILIZATION WITH MULCH ONLY.
6. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AND A MULCH ANCHOR, IN ACCORDANCE WITH STATE STANDARDS.
7. A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS TO STABILIZE STREETS, ROADS, DRIVEWAYS, AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN FIFTEEN (15) DAYS OF THE PRELIMINARY GRADING.
8. THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS REQUIRES THE INSTALLATION OF A PAD OF CLEAN CRUSHED STONE AT POINTS WHERE TRAFFIC WILL BE ACCESSING THE CONSTRUCTION SITE. AFTER INTERIOR ROADWAYS ARE PAVED, INDIVIDUAL LOTS REQUIRE A STABILIZED CONSTRUCTION ENTRANCE CONSISTING OF ONE INCH TO TWO INCH (1" - 2") STONE FOR A MINIMUM LENGTH OF TEN FEET (10') EQUAL TO THE LOT ENTRANCE WIDTH. ALL OTHER ACCESS POINTS SHALL BE BLOCKED OFF.
9. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS WILL BE REMOVED IMMEDIATELY.
10. PERMANENT VEGETATION IS TO BE SEEDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING.
11. AT THE TIME THAT SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROWTH COVER SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT IT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
12. IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS/ACRE, (OR 450 LBS/SQ FT OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12" OF SETTLED SOIL WITH A PH OF 5 OR MORE, OR 24" WHERE TREES OR SHRUBS ARE TO BE PLANTED.
13. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
14. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER. ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE STANDARD FOR DEWATERING.
15. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED AS REQUIRED BY THE STANDARD FOR DUST CONTROL.
16. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STOCKPILES NOT LOCATED WITHIN THE LIMIT OF DISTURBANCE WILL REQUIRE CERTIFICATION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN. CERTIFICATION OF A NEW SOIL EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED FOR THESE ACTIVITIES IF AN AREA GREATER THAN 5,000 SQUARE FEET IS DISTURBED.
17. ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL NOTE #6.
18. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BELOW STORMWATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

FREEHOLD SOIL CONSERVATION DISTRICT
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ACID SOILS NOTES

IN ORDER TO PROVIDE SUITABLE CONDITIONS FOR GROWTH AND VEGETATION AND TO PREVENT THE ACIDIFYING OF DRAINAGE WATER IN THOSE AREAS UNDERLAIN WITH ACID FORMATIONS WITH A ph BELOW 4.0 THE FOLLOWING REQUIREMENT SHALL BE MET:

1. LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID PRODUCING SOILS ARE ENCOUNTERED.
2. TOPSOIL STRIPPED FROM THE SITE SHALL BE STORED SEPARATELY FROM TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOILS.
3. STOCKPILES OF HIGH ACID PRODUCING SOIL SHOULD BE LOCATED ON LEVEL LAND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THIS MATERIAL HAS A HIGH CLAY CONTENT.
4. TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOIL MATERIAL TO BE STORED MORE THAN 48 HOURS SHOULD BE COVERED WITH PROPERLY ANCHORED, HEAVY GRADE SHEETS OF POLYETHYLENE WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF 3 TO 6 INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. SILT FENCE SHALL BE INSTALLED AT THE TOE OF SLOPE TO CONTAIN MOVEMENT OF THE STOCKPILED MATERIAL. TOPSOIL SHALL NOT BE APPLIED TO THE STOCKPILES TO PREVENT TOPSOIL CONTAMINATION WITH HIGH ACID PRODUCING SOIL.
5. HIGH ACID PRODUCING SOILS WITH A pH OF 4 OR LESS, OR CONTAINING IRON SULFIDE, (INCLUDING BORROW FROM CUTS OR DREDGED SEDIMENT) SHALL BE ULTIMATELY PLACE OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS PER ACRE (OR 450 LBS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SETTLED SOIL WITH A pH OF 5 OR MORE EXCEPT AS FOLLOWS:
   A. AREAS WHERE TREES OR SHRUBS ARE PLANTED SHALL BE COVERED WITH A MINIMUM OF 24 INCHES OF SOIL WITH A pH OF 5 OR MORE.
   B. DISPOSAL AREAS SHALL NOT BE LOCATED WITHIN 24" OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES AND OTHERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
6. EQUIPMENT USED FOR MOVEMENT OF HIGH ACID-PRODUCING SOILS SHOULD BE CLEANED AT THE END OF EACH DAY TO PREVENT SPREADING OF HIGH ACID-PRODUCING SOIL MATERIALS TO OTHER PARTS OF THE SITE, INTO STREAMS OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED RUSTING.
7. NON-VEGETATIVE EROSION CONTROL PRACTICES (STONE TRACKING PADS, STRATEGICALLY PLACED LIMESTONE CHECK DAM, SEDIMENT BARRIER, WOOD CHIPS) SHOULD BE INSTALLED TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF THE SITE.
8. FOLLOWING BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOIL, TOPSOILING AND SEEDING OF THE SITE (SEE TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, AND TOPSOILING). MONITORING MUST CONTINUE FOR A MINIMUM OF 6 MONTHS TO ENSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH ACID-PRODUCING SOIL PROBLEMS EMERGE. IF PROBLEMS STILL EXIST, THE AFFECTED AREA MUST BE TREATED AS INDICATED ABOVE TO CORRECT THE PROBLEM.

CONSTRUCTION SCHEDULE AND PROCEDURE FOR IMPLEMENTATION OF SOIL EROSION AND SEDIMENT CONTROL MEASURES

1. PROVIDE TEMPORARY STABILIZATION OF ALL DISTURBED AREAS AND INSTALL SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE AND ALL OTHER NECESSARY SOIL EROSION MEASURES. (2 DAYS)
2. PERFORM SITE CLEARING. (4 WEEKS)
3. CLEAR AND ESTABLISH ROUGH GRADES AS NECESSARY TO CONSTRUCT TEMPORARY PARKING LOT AND SITE IMPROVEMENTS. (2 WEEKS)
4. INSTALL STORM DETENTION SYSTEM, INLETS AND CONNECTING PIPES (3 WEEKS)
5. INSTALL ALL UNDERGROUND UTILITIES INCLUDING TEMPORARY ELECTRICAL LINE TO SERVICE PROPOSED LIGHTING (2 WEEKS)
6. INSTALL CURB, POROUS PAVEMENT STONE, AND PAVEMENT BASE COURSE (3 WEEKS)
7. ESTABLISH FINISHED GRADE, AND PROVIDE PERMANENT VEGETATIVE COVER. (2 WEEKS)
8. PAVE DRIVEWAYS, ACCESS DRIVE AND COMPLETE LIGHTING. (3 WEEKS)
9. REMOVE ACCESS PROTECTION, AND SILT FENCE AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED. (1 WEEK)

THE ABOVE SCHEDULE IS FOR THE IMPLEMENTATION AND INSTALLATION OF SOIL EROSION AND SEDIMENT CONTROL MEASURES ONLY. CONTRACTOR MAY MODIFY AND/OR CREATE HIS OWN SCHEDULE. IF THE CONSTRUCTION SCHEDULE IS MODIFIED, A REVISION TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED.

PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. IMMEDIATELY PRIOR TO SEEDING AND TOPSOILING APPLICATION, THE SUBSOIL SHALL BE EVALUATED FOR COMPACTION IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.
   C. TOPSOIL SHOULD BE HANDLED ONLY WHEN ITS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS REQUIRED ON ALL SITES. TOPSOIL SHALL BE AMENDED WITH ORGANIC MATTER, AS NEEDED, IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING.
   D. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
2. SEEDBED PREPARATION
   A. UNIFORMLY APPLY GROUND LIMESTONE AND FERTILIZER TO TOPSOIL WHICH HAS BEEN SPREAD AND FIRMED, ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS COOPERATIVE EXTENSION OFFICES (HTTP://NJAES.RUTGERS.EDU/COUNTY/). FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 S.F. OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE AND INCORPORATED INTO THE SURFACE 4 INCHES. IF FERTILIZER IS NOT INCORPORATED, APPLY ONE-HALFTHE RATE DESCRIBED ABOVE DURING THE SEEDBED PREPARATION AND REPEAT ANOTHER ONE-HALF RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING.
   B. WORK LIME AND FERTILIZER INTO THE TOPSOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.
   C. HIGH ACID PRODUCING SOIL: SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED PREPARATION. SEE ACID SOIL NOTES.
3. SEEDING
   A. PERMANENT SEEDING SHALL CONSISTING OF THE FOLLOWING MIXES OR APPROVED EQUAL – ACCEPTABLE SEEDING DATES ARE BETWEEN MARCH 1 THRU APRIL 30 AND OPTIMAL SEEDING DATES ARE AUGUST 15 THRU OCTOBER 15:

HARD FESCUE	@ 4.0#/1,000 S.F.
PERENNIAL RYEGRASS	@ 1.0#/1,000 S.F.
KENTUCKY BLUEGRASS	@ 1.0#/1,000 S.F.

      PERMANENT SEEDING SHALL BE PROVIDED ON ALL THE DETENTION BASIN SIDE SLOPES AND BASIN BOTTOM. THE SEED MIX SHALL BE SEED MIXTURE 17 AND CONSIST OF THE FOLLOWING MIXTURE OR APPROVED EQUAL – ACCEPTABLE SEEDING DATES ARE BETWEEN MARCH 1 THRU AUGUST 14 AND OPTIMAL SEEDING DATES ARE AUGUST 15 THRU OCTOBER 1:

CREEPING BENTGRASS	@#/1,000 S.F.
CREEPING RED FESCUE	@#/1,000 S.F.
ALKALI SALTGRASS	@#/1,000 S.F.

      PLEASE NOTE THAT OTHER SEED MIXTURES CAN BE USED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
   B. CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF ¼ TO ½ INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE ¼ INCH DEEPER ON COARSE-TEXTURED SOIL.
   C. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.
   D. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK, OR TRAILER-MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER, AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT-FINERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. WHEN POOR SEED TO SOIL CONTACT OCCURS, THERE IS A REDUCED SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.
4. MULCHING

   MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS REQUIREMENT.

   A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, APPLIED AT THE RATE OF 1 ½ TO 2 TONS ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 2 TONS PER ACRE. MULCH CHOPPER-SPREADERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO PRESENCE OF WEED SEED.

      APPLICATION- SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 85% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTION 70 TO 90 POUNDS WITHIN EACH SECTION.

      ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.

   1. PEG AND TWINE. DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRECHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
   2. MULCH NETTING. STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTING TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
   3. CRIMPER (MULCH ANCHORING COULTER TOOL) – A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR AND MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
   4. LIQUID MULCH BINDERS–MAY BE USED TO ANCHOR SALT HAY OR STRAW MULCH.

      A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.

      B. USE ONE OF THE FOLLOWING:

   1. ORGANIC AND VEGETABLE BASED BINDERS – NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES AND WEATHER CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS. MANY NEW PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.
   2. SYNTHETIC BINDERS – HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

      NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A COMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.
   3. WOOD-FIBER OR PAPER-FIBER MULCH. SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS. USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURERS) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.
   4. PELLETIZED MULCH. COMPRESSED AND EXTRUDE PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORMA MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60–75LBS/1,000 SQUARE FEET WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE.

      APPLY THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.
5. IRRIGATION (WHERE FEASIBLE)

   IF SOIL MOISTURE IS DEFICIENT, AND MULCH IS NOT USED, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH APPLIED UP TO TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.

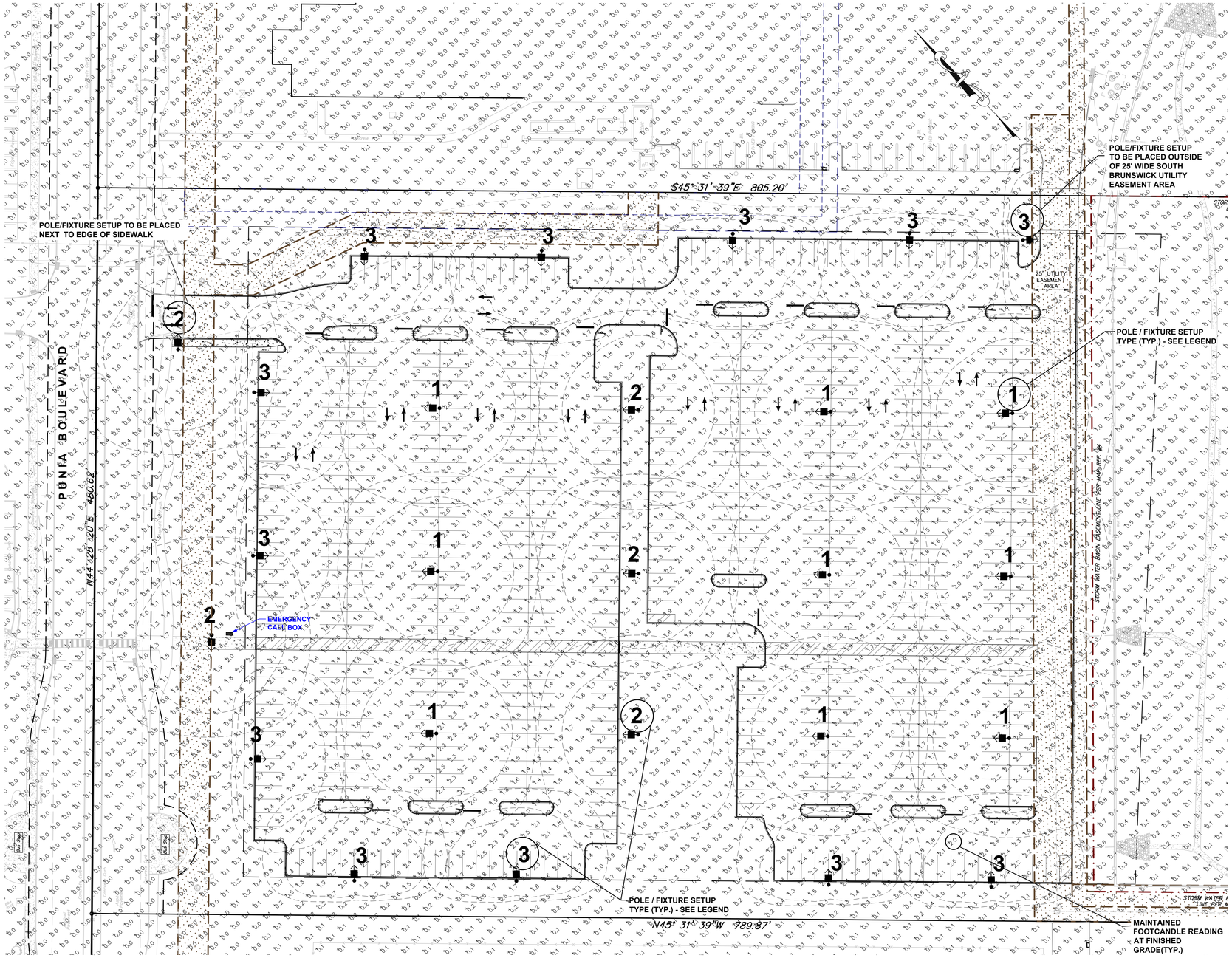
STABILIZATION WITH MULCH

METHODS AND MATERIALS

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.
2. PROTECTIVE MATERIALS
   A. UNROTTED SMALL-GRAIN STRAW, OR SALT HAY AT 2.0 TO 2.5 TONS PER ACRE IS SPREAD UNIFORMLY AT 90 TO 115 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING TIE DOWN. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT. THE APPROVED RATES ABOVE HAVE BEEN MET WHEN THE MULCH COVERS THE GROUND COMPLETELY UPON VISUAL INSPECTION, i.e. THE SOIL CAN NOT BE SEEN THROUGH THE MULCH.
   B. ASPHALT EMULSION IS RECOMMENDED AT THE RATE OF 600 TO 1,200 GALLONS PER ACRE. THIS IS SUITABLE FOR A LIMITED PERIOD OF TIME WHERE TRAVEL BY PEOPLE, ANIMALS OR MACHINES IS NOT A PROBLEM.
   C. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.
   D. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A HYROSEEDER.
   E. MULCH NETTING, SUCH AS PAPER JUTE, EXCELSIOR, COTTON, OR PLASTIC, MAY BE USED.
   F. WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.
   G. GRAVEL, CRUSHED STONE, OR SAG AT THE RATE OF 9 CUBIC YARDS PER 1,000 SQ. FT. APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 3 INCHES MAY BE USED. SIZE 2 OR 3 (ASTM-C-33) IS RECOMMENDED.
3. MULCH ANCHORING – SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA AND STEEPNESS OF SLOPES.
   A. PEG AND TWINE – DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
   B. MULCH NETTING – STAPLE PAPER, COTTON, OR PLASTIC NETTINGS OVER MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED. NETTING IS GENERALLY AVAILABLE IN ROLLS 4 FEET WIDE AND UP TO 300 FEET LONG.
   C. CRIMPER MULCH ANCHORING COULTER TOOL – A TRACTOR-DAWN IMPLEMENT ESPECIALLY DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SURFACE. THIS PRACTICE AFFORDS MAXIMUM EROSION CONTROL, BUT IS USE IS LIMITED TO THOSE SLOPES UPON WHICH THE TRACTOR CAN OPERATE SAFELY. SOIL PENETRATION SHOULD BE ABOUT 3 TO 4 INCHES. ON SLOPING LAND, THE OPERATION SHOULD BE ON THE CONTOUR.
   D. LIQUID MULCH –BINDERS
      1. APPLICATION SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
      2. USE ONE OF THE FOLLOWING:
   A. ORGANIC AND VEGETABLE BASED BINDER – NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. VEGETABLE BASED GELS SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER.
      B. SYNTHETIC BINDERS – HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
   C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.)
2. SEEDBED PREPARATION
   A. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SA

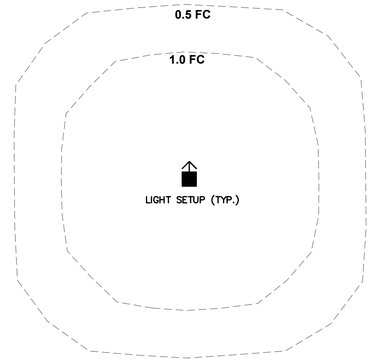


LEGEND:

SETUP TYPE 1	FIXTURE TYPE A WITH POLE TYPE A (CONCRETE PEDESTAL FOOTING INSTALLATION)
SETUP TYPE 2	FIXTURE TYPE A WITH POLE TYPE B (DIRECT BURIAL INSTALLATION)
SETUP TYPE 3	FIXTURE TYPE B WITH POLE TYPE B (DIRECT BURIAL INSTALLATION)

LIGHTING NOTES

1. DO NOT INSTALL PROPOSED LIGHTS ON TOP OF ANY PROPOSED OR EXISTING UNDERGROUND UTILITIES. FIELD ADJUST LIGHTS AS NEEDED AS DIRECTED BY THE PROJECT PROFESSIONAL TO ACCOMMODATE ANY POTENTIAL CONFLICTS.
2. SETUP TYPE 1 SHALL HAVE 2.5' CONCRETE PEDESTALS.
3. SETUP TYPE 2 AND 3 SHALL BE PLACED IN CENTERS OF ISLANDS OR 5' MINIMUM FROM THE BACK OF THE CURB OR TO THE FACE OF THE POLE UNLESS OTHERWISE NOTE.D
4. COLOR AND FINISH OF PROPOSED LIGHTS AND POLES SHALL BE SELECTED FROM AVAILABLE STANDARD COLOR BY OWNER. FINISHES OF THE POLE AND LIGHT FIXTURE SHALL MATCH.
5. COLOR OF LED LIGHT SOURCE TO MATCH COLOR RENDITION OF EXISTING CAMPUS LIGHTS.
6. THE CONTRACTOR MUST PROVIDE CONTROL SYSTEM INCLUDING ALL WIRING, CONDUITS, CONNECTIONS AND SWITCHES FOR THE OWNER TO ACTIVATE AND OPERATE THE NIGHTTIME LIGHTING SEQUENCE (DIMMING) FROM A REMOTE LOCATION . CONTRACTOR MUST PROVIDE SHOP DRAWINGS OF THE COMPLETE WORKING CONTROL SYSTEM.
7. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS AND FINISH/COLOR SAMPLES OF ALL LIGHT FIXTURES AND POLES FOR REVIEW AND APPROVAL BY THE APPROPRIATE ENTITIES PRIOR TO ORDERING OF MATERIAL.



TYPICAL LIGHTING FOOTCANDLES VALUES SHOWN FOR ALL SETUPS

NOT TO SCALE

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Area	Illuminance	Fc	0.7	3.9	0.0	N.A.	N.A.
Parking and Drive Lane	Illuminance	Fc	1.9	3.9	1.0	1.9	3.9

Luminaire Schedule					
Symbol	Label	Description	Arr. Watts	Arr. Lum. Lumens	LLF
	1	STREETWORKS #USSL-XL-C047-D-U-T5-SA-BK, 25' MOUNTING HEIGHT WITH POLE TYPE A (CONCRETE PEDESTAL)	176	28129	0.900
	2	STREETWORKS #USSL-XL-C047-D-U-T5-SA-BK, 25' MOUNTING HEIGHT WITH POLE TYPE B (DIRECT BURIAL)	176	28129	0.900
	3	STREETWORKS #USSL-C029-D-U-T4-SA-BK-HSS. 25' MOUNTING HEIGHTWITH POLE TYPE B (DIRECT BURIAL)	131	15518	0.900

LOCAL REP FOR PRODUCTS: ENTERPRISE LIGHTING SALES (ANDY CHILDERS) WOODBRIDGE, NJ (ACHILDERS@ENTERELS.COM/732-425-5287)

SCALE IN FEET

NOTE: THIS PLAN SHALL BE USED FOR LIGHTING PURPOSES ONLY.

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH
99 Chauncy Street 4th Floor
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T:617.423.1700 | F:800.934.9691
sheppleybulfinch.com
Design Architect

THA Consulting, Inc.
550 Township line Road
Suite 100
Blue Bell, PA 19422
T: 484.342.0200
www.tha-consulting.com
Architect / Structural Engineer / Parking Consultant

BR+A Consulting Engineers
105 Madison Avenue 10th Floor
New York, NY, 10016
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brplusa.com
Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

FPA FRENCH & PARRELLO ASSOCIATES
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Wall, New Jersey 07719
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FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

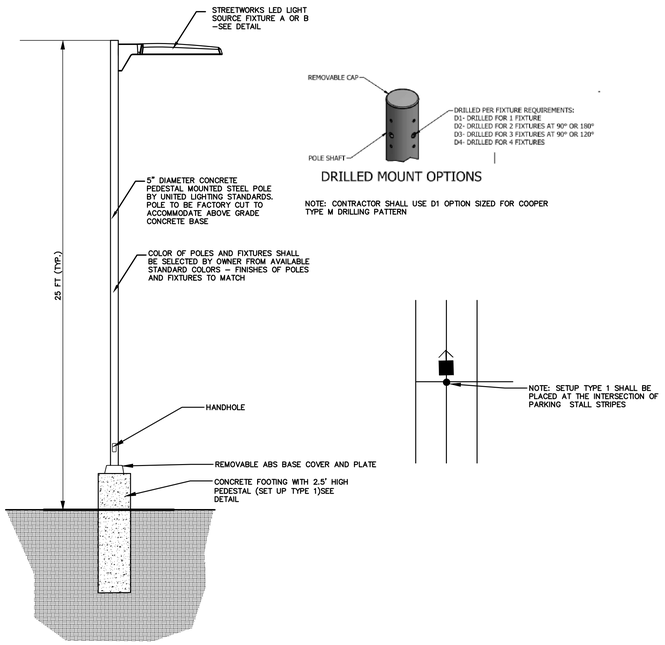
LIGHTING PLAN

C.1A.08

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
O:\CD\2988\ACD2987 - Cancer Center\ARCH\ACD2987-283 - Penn Medicine Cancer Center\CAD\DWG\ACD2987 - Temporary Parking Lot\ARCH2987-283 - LS-TPL-Proj lighting
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.

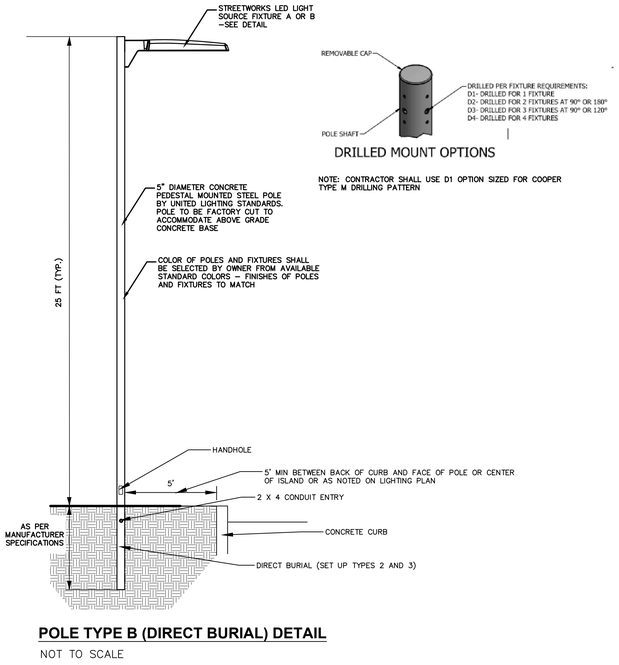


POLE TYPE A (CONCRETE PEDESTAL) DETAIL

NOT TO SCALE

NOTES:

1. POLE A (CONCRETE PEDESTAL OPTION) SHALL BE MANUFACTURED BY UNITED LIGHTING STANDARDS, WARREN, MICHIGAN.
2. POLES SHALL HAVE COAL TAR EPOXY COATING OPTION FOR EMBEDDED PORTION PLUS 6 INCHES OF THE POLE SHAFT
3. LOCAL PRODUCT REP: ENTERPRISE LIGHTING SALES (ANDY CHILDERS), WOODBRIDGE, NJ (ACHILDERS@ENTERELS.COM/732-425-5287)

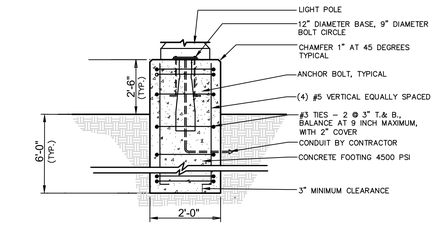


POLE TYPE B (DIRECT BURIAL) DETAIL

NOT TO SCALE

NOTES:

1. POLE TYPE B (DIRECT BURIAL OPTION) SHALL BE MANUFACTURED BY UNITED LIGHTING STANDARDS, WARREN, MICHIGAN. CONTRACTOR SHALL INSTALL POLES VIA DIRECT BURIAL METHODS BASED ON MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. POLES SHALL HAVE COAL TAR EPOXY COATING OPTION FOR EMBEDDED PORTION PLUS 6 INCHES OF THE POLE SHAFT
3. LOCAL PRODUCT REP: ENTERPRISE LIGHTING SALES (ANDY CHILDERS), WOODBRIDGE, NJ (ACHILDERS@ENTERELS.COM/732-425-5287)



CONCRETE FOOTING WITH PEDESTAL DETAIL (FOR POLE TYPE A)

NOT TO SCALE

FIXTURE TYPE A

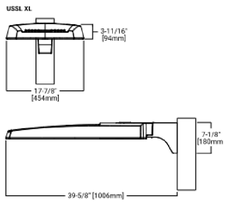
FIXTURE TYPE B

Streetworks

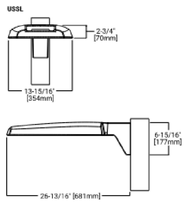
USSL LED

Area / Site Luminaire

Product Features



FIXTURE TYPE A - USSL XL



FIXTURE TYPE B - USSL

FIXTURES TYPE A AND B DETAILS

NOT TO SCALE

NOTES:

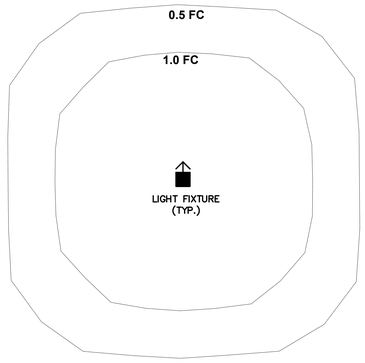
1. FIXTURES SHALL BE STYLE "STREETWORKS" USSL LED MANUFACTURED BY COOPER LIGHTING SOLUTIONS, PEACHTREE, GA. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. COLOR SHALL BE SELECTED FROM STANDARD AVAILABLE COLORS AS APPROVED BY OWNER. COLOR AND FINISH SHALL MATCH PROPOSED POLES.
3. LOCAL PRODUCT REP: ENTERPRISE LIGHTING SALES (ANDY CHILDERS), WOODBRIDGE, NJ (ACHILDERS@ENTERELS.COM/732-425-5287)

LEGEND:

SETUP TYPE 1	FIXTURE TYPE A WITH POLE TYPE A (CONCRETE PEDESTAL FOOTING INSTALLATION)
SETUP TYPE 2	FIXTURE TYPE A WITH POLE TYPE B (DIRECT BURIAL INSTALLATION)
SETUP TYPE 3	FIXTURE TYPE B WITH POLE TYPE B (DIRECT BURIAL INSTALLATION)

LIGHTING NOTES

1. DO NOT INSTALL PROPOSED LIGHTS ON TOP OF ANY PROPOSED OR EXISTING UNDERGROUND UTILITIES. FIELD ADJUST LIGHTS AS NEEDED AS DIRECTED BY THE PROJECT PROFESSIONAL TO ACCOMMODATE ANY POTENTIAL CONFLICTS.
2. SETUP TYPE 1 SHALL HAVE 2.5' CONCRETE PEDESTALS.
3. SETUP TYPE 2 AND 3 SHALL BE PLACED IN CENTERS OF ISLANDS OR 5' MINIMUM FROM THE BACK OF THE CURB OR TO THE FACE OF THE POLE UNLESS OTHERWISE NOTE.D
4. COLOR AND FINISH OF PROPOSED LIGHTS AND POLES SHALL BE SELECTED FROM AVAILABLE STANDARD COLOR BY OWNER. FINISHES OF THE POLE AND LIGHT FIXTURE SHALL MATCH.
5. COLOR OF LED LIGHT SOURCE TO MATCH COLOR RENDITION OF EXISTING CAMPUS LIGHTS.
6. THE CONTRACTOR MUST PROVIDE CONTROL SYSTEM INCLUDING ALL WIRING, CONDUITS, CONNECTIONS AND SWITCHES FOR THE OWNER TO ACTIVATE AND OPERATE THE NIGHTTIME LIGHTING SEQUENCE (DIMMING) FROM A REMOTE LOCATION . CONTRACTOR MUST PROVIDE SHOP DRAWINGS OF THE COMPLETE WORKING CONTROL SYSTEM.
7. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS AND FINISH/COLOR SAMPLES OF ALL LIGHT FIXTURES AND POLES FOR REVIEW AND APPROVAL BY THE APPROPRIATE ENTITIES PRIOR TO ORDERING OF MATERIAL.



TYPICAL LIGHTING FOOTCANDLES VALUES SHOWN FOR ALL FIXTURES

NOT TO SCALE

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

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Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

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Wall, New Jersey 07719
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FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

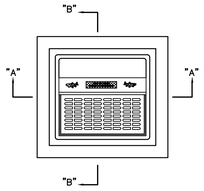
PHASE 1A

LIGHTING DETAILS

C.1A.09

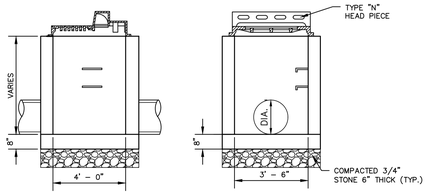
04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:58 AM
O:\CE\20000\20023\T - Cancer Center\NDC\20231.R01 - Penn Medical Cancer Center\CAD\DWG\NDC023T - Temporary Parking Lot\NDC023T.R01 - LLI-TPL.dwg bollet
Penn Medicine Princeton Health Cancer Center Garage
THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.



NOTES:

1. FOOTING TO BE N.J.D.O.T., CLASS "B"
2. INVERT TO BE CLASS "B"
3. IF WALL CONSTRUCTION IS OTHER THAN PRECAST CONCRETE, THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER
4. FRAME AND GRATE TO BE No. 2618 AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR APPROVED EQUAL. TYPE "N" ECO HEAD PIECE.
5. PROVIDE ALUMINUM LADDER RUNGS @ 12" CENTER TO CENTER
6. WHEN ADDITIONAL DEPTH IS SCHEDULE WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO THE INVERT, SHALL BE 12" THICK. THE FOUNDATION DIMENSIONS SHALL BE INCREASED TO 12" WIDTH AND TO 12" IN DEPTH.
7. FOUNDATION AND INVERT TO BE CONSTRUCTED IN 2 STAGES. TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.
8. CONTRACTOR SHALL ORDER PRECAST INLET 1' SHORTER THAN ANTICIPATED TO ACCOMMODATE FOR UNCONFIRMED PIPE INVERTS UNLESS INVERTS HAVE BEEN CONFIRMED DURING THE PRE-CONSTRUCTION INVESTIGATION.

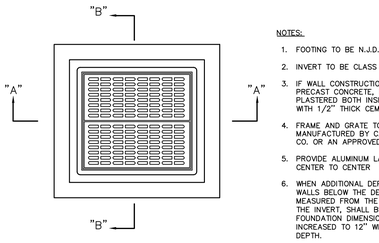


SECTION B-B
"THROUGH" INVERT DETAIL

SECTION A-A
"TERMINAL" INVERT DETAIL

TYPE "B" INLET DETAIL

NOT TO SCALE



NOTES:

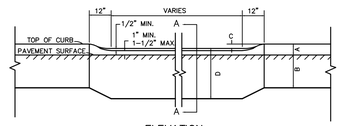
1. FOOTING TO BE N.J.D.O.T., CLASS "C"
2. INVERT TO BE CLASS "C"
3. IF WALL CONSTRUCTION IS OTHER THAN PRECAST CONCRETE, THE WALL SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER
4. FRAME AND GRATE TO BE NO. 3425 AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR AN APPROVED EQUAL
5. PROVIDE ALUMINUM LADDER RUNGS @ 12" CENTER TO CENTER
6. WHEN ADDITIONAL DEPTH IS SCHEDULE WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO THE INVERT, SHALL BE 12" THICK. THE FOUNDATION DIMENSIONS SHALL BE INCREASED TO 12" WIDTH AND TO 12' IN DEPTH.

SECTION A-A
"THROUGH" INVERT DETAIL

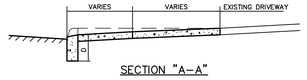
SECTION B-B
"TERMINAL" INVERT DETAIL

TYPE 'E' INLET DETAIL

NOT TO SCALE



ELEVATION

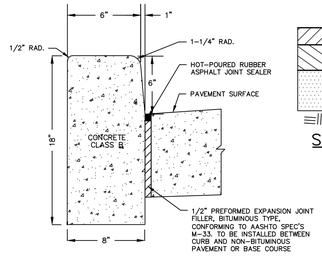


SECTION "A-A"

	A	B	C	D
CONCRETE CURB TYPE I	6"	12"	4" MIN., 4-1/2" MAX.	18"
CONCRETE CURB TYPE II	6"	12"	4" MIN., 4-1/2" MAX.	18"
CONCRETE CURB TYPE III	8"	12"	6" MIN., 6-1/2" MAX.	20"
CONCRETE CURB TYPE IV	8"	12"	6" MIN., 6-1/2" MAX.	20"
CONCRETE CURB TYPE V	8"	12"	6" MIN., 6-1/2" MAX.	20"

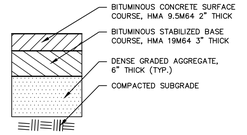
METHOD OF DEPRESSING CURB AT DRIVEWAY DETAIL

NOT TO SCALE



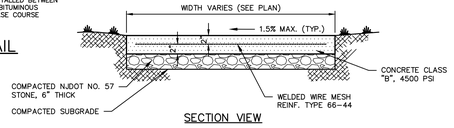
CONCRETE VERTICAL CURB DETAIL

NOT TO SCALE



STANDARD PAVEMENT SECTION DETAIL

NOT TO SCALE



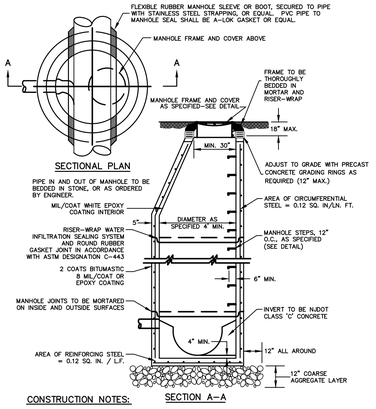
SECTION VIEW

NOTES:

1. PREFORMED BITUMINOUS CELLULAR JOINT FILLERS 1/2" THICK, SHALL BE PLACED AT INTERVALS NOT EXCEEDING TWENTY (20) FEET. DUMMY (FORMED) JOINTS SHALL BE CUT INTO THE CONCRETE SIDEWALK BETWEEN THE EXPANSION JOINTS AT EQUAL INTERVALS NOT EXCEEDING THE WIDTH OF THE SIDEWALK.
2. THE SIDEWALK SUBGRADE SHALL BE NJDOT NO. 57 STONE, 6" THICK OR MATERIAL APPROVED BY THE TOWNSHIP ENGINEER, AND COMPACTED PRIOR TO THE PLACEMENT OF ANY SIDEWALK.
3. THE SIDEWALK SECTION SHALL BE 6" THICK WITH WELDED WIRE FABRIC AT DRIVEWAYS.
4. SIDEWALK SHALL BE 4' WIDE, EXCEPT WHERE ADJACENT TO VEHICLE PARKING AREAS WHERE THE SIDEWALK SHALL BE 6' WIDE.

CONCRETE SIDEWALK, 4" THICK DETAIL

NOT TO SCALE



SECTIONAL PLAN

SECTION A-A

CONSTRUCTION NOTES:

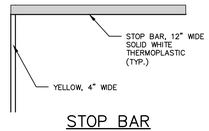
1. PRECAST MANHOLE SECTIONS TO BE IN ACCORDANCE WITH LATEST ASTM DESIGNATION C-478, MINIMUM COMPRESSION STRENGTH TO BE 4000 PSI
2. FLEXIBLE RUBBER BOOT SHALL BE USED FOR CONNECTION OF PVC PIPE TO MANHOLE.
3. PRECAST CHANNELS SHALL NOT BE USED FOR BENDS GREATER THAN 45°. POURED CONCRETE LONG RADIUS CHANNELS SHALL BE CONSTRUCTED.
4. WHEN DESIGN CALLS FOR REGULAR OR LOCKING MANHOLE FRAME AND COVER, INSTALL CONE SECTION WITH 30" OPENING. FOR A WATERTIGHT FRAME AND COVER, INSTALL CONE SECTION WITH 24" OPENING.
5. RISER-WRAP WATER INFILTRATION SYSTEM TO BE INSTALLED AT ALL MANHOLE JOINTS AND FRAME BASE.

STANDARD PRECAST SANITARY MANHOLE

N.T.S.

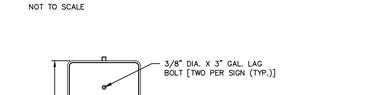
R1-1
30" X 30"

STOP SIGN DETAIL
NOT TO SCALE



STOP BAR
NOT TO SCALE

NOTE:
TO BE SET 4 FT FROM BEHIND CROSSWALK



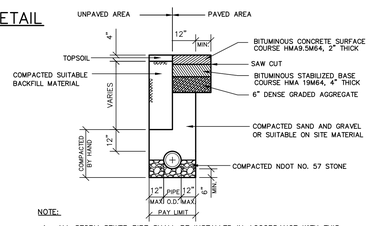
TRENCH WIDTH	PIPE DIAMETER
3'-0	6", 8", 10", 12"
3'-8"	14", 15", 16"
4'-0	18"
4'-3"	20", 21"
4'-6"	24"
4'-10"	27"
5'-0	30"
5'-6"	33"
5'-8"	36"

NOTES:

1. THE BEDDING SHALL BE PROVIDED IN ACCORDANCE WITH STORM PIPE BEDDING DETAIL ON THIS SHEET.
2. THE CONTRACTORS SHALL PROVIDE BEDDING IN ACCORDANCE WITH THE PIPE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

STORM TRENCH WIDTH DETAIL

NOT TO SCALE

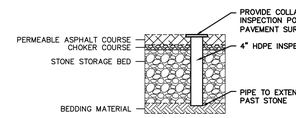


NOTE:

1. ALL STORM SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL AND THE PIPE MANUFACTURER'S SPECIFICATIONS.

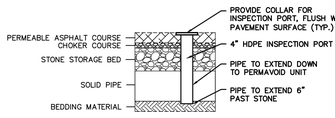
TYPICAL STORM PIPE TRENCH DETAIL

NOT TO SCALE



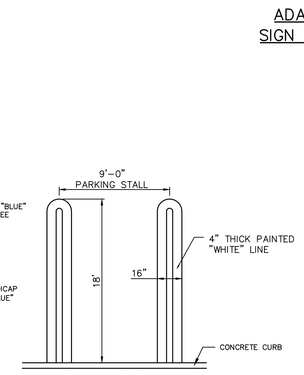
POROUS PAVEMENT INSPECTION PORT DETAIL

NOT TO SCALE



POROUS PAVEMENT INSPECTION PORT DETAIL

NOT TO SCALE

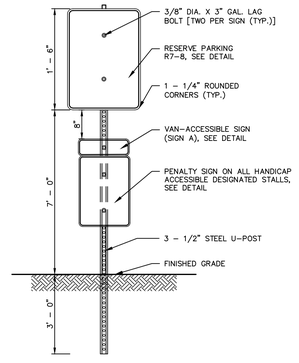


ADA COMPLIANT PARKING STALL DETAIL

NOT TO SCALE

HAIRPIN STYLE PARKING LOT STRIPING DETAIL

NOT TO SCALE

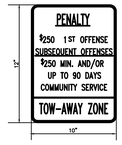


NOTES:

1. ALL SIGNS TO CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
2. OUTSIDE EDGE OF CLOSEST TO ROADWAY SHALL BE A MINIMUM DISTANCE OF 2'
3. THE CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO PURCHASE OF ANY MATERIALS.
4. ALL SIGNS MUST BE BREAKAWAY WITH LAP SPLICE AS SHOWN ON DETAIL

ADA COMPLIANT PARKING SIGN AND SIGN POST DETAIL

NOT TO SCALE



NOTES :
1. BLACK LEGEND ON WHITE REFLECTORIZED BACKGROUND
2. ALL DIMENSIONS ARE IN INCHES.

PENALTY SIGN
R7-8P

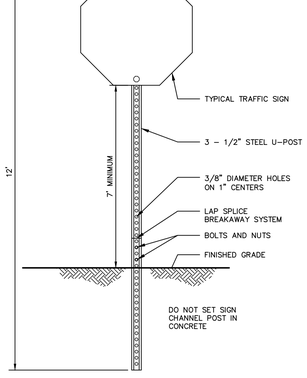
R7-8
12" x 18"

HANDICAPPED PARKING SIGN DETAIL

NOT TO SCALE

NOTES :
1. BLACK LEGEND ON WHITE REFLECTORIZED BACKGROUND
2. ALL DIMENSIONS ARE IN INCHES.

VAN ACCESSIBLE SIGN
NOT TO SCALE

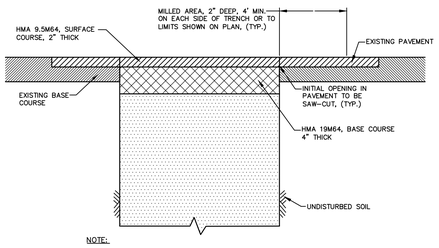


NOTES:

1. ALL REGULATORY AND WARNING SIGNS SHALL BE HIGH INTENSITY REFLECTIVE SHEETING
2. ALL SIGNS SHALL BE FABRICATED USING DG3 SHEETING
3. ALL SIGNS SHALL CONFORM TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION
4. ALL U CHANNEL POSTS ARE TO BE 3 LBS GALVANIZED FINISHED
5. ALL SIGNS MUST BE BREAKAWAY WITH LAP SPLICE AS SHOWN ON DETAIL
6. ALL SIGN AND STRIPING MUST BE IN ACCORDANCE WITH THE LATEST MUTCO

STOP SIGN POST DETAIL

NOT TO SCALE

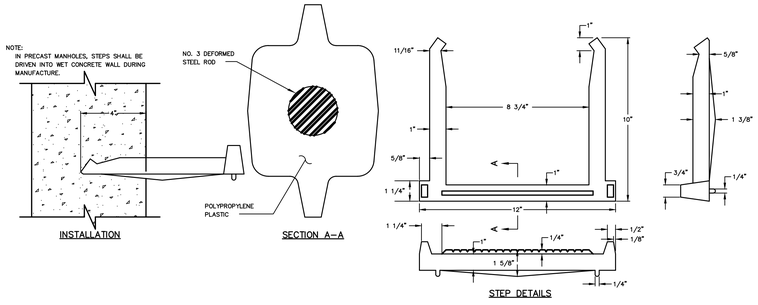


NOTE:

1. TEMPORARY PAVEMENT TO BE MAINTAINED BY CONTRACTOR. NO PERMANENT REPAIR TO BE MADE WITHOUT SPECIFIC APPROVAL OF THE TOWNSHIP ENGINEER AND COUNTY.

PAVEMENT REPAIR DETAIL

NOT TO SCALE



POLYPROPYLENE MANHOLE STEPS

N.T.S.

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH
99 Chauncy Street 4th Floor
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sheplevbulfinch.com
Design Architect

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Blue Bell, PA 19422
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www.tha-consulting.com
Architect / Structural Engineer / Parking Consultant

BR+A Consulting Engineers
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New York, NY, 10016
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brplusa.com
Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

FPA FRENCH & PARRELLO ASSOCIATES
Corporate Office:
1800 Rt 34, Suite 101
Wall, New Jersey 07719
732.312.9800
FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

CONSTRUCTION DETAILS-1

C.1A.10

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
O:\CE\20080\26232\T - Cancer Center\26232T 003 - Penn Medical Cancer Center\CAD\DWG\26232T - Temporary Parking Lot\26232T 003-C01.dwg CONSTRUCTION DETAILS - 1
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.

TALK A PHONE
Creating Communications Solutions

OUTDOOR EMERGENCY PHONES

ETP-400 – Single Button Emergency Phone

ETP-400

Description
The **ETP-400** is an outdoor-rated, ADA-compliant hands-free Emergency Phone for use in locations such as: parking facilities, college campuses, controlled access gates, medical centers and industrial parks.

Features
- Cast metal raised letter and Braille signage for ADA compliance
- Vandal resistant stainless steel faceplate and metal button
- Uses regular phone lines or PBX
- Phone line powered: no power supply or battery back-up needed
- Circuit boards are conformally coated for water protection
- LED indicator for hearing impaired
- Auxiliary input and outputs to integrate with CCTV, Blue Light Strobe, Scream Alert™ and other devices
- Built-in auto-dialer can dial two numbers: if first number doesn't answer or is busy, dials second number
- Auto-answer allows security to monitor and initiate calls with Emergency Phone
- Options available that offer the ability to automatically identify attendant of location of calling phone by recorded message and digital display

Specifications
Construction:	12 gauge (2.8mm) #4 brushed stainless steel faceplate
Dimensions:	Front Panel: 9.5(241) W x 11.75(298) H in(mm) Back Box: 6.63(168) W x 9.75(248) H x 2.5(64) D in(mm)
Weight:	8 lbs. (3.6kg)
Operating Temperature:	-4°F to +149°F (-20°C to +65°C)
Mounting:	Flush mounts (surface mount options available)
Communication:	2-way hands-free communication
Digit Capacity:	Up to 18 digits, including pauses, for each of two phone numbers
Dialing Speed:	Approximately 10 tones per second
Power Source:	Phone line powered (requires 20mA at 24 v off-hook)
Connection:	Parallel tip and ring connected to RJ11 connector for quick installation
Circuit Protection:	Varistor lightening suppressed and full wave polarity guarded
Programming:	Non-volatile EEPROM programming can be done from any telephone No battery back up is needed
"On Time":	Programmable from 1-4270 minutes in 1-minute increments
Recommended Wiring:	1 twisted-shielded pair
Compliance:	CSA Certified to UL Standard 60950

Options & Accessories
Voice Location Identifier:	Model **ETP-400V** includes the capability to record a message identifying the location of the call. Message is recorded and duration set during programming
"TO CALL" Casting:	Use Model **ETP-400C** for a button that reads **TO CALL** instead of **EMERGENCY**
8-Line Consolidator:	Model **EC-8** allows connection of up to 8 phones on one phone line while retaining ability to call each phone individually. Can also create a closed system without need for any phone lines
Monitoring/Diagnostic Software Package:	Talk-A-Lert®, model **ETP-TAL**, automatically polls each Emergency Phone, reports incoming calls and keeps permanent records of all events
Faceplate Camera:	Add "OP3" to model number to add a color pinhole camera mounted discreetly behind the faceplate. Add "OP3BW" for a b/w camera

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Phone 773.539.1100 • Fax 773.539.1241 • info@talkaphone.com • www.talkaphone.com
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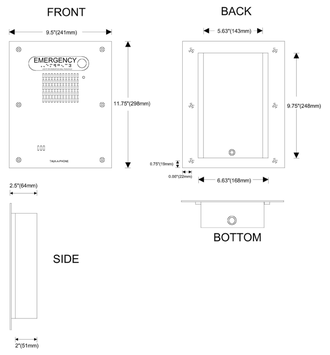
ETP-400 – Single Button Outdoor Emergency Phone

Dimensions



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EMERGENCY PHONE MOUNTS

ETP-MT – Emergency Phone Tower

Description
Vandal-resistant Emergency Phone Tower systems provide exceptional clarity, performance and a sense of security. Towers are often used in college campuses, parking facilities, shopping malls, medical centers and industrial campuses.

Features
- Attention-getting blue light strobe included and mounted atop unit: blue light is continuously lit, strobe is activated when **EMERGENCY** button is pressed and flashes for duration of call.
- Faceplate is lit at all times by ultrabright LEDs
- Designed to resist extreme weather conditions
- A variety of lettering, signage and color choices are available
- Talk-A-Phone 400-Series flush mounting Emergency/Information Phone mounts easily into unit (order separately)
- ADA-compliant

Specifications
Dimensions:	10.0(254) W x 8.0(203) D x 114.2(2901) H in(mm)
Weight:	280 lbs. (127 kg)
Construction:	0.25 in (6.3 mm) steel with multi-coat rust inhibitive coating
Lighting:	Strobe: 1.5 million candlepower, 70 flashes per minute Blue Light: 7 watt high efficiency, 10,000 hour compact fluorescent Faceplate Light: Ultrabright LEDs, 100,000 hour lifetime
Lettering:	3.25 in (82.5 mm) high reflective white letters, also available in other colors and with other wording
Power:	Blue light strobe and faceplate light require 120VAC (170mA for each light, 2 amps for each 5 milliseconds flash of strobe); available in 12VDC/24VAC/24VDC
Mounting:	Mounts into concrete foundation using included hardware (shipped in advance). Mounting options available for pre-poured decks.
Compliance:	CSA Certified to UL Standard 60950

Communication Options
Emergency Phone:	Model **ETP-400** has a standard red **EMERGENCY** button
Emergency/Info Phone:	Model **ETP-400D** has a red **EMERGENCY** button and a black **INFO** button to allow two different types of locations to be called
Emergency/Keypad Phone:	Model **ETP-400K** has a red **EMERGENCY** button as well as a black **CALL** button, which allows access to the built-in keypad
RF Interface:	Models **VOIP-RF** and **VOIP-1** when used in conjunction with a phone listed above creates a Radio Frequency Emergency Phone. (Note: other RF equipment is required for a complete system)
Cellular Interface:	Model **ETP-CI** when used in conjunction with a phone listed above creates a stand-alone cellular Emergency Phone Tower

Options & Accessories
Fixed CCTV Option:	Model **ETP-MT OP 3** includes a Silent Witness fixed b/w camera
CCTV Housing Option:	Model **ETP-MT OP 2** includes a housing for mounting your own fixed CCTV
Parking Deck Mounting Kit:	Order model **ETP-PDMK-2** to mount on pre-poured parking deck

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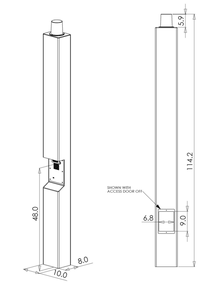
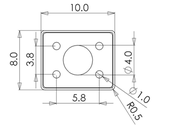
Phone 773.539.1100 • Fax 773.539.1241 • info@talkaphone.com • www.talkaphone.com
All prices and specifications are subject to change without notice.

ETP-MT – Emergency Phone Tower

Dimensions



Footprint Dimensions



All dimensions are in inches

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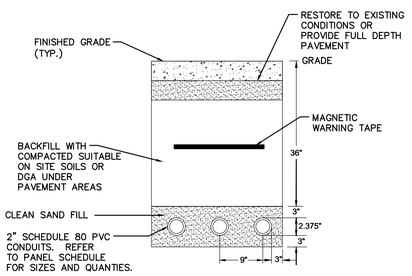
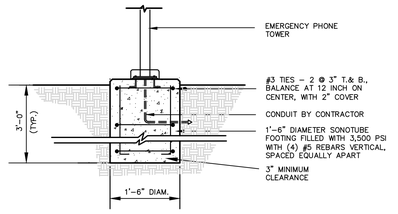


TYPICAL CONDUIT DUCTBANK DETAIL

NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO CONFIRM THE EMERGENCY PHONE TOWER SPECIFICATIONS SO THAT THE ANCHOR BOLTS AND TIES ARE CONSISTENT WITH THE MANUFACTURER OF THE EMERGENCY PHONE CALL TOWER.
2. CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL CONDUIT DUCT BANK SYSTEM WITH PULL STRING AND FOUNDATION FOR EMERGENCY CALL BOX.
3. EMERGENCY PHONE CALL TOWER AND WIRING SHALL BE INSTALLED BY SELECTED VENDOR OF PENN MEDICINE.

EMERGENCY PHONE TOWER FOOTING DETAIL

NOT TO SCALE

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health

1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH

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shepleybulfinch.com
Design Architect

THA

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Blue Bell, PA 19422
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www.tha-consulting.com
Architect / Structural Engineer / Parking Consultant

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FPA FRENCH & PARRELLO ASSOCIATES
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

Corporate Office:
1800 Rt 34, Suite 101
Wall, New Jersey 07719
732.312.9800
FPAengineers.com

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Temporary Parking Lot

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

CONSTRUCTION DETAILS-2

C.1A.11

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
O:\CE\20666\DC0287 - Cancer Center\SD\C287_001 - Penn Medicine Cancer Center\CAD\DWG\SHEET - Temporary Parking Lot\SD\C287_001-C01-2.dwg CONSTRUCTION DETAILS - 2

Penn Medicine Princeton Health Cancer Center Garage

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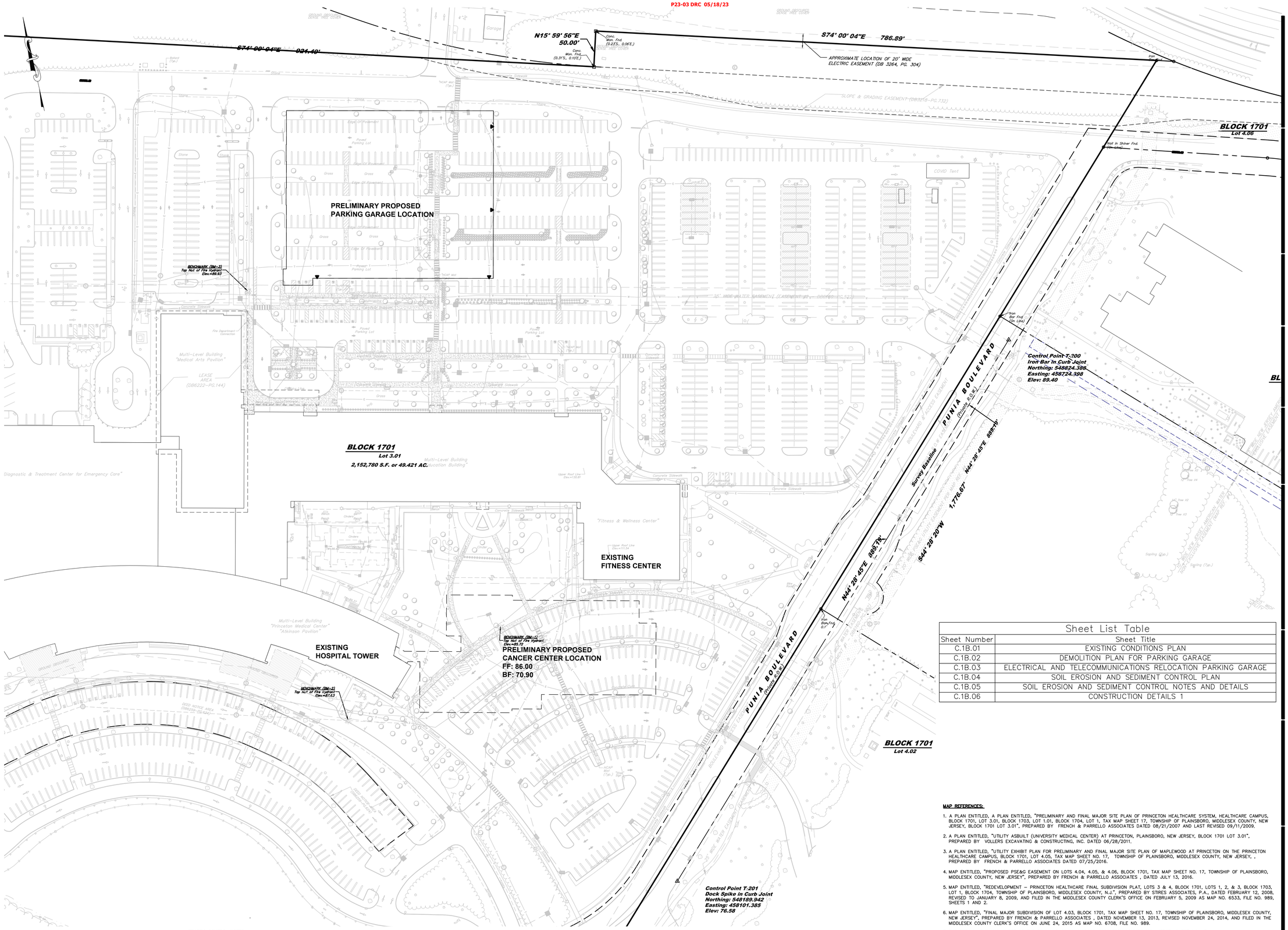
P23-03 DRC 05/18/23



Sheet List Table	
Sheet Number	Sheet Title
C.1B.01	EXISTING CONDITIONS PLAN
C.1B.02	DEMOLITION PLAN FOR PARKING GARAGE
C.1B.03	ELECTRICAL AND TELECOMMUNICATIONS RELOCATION PARKING GARAGE
C.1B.04	SOIL EROSION AND SEDIMENT CONTROL PLAN
C.1B.05	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C.1B.06	CONSTRUCTION DETAILS 1

LEGEND

- W — WATER MAIN LINE
- T — TELECOMMUNICATIONS LINE
- E — ELECTRICAL SERVICE LINE
- SANITARY SEWER LINE
- STORMWATER LINE
- G — GAS LINE

TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE TO INSURE THE SAFE, ORDERLY AND EXPEDITIOUS CIRCULATION OF VEHICULAR AND PEDESTRIAN TRAFFIC FLOW AT ALL TIMES. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 12 FEET WIDE, TRAVEL LANE FOR EACH DIRECTION OF TRAFFIC FLOW ALONG THE ADJACENT ROADWAYS, AT ALL TIMES DURING HIS CONSTRUCTION ACTIVITIES, TO ALLOW LOCAL AND EMERGENCY TRAFFIC ACCESS.
2. WATCHMEN AND FLAGMEN SHALL BE EMPLOYED BY THE CONTRACTOR FOR THE PROTECTION OF ANY EQUIPMENT ENTERING, LEAVING OR CROSSING ACTIVE TRAFFIC LANES, OR AS MAY BE REQUIRED FOR ROUTING OF ANY TRAFFIC AROUND OR THROUGH THE CONSTRUCTION. WATCHMEN AND FLAGMEN WILL BE EMPLOYED BY THE CONTRACTOR AT HIS OWN EXPENSE.
3. ALL TRAFFIC CONTROL, MEASURES, DEVICES SIGNAGE, ETC., SHALL BE PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. THE CONTRACTOR SHALL PROVIDE ANY/ALL TEMPORARY ADVISORY AND WAY FINDING SIGNAGE TO DIRECT TRAFFIC AND PEDESTRIANS AROUND CONSTRUCTION ACTIVITIES AND/OR TO RELOCATED DESTINATIONS (BUILDINGS, EXITS, ETC.).

UTILITY NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION OR CONSTRUCTION ACTIVITIES TO DETERMINE THE EXACT LOCATIONS AS NECESSARY. THE LOCATION AND TYPE OF THE EXISTING UTILITIES SHOWN ON THESE PLANS IS NOT GUARANTEED TO BE ACCURATE NOR ALL INCLUSIVE. THE CONTRACTOR SHALL USE THE EXISTING UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS. THE CONTRACTOR MUST CONTACT THE"ONE CALL SYSTEM" AT 1-800-272-1000 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION AND/OR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DIG TEST PITS TO VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO BID, DEMOLITION, OR CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING ABANDONED UTILITIES IN THE PATH OF NEW UTILITY CONSTRUCTION, SITE IMPROVEMENTS, AND/OR BUILDING CONSTRUCTION.

NOTES:

1. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A PLAN ENTITLED "TOPOGRAPHIC SURVEY PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO LOTS 3.01 & 4.04, BLOCK 1701 SITUATED IN THE TOWNSHIP OF PLAINSBORO MIDDLESEX COUNTY, NEW JERSEY", DATED 08-04-2022
2. ANY UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON ABOVE GROUND OBSERVATIONS, UTILITY MARKING FOUND IN THE FIELD AND/OR INFORMATION SUPPLIED BY THE UTILITY COMPANIES. SINCE NO PHYSICAL LOCATION OF THE UNDERGROUND FACILITIES HAVE BEEN MADE BY THE UNDERSIGNED, NO GUARANTEE IS BEING MADE FOR THEIR COMPLETENESS OR ACCURACY.
3. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND OBTAIN SERVICE CONNECTIONS FROM EACH OF THE APPLICABLE UTILITY COMPANIES.

MAP REFERENCES:

1. A PLAN ENTITLED, A PLAN ENTITLED, "PRELIMINARY AND FINAL MAJOR SITE PLAN OF PRINCETON HEALTHCARE SYSTEM, HEALTHCARE CAMPUS, BLOCK 1701, LOT 3.01, BLOCK 1703, LOT 1.01, BLOCK 1704, LOT 1, TAX MAP SHEET 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY, BLOCK 1701 LOT 3.01", PREPARED BY FRENCH & PARRELLO ASSOCIATES DATED 08/21/2007 AND LAST REVISED 09/11/2009.
2. A PLAN ENTITLED, "UTILITY ASBUILT (UNIVERSITY MEDICAL CENTER) AT PRINCETON, PLAINSBORO, NEW JERSEY, BLOCK 1701 LOT 3.01", PREPARED BY VOLLERS EXCAVATING & CONSTRUCTING, INC. DATED 06/28/2011.
3. A PLAN ENTITLED, "UTILITY EXHIBIT PLAN FOR PRELIMINARY AND FINAL MAJOR SITE PLAN OF MAPLEWOOD AT PRINCETON ON THE PRINCETON HEALTHCARE CAMPUS, BLOCK 1701, LOT 4.05, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY, , PREPARED BY FRENCH & PARRELLO ASSOCIATES DATED 07/25/2016.
4. MAP ENTITLED, "PROPOSED PSE&G EASEMENT ON LOTS 4.04, 4.05, & 4.06, BLOCK 1701, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY FRENCH & PARRELLO ASSOCIATES , DATED JULY 13, 2016.
5. MAP ENTITLED, "REDEVELOPMENT – PRINCETON HEALTHCARE FINAL SUBDIVISION PLAT, LOTS 3 & 4, BLOCK 1701, LOTS 1, 2, & 3, BLOCK 1703, LOT 1, BLOCK 1704, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, N.J.", PREPARED BY STIRES ASSOCIATES, P.A., DATED FEBRUARY 12, 2008, REVISED TO JANUARY 8, 2009, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON FEBRUARY 5, 2009 AS MAP NO. 6533, FILE NO. 989, SHEETS 1 AND 2.
6. MAP ENTITLED, "FINAL MAJOR SUBDIVISION OF LOT 4.03, BLOCK 1701, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY FRENCH & PARRELLO ASSOCIATES , DATED NOVEMBER 13, 2013, REVISED NOVEMBER 24, 2014, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON JUNE 24, 2015 AS MAP NO. 6708, FILE NO. 989.
7. THE OFFICIAL TAX MAP SHEET OF THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY SHEET NO. 17.

APPROVED AS A PRELIMINARY AND FINAL MAJOR SITE PLAN BY THE TOWNSHIP OF PLAINSBORO PLANNING BOARD ON

CHAIRMAN _____ DATE _____

SECRETARY _____ DATE _____

50 0 50 100
SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health

1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH

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Boston, MA 02111
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ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Utility Relocation Plan

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1B

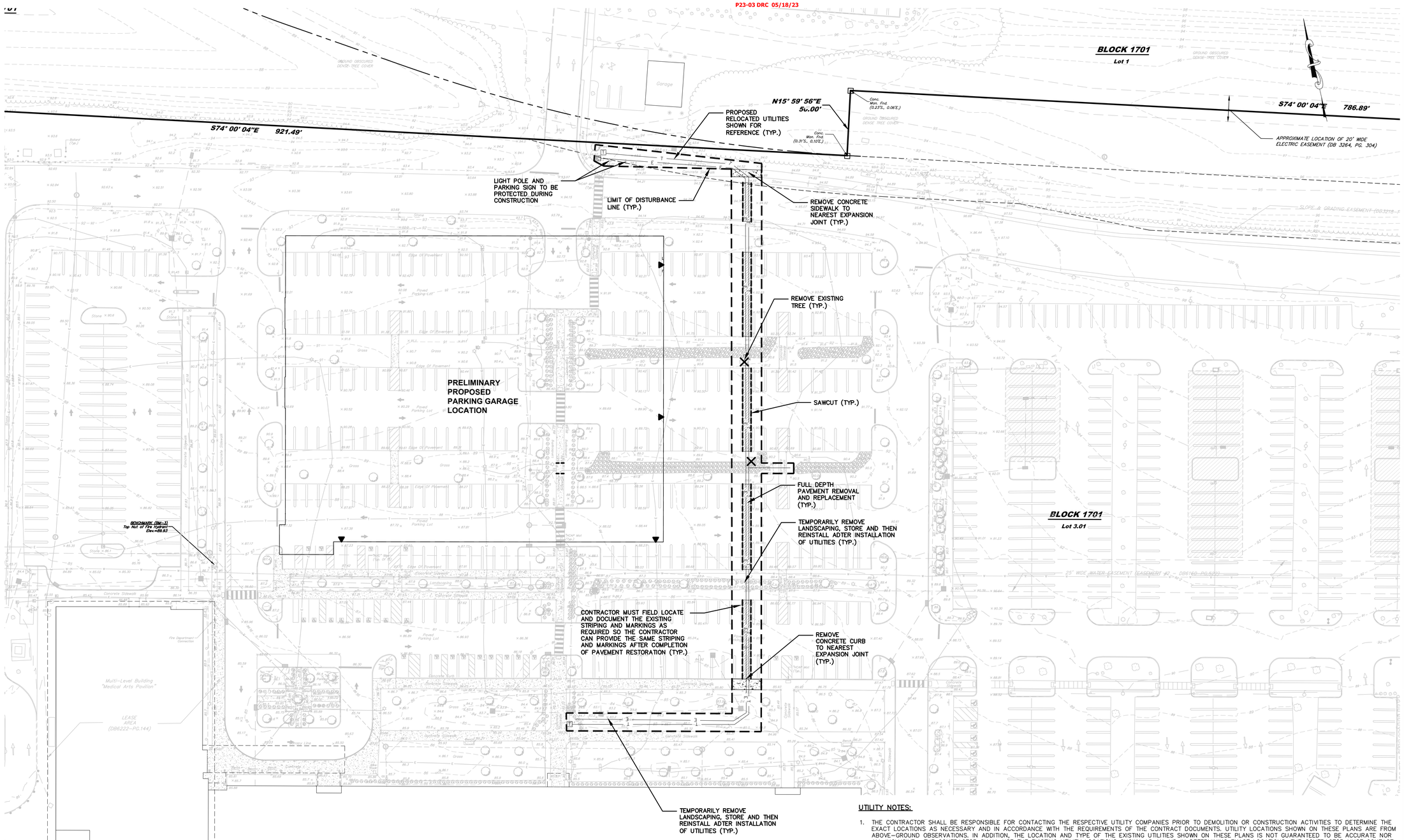
EXISTING CONDITIONS PLAN

C.1B.01

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
O:\22\22006622\SAT - Cancer Center\REDSAT\ 003 - Penn Medical Cancer Center\CAD\DWG\REDSAT - Utility Plans\REDSAT-002 - DEMO.dwg EXISTING CONDITIONS
Layout: C.1B.01
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.



LEGEND:

- LIMITS OF FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT
- LIMITS OF CONCRETE SIDEWALK REMOVAL AND REPLACEMENT
- REMOVE AND REPLACE CONCRETE CURB
- SAWCUT
- REMOVE EXISTING TREE
- LIMIT OF DISTURBANCE
- RELOCATE EXISTING TREE
- RELOCATED TREE

DEMOLITION NOTES:

1. ALL EXISTING SITE FEATURES AND STRUCTURES SHALL BE DEMOLISHED AND REMOVED SHALL BE DONE IN SUCH A MANNER SO AS TO MINIMIZE DISTURBANCE TO THE SURROUNDING PROPERTIES, NO DUST, PARTICLES OF DEBRIS OR WATER FROM THE DUST CONTROL SHALL BE PERMITTED OUTSIDE OF THE DESIGNATED WORK AREAS.
2. ALL EXISTING SITE FEATURES AND STRUCTURES SHALL BE DEMOLISHED IN THEIR ENTIRETY, OR AS REQUIRED TO CONSTRUCT SITE IMPROVEMENT ELEMENTS. THE CONTRACTOR IS RESPONSIBLE TO FILL EXCAVATED VOIDS WITH DENSE GRADED AGGREGATE WHICH MUST BE PLACED AND COMPACTED PER THE SPECIFICATIONS. ALL DISTURBED AREAS MUST BE FINE GRADED, COVERED WITH A MINIMUM OF 5" OF TOPSOIL AND THEN SEEDED IN ACCORDANCE WITH SPECIFICATIONS.
3. DURING ALL DEMOLITION AND CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL A SILT FENCE AND HAY BALE SEDIMENT BARRIERS AROUND THE PERIMETERS OF THE WORK AREAS TO MAINTAIN ADEQUATE SILT AND SOIL EROSION CONTROL AND ADEQUATE WATER DRAINAGE AROUND DISTURBED AREAS TO MAINTAIN ADEQUATE CONTROL UNTIL BACKFILLING AND REGRADING OPERATIONS ARE COMPLETED AND THE AREA IS STABILIZED.
4. UPON COMPLETION OF THE CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL REMOVE ALL MATERIALS AND DEBRIS FROM THE PROJECT SITE AND AS DIRECTED BY THE OWNER. THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR FERTILIZING AND SEEDING ALL EXPOSED AREAS IN THE PROJECT SITE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL DEBRIS, CONCRETE, ASPHALT, STONE, SOIL MATERIALS, TOPSOIL, VEGETATION AND ANY MATERIALS GENERATED DURING HIS DEMOLITION AND CONSTRUCTION ACTIVITIES. ALL EXCESS DEBRIS AND MATERIALS MUST BE REMOVED TO A NJDEP APPROVED LANDFILL. NO ON-SITE BURIAL OF DEBRIS WILL BE ALLOWED.

UTILITY NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION OR CONSTRUCTION ACTIVITIES TO DETERMINE THE EXACT LOCATIONS AS NECESSARY AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. UTILITY LOCATIONS SHOWN ON THESE PLANS ARE FROM ABOVE-GROUND OBSERVATIONS. IN ADDITION, THE LOCATION AND TYPE OF THE EXISTING UTILITIES SHOWN ON THESE PLANS IS NOT GUARANTEED TO BE ACCURATE NOR ALL INCLUSIVE. THE CONTRACTOR SHALL USE THE EXISTING UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS. THE CONTRACTOR MUST CONTACT THE "ONE CALL SYSTEM" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE EXACT LOCATION OF THE EXISTING UTILITIES, AS REQUIRED TO PERFORM THE DEMOLITION AND CONSTRUCTION ACTIVITIES WHICH MAY INCLUDE EXCAVATION OF TEST PITS, HAND EXCAVATION, RETAIN THE SERVICES OF AN UNDERGROUND UTILITY LOCATION CONTRACTOR, PERFORMING GROUND PENETRATION RADAR OR OTHER MEANS AND METHODS AS REQUIRED BY THE CONTRACTOR TO LOCATE AND PROTECT THE UTILITIES AS INDICATED ON THE PLANS AND SPECIFICATIONS FROM DAMAGE OR DISRUPTION BY HIS ACTIVITIES.
3. IF ANY UTILITY FACILITIES ARE DISRUPTED OR DAMAGED DURING THE CONSTRUCTION WORK ASSOCIATED WITH THIS PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR RESTORING THE UTILITY FACILITIES BY THE END OF THE WORKING DAY AT NO ADDITIONAL EXPENSE TO THE OWNER.
4. THE CONTRACTOR SHALL PROCURE ALL NECESSARY PERMITS AND LICENSES REQUIRED TO CARRY OUT HIS WORK IN FULL ACCORDANCE WITH REQUIREMENTS OF ALL REGULATIONS AND AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND ALL CODES, RULES AND REGULATIONS OF HEALTH, PUBLIC OR OTHER AUTHORITY CONTROLLING OR LIMITING THE METHODS, MATERIAL TO BE USED, OR THE ACTIONS OF OF THOSE EMPLOYED IN WORK OF THIS KIND. ALL WORK, LABOR OR MATERIAL NECESSARY TO COMPLY WITH THESE LAWS, CODES, RULES AND REGULATIONS SHALL BE PERFORMED AND FURNISHED BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FERTILIZING AND SEEDING ALL AREAS DISTURBED BY HIS ACTIVITIES WITHIN THE LIMITS OF THE PROJECT SITE. PAVEMENT REPLACEMENT AND ALL OTHER SITE RESTORATION WORK WITHIN THE PROJECT SITE SHALL MEET THE REQUIREMENTS OUTLINED IN THE SPECIFICATIONS AND CONTRACT PLANS.
6. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL NECESSARY EQUIPMENT AND METHODS TO KEEP EXCAVATIONS FREE OF WATER AND PROTECT WORK AND ADJACENT STRUCTURES FROM DAMAGE BY WATER DURING ALL STAGES OF HIS ACTIVITIES. NO SEPARATE PAYMENT WILL BE MADE FOR DEWATERING OPERATIONS AND ALL COSTS THEREOF SHALL BE INCLUDED IN THE PRICE BID FOR THIS PROJECT.
7. THE CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN SHEETING, BRACING, SHORING AND OTHER SUPPORTS REQUIRED BY HIS WORK AND TO PROTECT ADJACENT STRUCTURES. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND ALL COSTS THEREOF SHALL BE INCLUDED IN THE PRICE BID FOR THIS PROJECT.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE ANY AND ALL SAFETY BARRIERS TO PROPERLY SECURE HIS PROJECT WORK AREA. THE SAFETY STANDARDS MUST INCLUDE BUT ARE NOT LIMITED TO SAFETY CONES, SNOW PLASTIC FENCE, TEMPORARY FENCING, BARRICADES, SIGNAGE AND FLAGMAN AS REQUIRED TO MAINTAIN A SAFE AND SECURE WORK AREA.
9. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO ASSIST WITH SECURING THE PARKING, ACCESS DRIVEWAYS AND/OR WALKWAYS AS MAY BE REQUIRED TO PERFORM THE UTILITY AND RESTORATION WORK.

30 0 30 60
SCALE IN FEET

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Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

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NO.	DATE	DESCRIPTION

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Penn Medicine Princeton Health Utility Relocation Plan

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1B

DEMOLITION PLAN FOR PARKING GARAGE

C.1B.02

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:06 AM
G:\CD\2022\NBR22119 - Cancer Center\NBC\SDT.d93 - Penn Medical Cancer Center\CAD\DWG\NBC\SDT - Utility Plans\NBC\SDT.d93 - DEMO.dwg DEMOLITION PLAN 1
Penn Medicine Princeton Health Cancer Center Garage

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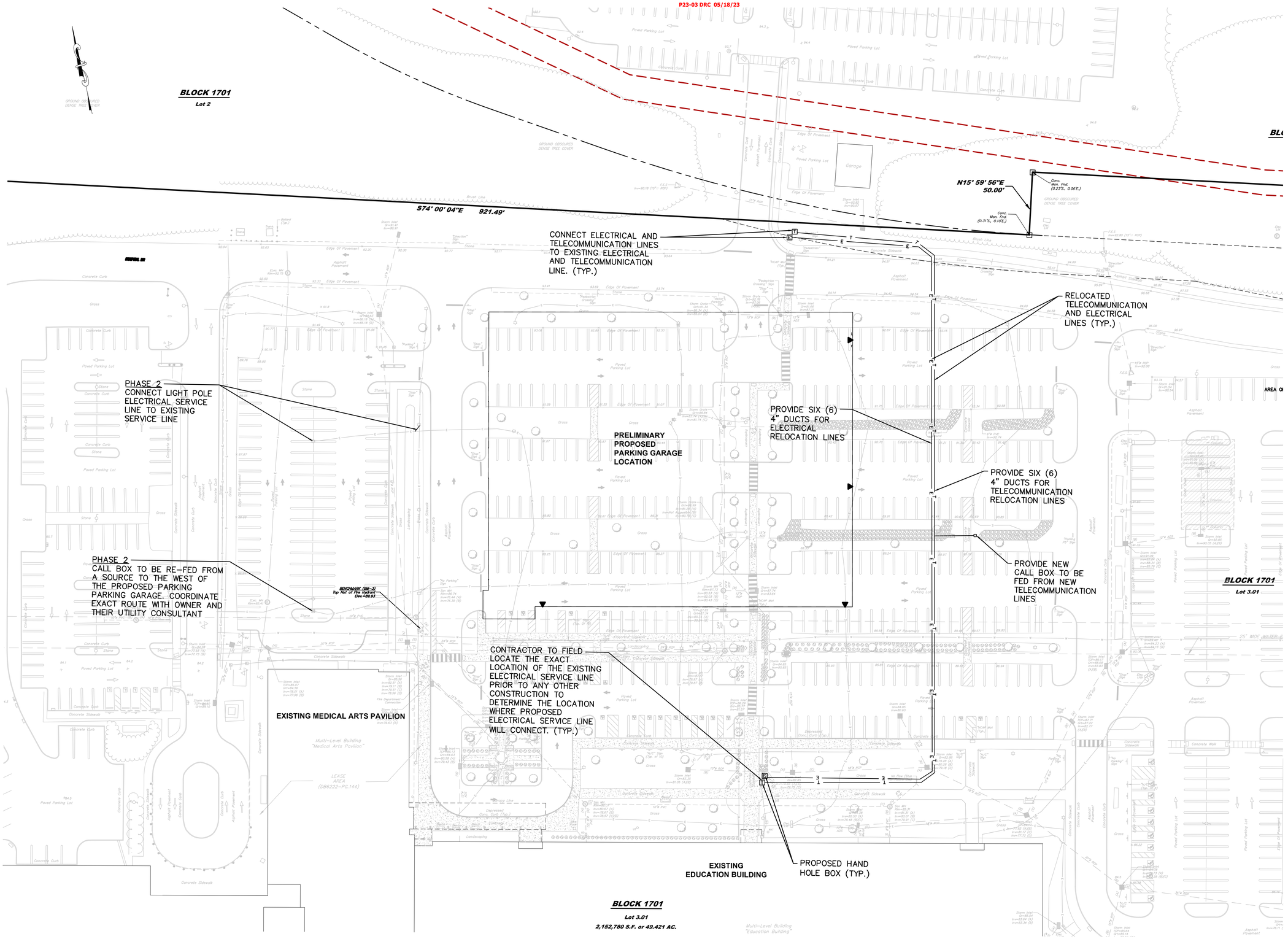
P23-03 DRC 05/18/23



LEGEND

- W — WATER MAIN LINE
- T — TELECOMMUNICATIONS LINE
- E — ELECTRICAL SERVICE LINE
- SANITARY SEWER LINE
- STORMWATER LINE
- G — GAS LINE

TELECOMMUNICATIONS LINE OWNERS

1. CARRIER ZAYO FIBER
   KEVIN NEVITT – ACCOUNT EXECUTIVE
   KEVIN.NEVITT@ZAYO.COM
   O: 212-803-5603 M: 610-984-3523

NOTES

1. CONTRACTOR SHALL COORDINATE WITH THE COMMUNICATIONS VENDORS (ZAYO FIBER) TO CONFIRM CONDUIT SIZE AND HAND HOLE BOX REQUIREMENTS.
2. CONTRACTOR SHALL INSTALL CONDUIT DUCTBANK SYSTEM WITH PULL STRINGS AND HAND HOLE BOXES AS PER VENDOR SPECIFICATIONS
3. CONTRACTOR IS RESPONSIBLE TO RESTORE THE EXISTING SITE CONDITIONS, I.E. PAVEMENT, CURB, WALKWAYS, STRIPING, SIGNAGE AND LAWN. LANDSCAPE AREAS.

PHASING NOTES

1. ALL PROPOSED WORK SHALL FALL UNDER PHASE 1 UNLESS OTHERWISE NOTED.

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Penn Medicine Princeton Health Cancer Center Garage

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Penn Medicine Princeton Health Utility Relocation Plan

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

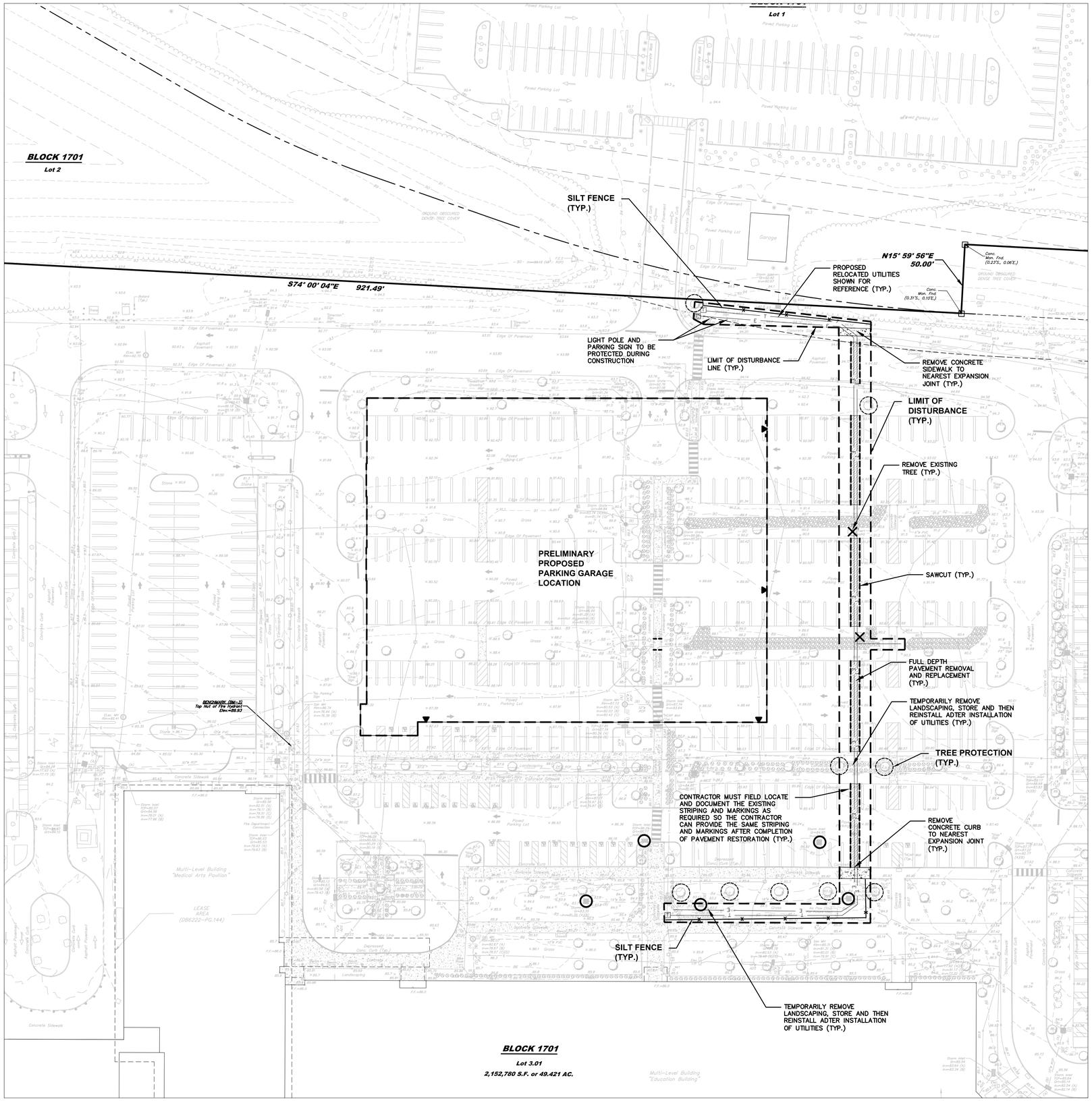
PHASE 1B

ELECTRICAL AND TELECOMMUNICATIONS RELOCATION PARKING GARAGE

C.1B.03

04/14/2023 SITE PLAN SUBMISSION

P23-03 DRC 05/18/23



KEY MAP
NTS

LEGEND

- W — WATER MAIN LINE
- T — TELECOMMUNICATIONS LINE
- E — ELECTRICAL SERVICE LINE
- SANITARY SEWER LINE
- STORMWATER LINE
- G — GAS LINE
- LIMITS OF FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT
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- REMOVE AND REPLACE CONCRETE CURB
- SAWCUT
- REMOVE EXISTING TREE
- LIMIT OF DISTURBANCE
- RELOCATE EXISTING TREE
- RELOCATED TREE
- TREE PROTECTION
- INLET PROTECTION

LIMIT OF DISTURBANCE
13,127 S.F. +/-
0.301 AC +/-

THIS PLAN IS USED FOR SOIL EROSION AND SEDIMENT CONTROL PURPOSES ONLY

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Penn Medicine Princeton Health Cancer Center Garage

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NO.	DATE	DESCRIPTION

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Penn Medicine Princeton Health Utility Relocation Plan

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1B

SOIL EROSION AND SEDIMENT CONTROL PLAN

C.1B.04

04/14/2023 SITE PLAN SUBMISSION

P23-03 DRC 05/18/23

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE FREEHOLD SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY SOIL DISTURBING ACTIVITY.
2. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
4. N.J.S.A 4:24-39 ET. SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THE DISTRICT DETERMINES THAT A PROJECT OR PORTION THEREOF IS IN FULL COMPLIANCE WITH THE CERTIFIED PLAN AND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY AND A REPORT OF COMPLIANCE HAS BEEN ISSUED. UPON WRITTEN REQUEST FROM THE APPLICANT, THE DISTRICT MAY ISSUE A REPORT OF COMPLIANCE WITH CONDITIONS ON A LOT-BY-LOT OR SECTION-BY-SECTION BASIS, PROVIDED THAT THE PROJECT OR PORTION THEREOF IS IN SATISFACTORY COMPLIANCE WITH THE SEQUENCE OF DEVELOPMENT AND TEMPORARY MEASURES FOR SOIL EROSION AND SEDIMENT CONTROL HAVE BEEN IMPLEMENTED, INCLUDING PROVISIONS FOR STABILIZATION AND SITE WORK.
5. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN SIXTY (60) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING IN THE SEASON PRIORITS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF 2 TO 2 ½ TONS PER ACRE, ACCORDING TO STATE STANDARD FOR STABILIZATION WITH MULCH ONLY.
6. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AND A MULCH ANCHOR, IN ACCORDANCE WITH STATE STANDARDS.
7. A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS TO STABILIZE STREETS, ROADS, DRIVEWAYS, AND PARKING AREAS IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN FIFTEEN (15) DAYS OF THE PRELIMINARY GRADING.
8. THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS REQUIRES THE INSTALLATION OF A PAD OF CLEAN CRUSHED STONE AT POINTS WHERE TRAFFIC WILL BE ACCESSING THE CONSTRUCTION SITE. AFTER INTERIOR ROADWAYS ARE PAVED, INDIVIDUAL LOTS REQUIRE A STABILIZED CONSTRUCTION ENTRANCE CONSISTING OF ONE INCH TO TWO INCH (1" – 2") STONE FOR A MINIMUM LENGTH OF TEN FEET (10') EQUAL TO THE LOT ENTRANCE WIDTH. ALL OTHER ACCESS POINTS SHALL BE BLOCKED OFF.
9. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS WILL BE REMOVED IMMEDIATELY.
10. PERMANENT VEGETATION IS TO BE SEEDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING.
11. AT THE TIME THAT SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT IT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
12. IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS/ACRE, (OR 450 LBS/SQ FT OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12' OF SETTLED SOIL WITH A PH OF 5 OR MORE, OR 24' WHERE TREES OR SHRUBS ARE TO BE PLANTED.
13. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
14. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER. ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE STANDARD FOR DEWATERING.
15. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET, TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED AS REQUIRED BY THE STANDARD FOR DUST CONTROL.
16. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STOCKPILES NOT LOCATED WITHIN THE LIMIT OF DISTURBANCE WILL REQUIRE CERTIFICATION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN. CERTIFICATION OF A NEW SOIL EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED FOR THESE ACTIVITIES IF AN AREA GREATER THAN 5,000 SQUARE FEET IS DISTURBED.
17. ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL NOTE #6.
18. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BELOW STORMWATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

FREEHOLD SOIL CONSERVATION DISTRICT
4000 KOZLOSKI ROAD
FREEHOLD NEW JERSEY 07728
(732) 683-8500

ACID SOILS NOTES

IN ORDER TO PROVIDE SUITABLE CONDITIONS FOR GROWTH AND VEGETATION AND TO PREVENT THE ACIDIFYING OF DRAINAGE WATER IN THOSE AREAS UNDERLAIN WITH ACID FORMATIONS WITH A ph BELOW 4.0 THE FOLLOWING REQUIREMENT SHALL BE MET:

1. LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID PRODUCING SOILS ARE ENCOUNTERED.
2. TOPSOIL STRIPPED FROM THE SITE SHALL BE STORED SEPARATELY FROM TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOILS.
3. STOCKPILES OF HIGH ACID PRODUCING SOIL SHOULD BE LOCATED ON LEVEL LAND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THIS MATERIAL HAS A HIGH CLAY CONTENT.
4. TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOIL MATERIAL TO BE STORED MORE THAN 48 HOURS SHOULD BE COVERED WITH PROPERLY ANCHORED, HEAVY GRADE SHEETS OF POLYETHYLENE WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF 3 TO 6 INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. SILT FENCE SHALL BE INSTALLED AT THE TOE OF SLOPE TO CONTAIN MOVEMENT OF THE STOCKPILED MATERIAL. TOPSOIL SHALL NOT BE APPLIED TO THE STOCKPILES TO PREVENT TOPSOIL CONTAMINATION WITH HIGH ACID PRODUCING SOIL.
5. HIGH ACID PRODUCING SOILS WITH A pH OF 4 OR LESS, OR CONTAINING IRON SULFIDE, (INCLUDING BORROW FROM CUTS OR DREDGED SEDIMENT) SHALL BE ULTIMATELY PLACE OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS PER ACRE (OR 450 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SETTLED SOIL WITH A pH OF 5 OR MORE EXCEPT AS FOLLOWS:
   A. AREAS WHERE TREES OR SHRUBS ARE PLANTED SHALL BE COVERED WITH A MINIMUM OF 24 INCHES OF SOIL WITH A pH OF 5 OR MORE.
   B. DISPOSAL AREAS SHALL NOT BE LOCATED WITHIN 24" OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES AND OTHERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
6. EQUIPMENT USED FOR MOVEMENT OF HIGH ACID-PRODUCING SOILS SHOULD BE CLEANED AT THE END OF EACH DAY TO PREVENT SPREADING OF HIGH ACID-PRODUCING SOIL MATERIALS TO OTHER PARTS OF THE SITE, INTO STREAMS OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED RUSTING.
7. NON-VEGETATIVE EROSION CONTROL PRACTICES (STONE TRACKING PADS, STRATEGICALLY PLACED LIMESTONE CHECK DAM, SEDIMENT BARRIER, WOOD CHIPS) SHOULD BE INSTALLED TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF THE SITE.
8. FOLLOWING BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOIL, TOPSOILING AND SEEDING OF THE SITE (SEE TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, AND TOPSOILING). MONITORING MUST CONTINUE FOR A MINIMUM OF 6 MONTHS TO ENSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH ACID-PRODUCING SOIL PROBLEMS EMERGE. IF PROBLEMS STILL EXIST, THE AFFECTED AREA MUST BE TREATED AS INDICATED ABOVE TO CORRECT THE PROBLEM.

CONSTRUCTION SCHEDULE AND PROCEDURE FOR IMPLEMENTATION OF SOIL EROSION AND SEDIMENT CONTROL MEASURES

1. INSTALL SILT FENCE, INLET PROTECTION, HAYBALE SEDIMENT BARRIERS AND ALL OTHER NECESSARY SOIL EROSION MEASURES. (2 WEEKS)
2. SAWCUT PAVEMENT, REMOVE CONCRETE CURB, REMOVE FULL DEPTH PAVEMENT, REMOVE TREES, REMOVE CONCRETE SIDEWALK AND OTHER ASSOCIATED IMPROVEMENTS. (2 WEEKS)
3. INSTALL ALL ASSOCIATED UTILITIES . (4 WEEKS)
4. PAVE ALL ROADWAYS AND PARKING AREAS. (1 WEEK)
5. PAINT AND STRIPE PAVEMENT (1 DAY)
6. REMOVE ACCESS PROTECTION, INLET PROTECTION, AND SILT FENCE AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED (ON GOING).

THE ABOVE SCHEDULE IS FOR THE IMPLEMENTATION AND INSTALLATION OF SOIL EROSION AND SEDIMENT CONTROL MEASURES ONLY. CONTRACTOR MAY MODIFY AND/OR CREATE HIS OWN SCHEDULE. IF THE CONSTRUCTION SCHEDULE IS MODIFIED, A REVISION TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED.

PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. IMMEDIATELY PRIOR TO SEEDING AND TOPSOILING APPLICATION, THE SUBSOIL SHALL BE EVALUATED FOR COMPACTION IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.
   C. TOPSOIL SHOULD BE HANDLED ONLY WHEN ITS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS REQUIRED ON ALL SITES. TOPSOIL SHALL BE AMENDED WITH ORGANIC MATTER, AS NEEDED, IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING.
   D. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
2. SEEDBED PREPARATION
   A. UNIFORMLY APPLY GROUND LIMESTONE AND FERTILIZER TO TOPSOIL WHICH HAS BEEN SPREAD AND FIRMED, ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION SOILS SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS COOPERATIVE EXTENSION OFFICES (HTTP://NJAES.RUTGERS.EDU/COUNTY/). FERTILIZER SHALL BE APPLIED AT THE RATE OF 600 TO 1,200 POUNDS PER ACRE OR 11 POUNDS PER 1,000 S.F. OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE AND INCORPORATED INTO THE SURFACE 4 INCHES. IF FERTILIZER IS NOT INCORPORATED, APPLY ONE-HALFTHE RATE DESCRIBED ABOVE DURING SEEDBED PREPARATION AND REPEAT ANOTHER ONE-HALF RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING.
   B. WORK LIME AND FERTILIZER INTO THE TOPSOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.
   C. HIGH ACID PRODUCING SOIL, SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED PREPARATION. SEE ACID SOIL NOTES.
3. SEEDING
   A. PERMANENT SEEDING SHALL CONSISTING OF THE FOLLOWING MIXES OR APPROVED EQUAL – ACCEPTABLE SEEDING DATES ARE BETWEEN MARCH 1 THRU APRIL 30 AND OPTIMAL SEEDING DATES ARE AUGUST 15 THRU OCTOBER 15:

HARD FESCUE	@ 4.0#/1,000 S.F.
PERENNIAL RYEGRASS	@ 1.0#/1,000 S.F.
KENTUCKY BLUEGRASS	@ 1.0#/1,000 S.F.

   PERMANENT SEEDING SHALL BE PROVIDED ON ALL THE DETENTION BASIN SIDE SLOPES AND BASIN BOTTOM. THE SEED MIX SHALL BE SEED MIXTURE 17 AND CONSIST OF THE FOLLOWING MIXTURE OR APPROVED EQUAL – ACCEPTABLE SEEDING DATES ARE BETWEEN MARCH 1 THRU AUGUST 14 AND OPTIMAL SEEDING DATES ARE AUGUST 15 THRU OCTOBER 1:

CREEPING BENTGRASS	@1#/1,000 S.F.
CREEPING RED FESCUE	@1#/1,000 S.F.
ALKALI SALTGRASS	@1#/1,000 S.F.

   PLEASE NOTE THAT OTHER SEED MIXTURES CAN BE USED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
   B. CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF ¼ TO ½ INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE ½ INCH DEEPER ON COARSE-TEXTURED SOIL.
   C. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.
   D. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK, OR TRAILER-MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER, AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT-FINERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. WHEN POOR SEED TO SOIL CONTACT OCCURS, THERE IS A REDUCED SEED GERMINATION AND GROWTH.
4. MULCHING

   MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS REQUIREMENT.
   A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, APPLIED AT THE RATE OF 1 ½ TO 2 TONS ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO PRESENCE OF WEED SEED.

      APPLICATION- SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTION 70 TO 90 POUNDS WITHIN EACH SECTION.

      ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.
   1. PEG AND TWINE. DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRECHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
   2. MULCH NETTING. STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTING TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
   3. CRIMPER (MULCH ANCHORING COULTER TOOL) – A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE STRAW INTO THE SOIL. THE BROADCAST LONG FIBER MULCH 5 TO 6 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
   4. LIQUID MULCH BINDERS–MAY BE USED TO ANCHOR SALT HAY OR STRAW MULCH.
      A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
      B. USE ONE OF THE FOLLOWING:
   1. ORGANIC AND VEGETABLE BASED BINDERS – NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

      NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A COMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.
   2. SYNTHETIC BINDERS – HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

      NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A COMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.
   3. WOOD-FIBER OR PAPER-FIBER MULCH. SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS, USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.
   4. PELLETIZED MULCH. COMPRESSED AND EXTRUDE PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORMA MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75LBS/1,000 SQUARE FEET WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE.

      APPLY THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.
5. IRRIGATION (WHERE FEASIBLE)

   IF SOIL MOISTURE IS DEFICIENT, AND MULCH IS NOT USED, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH APPLIED UP TO TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.

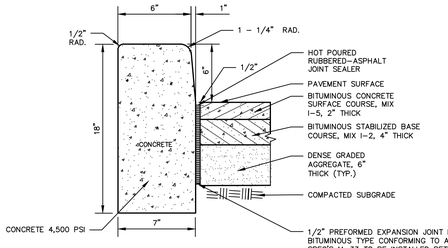
STABILIZATION WITH MULCH

METHODS AND MATERIALS

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.
2. PROTECTIVE MATERIALS
   A. UN-ROTTED SMALL-GRAIN STRAW, OR SALT HAY AT 2.0 TO 2.5 TONS PER ACRE IS SPREAD UNIFORMLY AT 90 TO 115 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING TIE DOWN. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT. THE APPROVED RATES ABOVE HAVE BEEN MET WHEN THE MULCH COVER THE SOIL SURFACE SO THAT 90% OR COMPLETE BY UPON VISUAL INSPECTION, IE. THE SOIL CAN NOT BE BELOW THE MULCH.
   B. ASPHALT EMULSION IS RECOMMENDED AT THE RATE OF 600 TO 1,200 GALLONS PER ACRE. THIS IS SUITABLE FOR A LIMITED PERIOD OF TIME WHERE TRAVEL BY PEOPLE, ANIMALS OR MACHINES IS NOT A PROBLEM.
   C. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.
   D. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A HYROSEEDER.
   E. MULCH NETTING, SUCH AS PAPER JUTE, EXCELSIOR, COTTON, OR PLASTIC, MAY BE USED.
   F. WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.
   G. GRAVEL, CRUSHED STONE, OR SAG AT THE RATE OF 9 CUBIC YARDS PER 1,000 SQ. FT. APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 3 INCHES MAY BE USED. SIZE 2 OR 3 (ASTM-C-33) IS RECOMMENDED.
3. MULCH ANCHORING – SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA AND STEEPNESS OF SLOPES.
   A. PEG AND TWINE – DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
   B. MULCH NETTING – STAPLE PAPER, COTTON, OR PLASTIC NETTINGS OVER MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED. NETTING IS USUALLY AVAILABLE IN ROLLS 4 FEET WIDE AND UP TO 300 FEET LONG.
   C. CRIMPER MULCH ANCHORING COULTER TOOL – A TRACTOR-DAWN IMPLEMENT ESPECIALLY DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SURFACE – THIS PRACTICE AFFORDS MAXIMUM EROSION CONTROL BUT IS USE IS LIMITED TO THOSE SLOPES UPON WHICH THE TRACTOR CAN OPERATE SAFELY. SOIL PENETRATION SHOULD BE ABOUT 3 TO 4 INCHES. ON SLOPING LAND, THE OPERATION SHOULD BE ON THE CONTOUR.
   D. LIQUID MULCH –BINDERS
      1. APPLICATION SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
      2. USE ONE OF THE FOLLOWING:
   A. ORGANIC AND VEGETABLE BASED BINDER – NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. VEGETABLE BASED GELS SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER.
      B. SYNTHETIC BINDERS – HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
   C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.)
2. SEEDBED PREPARATION
   A. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS COOPERATIVE EXTENSION OFFICES. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 S.F. OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE. APPLY

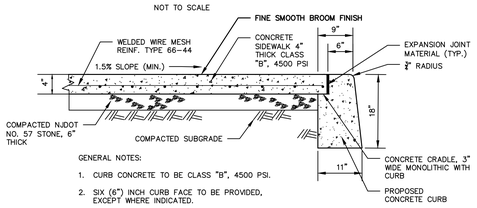


NOTE:

1. TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB 20'–0" APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS–IMPREGNATED FIBER JOINT FILLER COMPLYING WITH THE REQUIREMENTS OF A.A.S.H.T.O. SPEC. M–213, RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CURB.

CONCRETE VERTICAL CURB

NOT TO SCALE

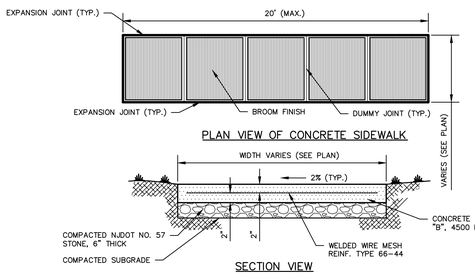


GENERAL NOTES:

1. CURB CONCRETE TO BE CLASS "B", 4500 PSI.
2. SIX (6") INCH CURB FACE TO BE PROVIDED, EXCEPT WHERE INDICATED.
3. PROVIDE PERFORMED BITUMINOUS FIBER EXPANSION JOINTS, 1/2" THK. AT 20'–0" (MAX.) INTERVALS, PROVIDE DUMMY JOINTS (FORMED) WHERE INDICATED BETWEEN EXPANSION JOINTS.
4. ALL SIDEWALK ADJACENT TO 90 DEGREE PARKING SHALL BE TWO (2) FEET FROM CURB LINE OR SIX (6) FEET IN WIDTH.

CURB AND SIDEWALK DETAIL

NOT TO SCALE



PLAN VIEW OF CONCRETE SIDEWALK

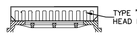
SECTION VIEW

NOTES:

1. PREFORMED BITUMINOUS CELLULAR JOINT FILLERS 1/2" THICK, SHALL BE PLACED AT INTERVALS NOT EXCEEDING TWENTY (20) FEET. DUMMY (FORMED) JOINTS SHALL BE CUT INTO THE CONCRETE SIDEWALK BETWEEN THE EXPANSION JOINTS AT EQUAL INTERVALS NOT EXCEEDING THE WIDTH OF THE SIDEWALK.
2. THE SIDEWALK SUBGRADE SHALL BE NJDOT NO. 57 STONE, 6" THICK OR MATERIAL APPROVED BY THE TOWNSHIP ENGINEER, AND COMPACTED PRIOR TO THE PLACEMENT OF ANY SIDEWALK.
3. THE SIDEWALK SECTION SHALL BE 6" THICK WITH WELDED WIRE FABRIC AT DRIVEWAYS.

CONCRETE SIDEWALK, 4" THICK

NOT TO SCALE

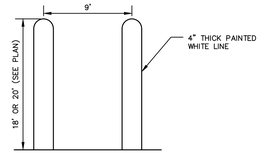


NOTE:

1. ECO TYPE CURB PIECES FOR THIS PROJECT SHALL BE TYPE "N".

TYPE "N–ECO" CURB PIECE

NOT TO SCALE

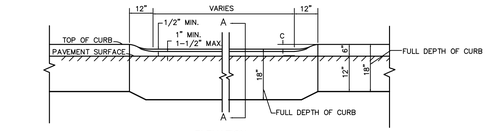


HAIRPIN STYLE PARKING LOT STRIPING DETAIL

NOT TO SCALE

NOTES:

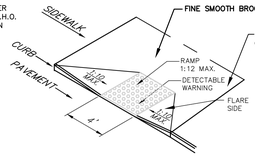
1. THE FIRE LANE SHALL BE IDENTIFIED BY THE CONTRACTOR PAINTING THE CURB YELLOW AND/OR PROVIDING A YELLOW STRIPE, 4" WIDE, WITHIN THE ENTIRE ACCESS DRIVE, AFTER FINAL PAVEMENT WORK IS COMPLETE.
2. THE LETTERING "NO PARKING FIRE LANE" SHALL BE 18" HIGH PAINTED YELLOW AND CENTERED WITHIN THE DESIGNATED FIRE LANE AT THE SAME LOCATION AS SHOWN ON THE PLANS OR AS APPROVED BY THE FIRE OFFICIAL.
3. IF NOT OTHERWISE INDICATED PAVEMENT STRIPING SHALL CONFORM TO THE FOLLOWING:
   A. PARKING STRIPES: 4" WIDE WHITE LINES
   B. LANE AND CENTER LINES: 4" WIDE WHITE LINES SPACED AS SHOWN
   C. STOP LINES: 12" WIDE WHITE LINES (4' MINIMUM FROM CROSSWALK)
   D. "LETTERING": 18" HIGH PAINTED WHITE, UNLESS OTHERWISE SPECIFIED
   E. HANDICAPPED RAMPS: SAFETY RED MOISTURE CURED POLYURETHANE COATING WITH SELF–CONTAINE WHITE RUBBER GRIT OR PERFORMED PLASTIC MARKING TAPE AS PER NJDOT STANDARDS.
4. ALL STRIPING SHOULD BE EPOXY BASED PAINT. ALL PAVEMENT MARKINGS (ARROWS, STOP BARS, CROSSWALKS, ETC.) SHOULD BE EXTRUDED THERMOPLASTIC.



ELEVATION

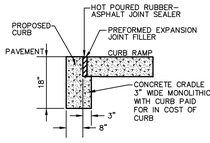
METHOD OF DEPRESSING CURB AT DRIVEWAY

NOT TO SCALE



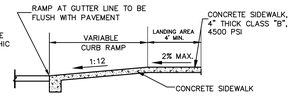
PLAN VIEW OF RAMP TYPE 1

N.T.S.



DETAIL THROUGH CURB RAMP

N.T.S.



SECTION THROUGH RAMP

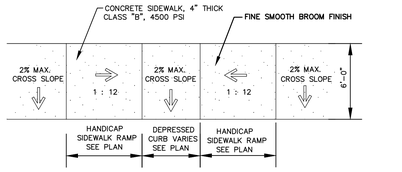
N.T.S.

HANDICAP SIDEWALK RAMP DETAIL

NOT TO SCALE

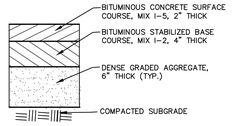
GENERAL NOTES:

1. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR OF OBSTRUCTIONS.
2. CURB (DEPRESSED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT 4' WIDE AT ALL CURB RAMPS.
3. SIDEWALK AND CURB RAMP TO BE PAID FOR AS CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
4. CONCRETE TO BE N.J.D.O.T., CLASS "B"
5. THE CONTRACTOR SHALL PROVIDE DETECTABLE WARNING ON ALL HANDICAP SIDEWALK RAMPS. THE DETECTABLE WARNING SHALL BE STRONGWARN TACTILE WARNING SURFACE, 2000 AS MANUFACTURED BY STRONGWALL INDUSTRIES, INC. (1–800–535–0668) OR APPROVED EQUIVALENT THAT CONFORMS TO ADA REQUIREMENTS. THE COLOR OF DETECTABLE WARNING MUST BE APPROVED BY THE ARCHITECT FROM AVAILABLE COLORS.
6. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI.



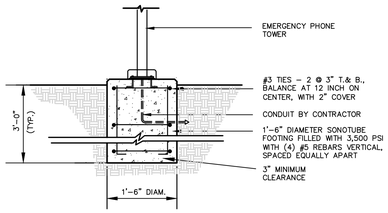
HANDICAP SIDEWALK RAMP TYPE 2

N.T.S.



FULL DEPTH BITUMINOUS PAVEMENT SECTION

NOT TO SCALE

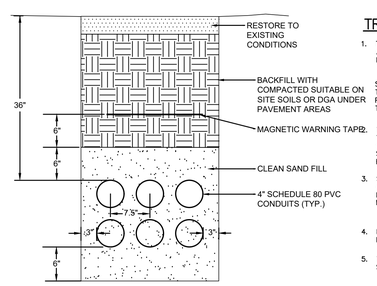


NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO CONFIRM THE EMERGENCY PHONE TOWER SPECIFICATIONS SO THAT THE ANCHOR BOLTS AND TIES ARE CONSISTENT WITH THE MANUFACTURER OF THE EMERGENCY PHONE CALL TOWER.
2. CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL CONDUIT DUCT BANK SYSTEM WITH PULL STRING AND FOUNDATION FOR EMERGENCY CALL BOX.
3. EMERGENCY PHONE CALL TOWER AND WIRING SHALL BE INSTALLED BY SELECTED VENDOR OF PENN MEDICINE.

EMERGENCY PHONE TOWER FOOTING DETAIL

NOT TO SCALE



NOTE:

1. DUCTBANK DETAIL IS FOR BOTH ELECTRICAL SERVICE LINES AND TELECOMMUNICATIONS LINES

TYPICAL CONDUIT DUCTBANK DETAIL

N.T.S.

TRENCH EXCAVATION AND BACKFILL NOTES

1. THE MAXIMUM DRY DENSITIES SHALL BE DETERMINED IN ACCORDANCE WITH ASTM DESIGNATION D1557. THE MINIMUM PERCENTAGE OF COMPACTION TO BE ACHIEVED BY THE CONTRACTOR IN THE VARIOUS ZONES IS AS FOLLOWS:

	PIPE MATERIAL	LOCATION	INITIAL COMPACTION
SURFACE ZONE:	ALL	ALL	95%
TRENCH BACKFILL ZONE:			90%
PIPE EMBEDMENT ZONE:			95%

THE MINIMUM COMPACTION IN EMBANKMENTS SHALL BE 90%

2. THE PIPE EMBEDMENT ZONE WIDTH AND THE MAXIMUM TRENCH WIDTH SHALL NOT EXCEED THE PERMISSABLE WIDTHS SHOWN. IF THE PERMISSABLE WIDTH IS EXCEEDED, THE PIPE SHALL BE INSTALLED IN A HIGHER CLASS BEDDING THAN SHOWN ON THE DRAWINGS OR THE SPECIFIED PIPE SHALL BE REPLACED WITH PIPE OF GREATER CRUSHING STRENGTH OR BOTH, TO ACHIEVE SUITABLE CONDITIONS.
3. SUITABLE MATERIAL FROM EXCAVATIONS SHALL BE FREE FROM OBJECTIONABLE QUANTITIES OF ORGANIC MATTER, CLAYS, TREES, STUMPS, FROZEN MATERIAL, RUBBLE, REFUSE, CINDERS, ROCK AND OTHER MATERIALS CONSIDERED DELETERIOUS BY THE AUTHORITY AND SHALL MEET THE REQUIREMENTS AS SPECIFIED WITHIN THE GEOTECHNICAL REPORT FOR THIS PROJECT.
4. BACKFILL TO BE MECHANICALLY COMPACTED IN TWELVE INCH LIFTS TO THE SATISFACTION OF THE ENGINEER.
5. THE CONTRACTOR MUST COMPLY WITH ALL STATE AND FEDERAL CONFINED SPACE RULES, AND ALL APPLICABLE O.S.H.A. REQUIREMENTS.

TALK A PHONE
Creating Communications Solutions

OUTDOOR EMERGENCY PHONES

ETP-400 – Single Button Emergency Phone

ETP-400

Description

The **ETP-400** is an outdoor-rated, ADA-compliant hands-free Emergency Phone for use in locations such as: parking facilities, college campuses, controlled access gates, medical centers and industrial parks.

Features

- Cast metal raised letter and Braille signage for ADA compliance
- Vandal resistant stainless steel faceplate and metal button
- Uses regular phone lines or PBX
- Phone line powered: no power supply or battery back-up needed
- Circuit boards are conformally coated for water protection
- LED indicator for hearing impaired
- Auxiliary input and outputs to integrate with CCTV, Blue Light Strobe, Scream Alert™ and other devices
- Built-in auto-dialer can dial two numbers: if first number doesn't answer or is busy, dials second number
- Auto-answer allows security to monitor and initiate calls with Emergency Phone
- Options available that offer the ability to automatically identify attendant of location of calling phone by recorded message and digital display

Specifications

Construction:	12 gauge (2.8mm) #4 brushed stainless steel faceplate
Dimensions:	Front Panel: 9.5(241) W x 11.75(298) H (in/mm) Back Box: 6.63(168) W x 9.75(248) H x 2.5(64) D in(mm)
Weight:	8 lbs. (3.6kg)
Operating Temperature:	-4°F to +149°F (-20°C to +65°C)
Mounting:	Flush mounts (surface mount options available)
Communication:	2-way hands-free communication
Digit Capacity:	Up to 18 digits, including pauses, for each of two phone numbers
Dialing Speed:	Approximately 10 tones per second
Power Source:	Phone line powered (requires 20mA at 24 v off-hook)
Connection:	Parallel tip and ring connected to RJ11 connector for quick installation
Circuit Protection:	Varistor lightening suppressed and full wave polarity guarded
Programming:	Non-volatile EEPROM programming can be done from any telephone
"On Time":	No battery back up is needed Programmable from 1-4270 minutes in 1-minute increments
Recommended Wiring:	1 twisted-shielded pair
Compliance:	CSA Certified to UL Standard 60950

Options & Accessories

Voice Location Identifier:	Model **ETP-400V** includes the capability to record a message identifying the location of the call. Message is recorded and duration set during programming
"TO CALL" Casting:	Use Model **ETP-400C** for a button that reads **TO CALL** instead of **EMERGENCY**
8-Line Consolidator:	Model **EC-8** allows connection of up to 8 phones on one phone line while retaining ability to call each phone individually. Can also create a closed system without need for any phone lines
Monitoring/Diagnostic Software Package:	Talk-A-Lert®, model **ETP-TAL**, automatically polls each Emergency Phone, reports incoming calls and keeps permanent records of all events
Faceplate Camera:	Add "OP3" to model number to add a color pinhole camera mounted discreetly behind the faceplate. Add "OP3BW" for a b/w camera

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Talk-A-Phone Co. • 7530 North Natchez Avenue • Niles, Illinois 60714-3804 Rev. 10/28/09
Phone 773.539.1100 • Fax 773.539.1241 • info@talkaphone.com • www.talkaphone.com
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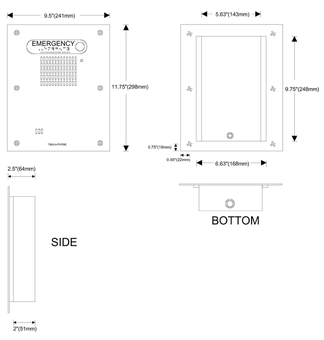
ETP-400 – Single Button Outdoor Emergency Phone

Dimensions



TALK A PHONE
Creating Communications Solutions

EMERGENCY PHONE MOUNTS

ETP-MT – Emergency Phone Tower

Description

Vandal-resistant Emergency Phone Tower systems provide exceptional clarity, performance and a sense of security. Towers are often used in college campuses, parking facilities, shopping malls, medical centers and industrial campuses.

Features

- Attention-getting blue light strobe included and mounted atop unit: blue light is continuously lit, strobe is activated when **EMERGENCY** button is pressed and flashes for duration of call.
- Faceplate is lit at all times by ultrabright LEDs
- Designed to resist extreme weather conditions
- A variety of lettering, signage and color choices are available
- Talk-A-Phone 400-Series flush mounting Emergency/Information Phone mounts easily into unit (order separately)
- ADA-compliant

Specifications

Dimensions:	10.0(254) W x 8.0(203) D x 114.2(2901) H in(mm)
Weight:	280 lbs. (127 kg)
Construction:	0.25 in (6.3 mm) steel with multi-coat rust inhibitive coating
Lighting:	Strobe: 1.5 million candlepower, 70 flashes per minute Blue Light: 7 watt high efficiency, 10,000 hour compact fluorescent Faceplate Light: Ultrabright LEDs, 100,000 hour lifetime
Lettering:	3.25 in (82.5 mm) high reflective white letters, also available in other colors and with other wording
Power:	Blue light strobe and faceplate light require 120VAC (170mA for each light, 2 amps for each 5 millisecond flash of strobe); available in 12VDC/24VAC/24VDC
Mounting:	Mounts into concrete foundation using included hardware (shipped in advance). Mounting options available for pre-poured decks.
Compliance:	CSA Certified to UL Standard 60950

Communication Options

Emergency Phone:	Model **ETP-400** has a standard red **EMERGENCY** button
Emergency/Info Phone:	Model **ETP-400D** has a red **EMERGENCY** button and a black **INFO** button to allow two different types of locations to be called
Emergency/Keypad Phone:	Model **ETP-400K** has a red **EMERGENCY** button as well as a black **CALL** button, which allows access to the built-in keypad
RF Interface:	Models **VOIP-RF** and **VOIP-1** when used in conjunction with a phone listed above creates a Radio Frequency Emergency Phone. (Note: other RF equipment is required for a complete system)
Cellular Interface:	Model **ETP-C1** when used in conjunction with a phone listed above creates a stand-alone cellular Emergency Phone Tower

Options & Accessories

Fixed CCTV Option:	Model **ETP-MT OP 3** includes a Silent Witness fixed b/w camera
CCTV Housing Option:	Model **ETP-MT OP 2** includes a housing for mounting your own fixed CCTV
Parking Deck Mounting Kit:	Order model **ETP-PDMK-2** to mount on pre-poured parking deck

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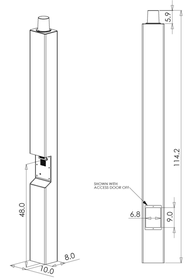
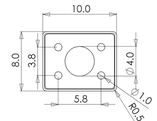
Phone 773.539.1100 • Fax 773.539.1241 • info@talkaphone.com • www.talkaphone.com
All prices and specifications are subject to change without notice.

ETP-MT – Emergency Phone Tower

Dimensions



Footprint Dimensions



All dimensions are in inches

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SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH
99 Chauncy Street 4th Floor
Boston, MA 02111
T:617.423.1700 | F:800.934.9691
shepleybulfinch.com
Design Architect

THA Consulting, Inc.
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Architect / Structural Engineer / Parking Consultant

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Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

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732.312.9800
FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Utility Relocation Plan

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1B CONSTRUCTION DETAILS 1

C.1B.06

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:35 AM
O:\C\2209\NBR22SIT - Cancer Center\NBR22SIT (DES - Penn Medicine Cancer Center\CAD\2D\NBR22SIT - Utility Plans\NBR22SIT_DEC - CD.dwg CD 1 (ARCH)

Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.

P23-03 DRC 05/18/23

PRELIMINARY AND FINAL MAJOR SITE PLAN
FOR
PENN MEDICINE PRINCETON HEALTH
PARKING GARAGE
BLOCK 1701, LOT 3.01
TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY

GENERAL NOTES:

APPLICANT/OWNER:

PRINCETON HEALTHCARE SYSTEM
A NEW JERSEY NONPROFIT CORPORATION
D/B/A PENN MEDICINE PRINCETON HEALTH
1 PLAINSBORO ROAD
PLAINSBORO, NJ 08536
(609) 430-7101

I HEREBY CERTIFY THAT I AM THE OWNER OF RECORD OF THE PROPERTY HEREIN DEPICTED AND THAT I CONCUR WITH THE FILING OF THIS PLAN.

MR. JAMES DEMETRIADES, PRESIDENT OF PENN MEDICINE PRINCETON HEALTH

1. THE PROJECT TRACT IS KNOWN AS BLOCK 1701, LOT 3.01, LOCATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY. THE PROJECT TRACT CONTAINS APPROXIMATELY 49.42 +/- ACRES AND CURRENTLY CONTAINS THE HOSPITAL WITH ASSOCIATED PARKING LOTS.
2. TOPOGRAPHIC INFORMATION SHOWN TAKEN FROM MAPS ENTITLED "TOPOGRAPHIC SURVEY PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO LOTS 3.01 & 4.04, BLOCK 1701 SITUATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY," PREPARED BY FRENCH AND PARRELLO ASSOCIATES, DATED 08/04/2022. REVISED TO 09/06/2022. THE VERTICAL DATUM IS NAVD 88.
3. BOUNDARY INFORMATION SHOWN TAKEN FROM MAPS ENTITLED "BOUNDARY SURVEY PENN MEDICINE PRINCETON MEDICAL CENTER AT PLAINSBORO LOT 3.01, BLOCK 1701 SITUATED IN THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY," PREPARED BY FRENCH AND PARRELLO ASSOCIATES, DATED 08/04/2022.
4. THIS PROPERTY IS LOCATED IN THE HMOC, HEALTH/MEDICAL OFFICE COMPLEX ZONE, AS PER THE "AMENDED REDEVELOPMENT PLAN FOR THE PRINCETON HEALTHCARE SYSTEM AT PLAINSBORO SITE" PREPARED BY PHILLIPS PREISS GRYGIEL LLC, ADOPTED MARCH 13, 2013. ALSO, THE PROPERTY HAS BEEN DESIGNATED FOR REDEVELOPMENT BY THE TOWNSHIP OF PLAINSBORO AS PER THE JANUARY 23, 2008 REPORT PREPARED BY PHILLIPS PREISS SHAPIRO ASSOCIATES, INC. PLANNING AND REAL ESTATE CONSULTANTS.
5. THE APPLICANT IS PROPOSING TO CONSTRUCT A PARKING GARAGE TO SUPPORT THE PROPOSED CANCER CENTER.

ZONING DATA TABLE - PARKING GARAGE

BULK STANDARDS BASED ON REDEVELOPMENT PLAN	REQUIREMENTS HOSPITAL/MEDICAL OFFICE COMPLEX	EXISTING HOSPITAL/ MEDICAL OFFICE COMPLEX	PROPOSED PARKING GARAGE
MINIMUM LOT AREA	40 ACRES	49.42 ACRES	NO CHANGE
MINIMUM LOT FRONTAGE	700 FEET	1,438.13 FEET	NO CHANGE
MINIMUM BUILDING SETBACKS FROM PERIMETER LOT LINES	75 FEET	116.83 FEET	69.0 FEET*
MINIMUM SETBACK OF BUILDING TO DRIVEWAYS AND PARKING LOTS	5 FEET	5 FEET	N/A
MINIMUM SETBACK OF PARKING AREAS FROM: -ROUTE 1, PLAINSBORO ROAD AND PUNIA BLVD -OTHER LOT LINES	 50 FEET 25 FEET	50 FEET	 > 50 FEET 69.0 FEET
MINIMUM SETBACKS BETWEEN BUILDINGS AND PARKING GARAGE	10 FEET	N/A	67.6 FEET
MAXIMUM BUILDING HEIGHT (FEET/STORIES)	175 FEET/10 STORIES	121 FEET/7 STORIES	N/A
MAXIMUM FLOOR AREA RATIO (FAR)	0.60	0.39 (TOTAL 846,652 SF)	NO CHANGE
MAXIMUM IMPERVIOUS COVERAGE ON LOT	60%	56.21% (27.78 AC)	57.16% (28.25 AC)
MAXIMUM PERMITTED HEIGHT OF PARKING GARAGE (LEVELS/FEET)	6 LEVELS/75 FEET	N/A	6 LEVELS/61.25 FEET

*DEVIATION REQUIRED

6. PARKING REQUIREMENTS

DISPLACED PARKING FROM CANCER CENTER PROJECT: 167 SPACES
DISPLACED PARKING FROM PARKING GARAGE: 182 SPACES
TOTAL DISPLACED: 349 SPACES

REQUIRED PARKING FOR CANCER CENTER PROJECT (TO ESTABLISH THE NUMBER OF PROPOSED GARAGE SPACES:
4 PER 1,000 SF OF GFA
151,555 GFA REQUIRES 606 SPACES
TOTAL REQUIRED = 349 + 606 = 955 SPACES
TOTAL PARKING SPACES PROVIDED IN THE GARAGE 1,161 SPACES

PARKING GARAGE 1,161 SPACES
STANDARD SPACES 994
ADA SPACES 117 (REQUIRED 10% OF TOTAL PROVIDED, 117)
TOTAL EV READY SPACES 50 (REQUIRED 4% OF TOTAL PROVIDED, 47)
ADA EV READY SPACES 3 (REQUIRED 5% OF TOTAL EV PROVIDED, 3)
STANDARD EV READY SPACES 47
BASED ON ORDINANCE 101-13.8.E.(2), EV OR EV READY SPACES "SHALL COUNT AS AT LEAST TWO PARKING SPACES FOR THE PURPOSE OF COMPLYING WITH A MINIUM PARKING SPACE REQUIREMENT. THIS SHALL RESULT IN A REDUCTION OF NO MORE THAN 10% OF THE TOTAL REQUIRED PARKING."

THE PARKING GARAGE WILL PROVDE A TOTAL OF 117 ADA ACCESIBLE PARKING SPACES. THE DISPLACED SURFACE ADA ACCESSIBLE SPACES WILL BE RELOCATED WITHIN SURFACE PARKING LOTS. SURFACE PARKING PROPOSED = 140 SPACES. ADA SPACES REQUIRED = 10% = 14. ADA SPACES PROVIDED = 23

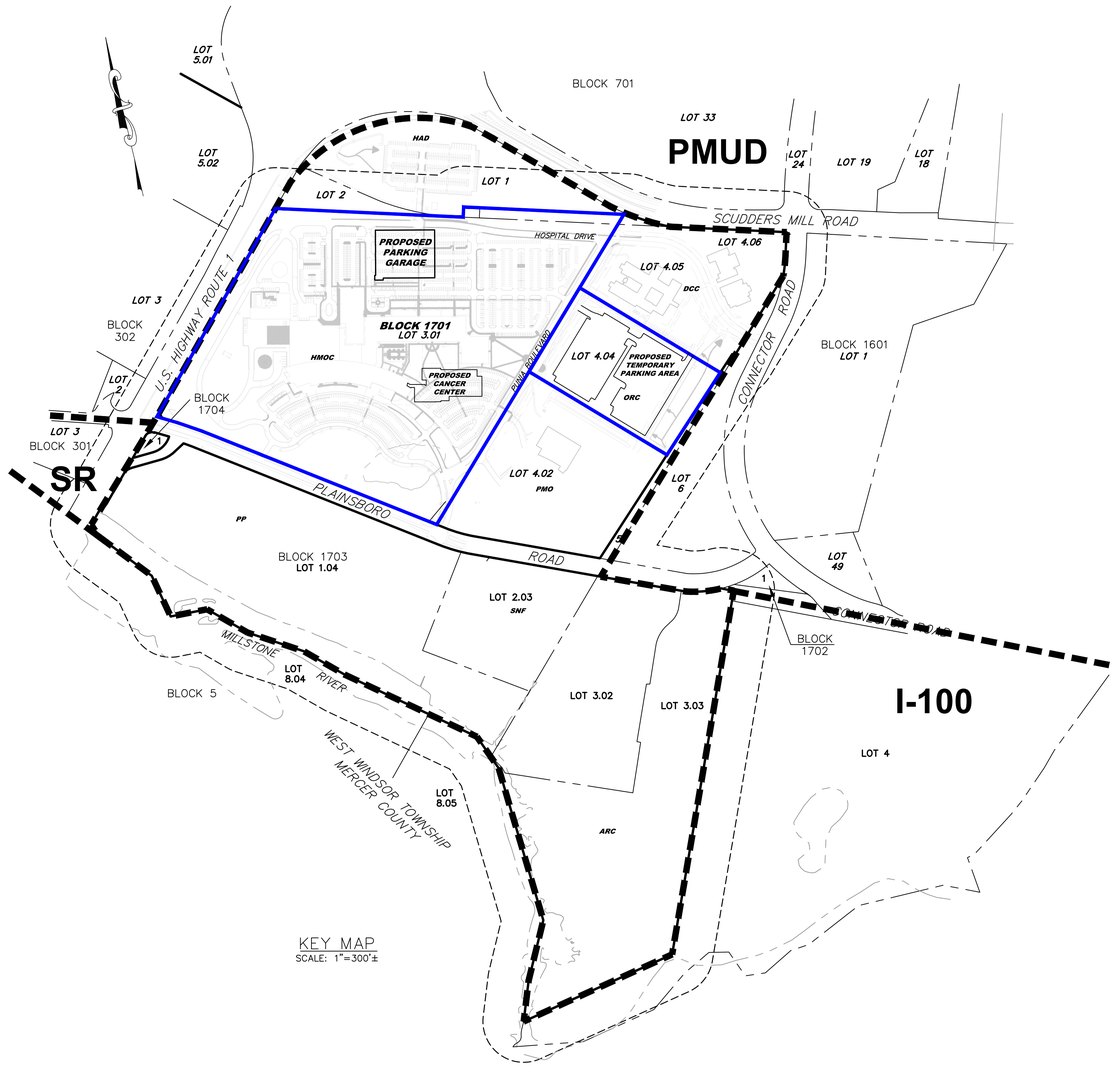
RECONFIGURED SURFACE LOT NEAR PARKING GARAGE 140 SPACES
STANDARD SPACES 115
ADA SPACES 25 (REQUIRED 10% OF TOTAL PROVIDED, 14)
TOTAL EV READY SPACES 4 (REQUIRED 4 SPACES)
ADA EV READY 1 (REQUIRED 1 OF 4 TOTAL)
STANDARD EV READY 3

TEMPORARY RELOCATION OF ADA SPACES FROM P6 PARKING LOT
8 ADA SPACES WILL BE REMOVED FROM P6 LOT, WHILE PARKING GARAGE IS UNDER CONSTRUCTION. 8 NEW ADA SPACES WILL BE STRIPED IN LOT P6, NEAR THE PATIENT DROP OFF AREA, WHICH WILL REMAIN OPERATIONAL DURING CONSTRUCTION. THE SPACES WILL BE REMOVED WHEN THE PARKING GARAGE IS COMPLETED.

7. ALL UTILITIES ARE TO BE PLACED UNDERGROUND IN ACCORDANCE WITH SECTION 85-29 OF TOWNSHIP ORDINANCE. ALSO ALL UTILITIES SHALL BE INSTALLED UNDERGROUND PRIOR TO THE PLACEMENT OF THE FINAL PAVEMENT.
8. ALL STORM SEWER SHALL BE RCP CLASS III UNLESS OTHERWISE NOTED.
9. THE SITE IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH ADA AND NEW JERSEY BARRIER FREE CODE REQUIREMENTS.
10. ALL CONSTRUCTION SHALL CONFORM WITH TOWNSHIP OF PLAINSBORO REQUIREMENTS.
11. SOIL EROSION AND SEDIMENT CONTROL SHALL FALL UNDER THE JURISDICTION OF THE FREEHOLD SOIL CONSERVATION DISTRICT.
12. ALL EASEMENTS ARE DEDICATED TO THE TOWNSHIP OF PLAINSBORO UNLESS OTHERWISE NOTED.
13. ALL SIGNS SHALL BE DESIGNED IN ACCORDANCE WITH "THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS.
14. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSE OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED ON THE DRAWINGS AND EACH DRAWING HAS BEEN REVISED TO INDICATE "ISSUED FOR CONSTRUCTION".
15. ALL DESIGN FEATURES DEPICTED HEREON WERE BASED ON CONSTRAINTS AND REGULATIONS IN EFFECT AT THE TIME OF PREPARATION AND INITIAL PRESENTATION OF THIS PLAN. ALL CURRENT DEVELOPMENT CONSTRAINTS SHOULD BE INVESTIGATED PRIOR TO COMMENCEMENT OF ANY ACTIVITY BASED ON THIS PLAN.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES FOR GAS, ELECTRIC, PHONE AND TV SERVICE LOCATIONS. LOCATION OF UTILITIES AS SHOWN ON THESE PLANS ARE PLOTTED FROM AVAILABLE DATA ON FILE WITH THE UTILITY COMPANIES AND IS NOT GUARANTEED AS TO EXACTNESS. THE CONTRACTOR IS TO CONTACT UTILITY COMPANIES 72 HOURS PRIOR TO CONSTRUCTION TO DETERMINE EXACT LOCATION. THE CONTRACTOR SHALL USE THE UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS ONLY. CONTRACTOR SHALL CALL "NJ ONE CALL" 811 OR (800-272-1000) PRIOR TO CONSTRUCTION.
17. SANITARY SEWER LINES SHALL BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY OR THE PIPES SHALL BE IN SEPARATE TRENCHES WITH THE SEWER AT LEAST 18 INCHES BELOW THE WATER MAIN. WHERE APPROPRIATE SEPARATION FROM THE WATER MAIN IS NOT POSSIBLE, THE SEWER SHALL BE ENCASED IN CONCRETE OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR AWAY FROM THE WATER LINE AS POSSIBLE.
18. TRASH AND WASTE DISPOSAL SHALL BE MANAGED BY THE OWNER THE SAME AS THE CURRENT OPERATION. THE EXISTING LOADING AREA ON THE WEST SIDE OF THE HOSPITAL SHALL BE USED FOR THE PICK-UP AND MANAGEMENT OF TRASH AND WASTE DISPOSAL. TRASH AND WASTE DISPOSAL SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE TOWNSHIP OF PLAINSBORO.
19. ALL PROPOSED SOD AND LAWN AREAS MUST BE GRADED WITH LIGHTWEIGHT CONSTRUCTION EQUIPMENT.
20. ALL GRADING SHALL BE A MINIMUM OF 2% AND A MAXIMUM OF 3' HORIZONTALLY TO 1' VERTICALLY ACROSS ALL LAWN AREAS AND AWAY FROM THE PROPOSED BUILDING. ALL STREET AND ACCESS DRIVES SHALL HAVE A MINIMUM CROSS SLOPE (CROWN) OF 2%
21. ALL SIDEWALKS ADJACENT TO 90 DEGREE PARKING SHALL BE TWO (2) FEET FROM CURB LINE OR 6 FEET IN WIDTH.

MAP REFERENCES:

1. A PLAN ENTITLED, "PRELIMINARY AND FINAL MAJOR SITE PLAN OF PRINCETON HEALTHCARE SYSTEM, HEALTHCARE CAMPUS, BLOCK 1701, LOT 3.01, BLOCK 1703, LOT 1.01, BLOCK 1704, LOT 1, TAX MAP SHEET 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY, BLOCK 1701 LOT 3.01", PREPARED BY FRENCH & PARRELLO ASSOCIATES DATED 08/21/2007 AND LAST REVISED 09/11/2009.
2. A PLAN ENTITLED, "UTILITY ASBUILT (UNIVERSITY MEDICAL CENTER) AT PRINCETON, PLAINSBORO, NEW JERSEY, BLOCK 1701 LOT 3.01", PREPARED BY VOLLERS EXCAVATING & CONSTRUCTING, INC. DATED 06/28/2011.
3. A PLAN ENTITLED, "UTILITY EXHIBIT PLAN FOR PRELIMINARY AND FINAL MAJOR SITE PLAN OF MAPLEWOOD AT PRINCETON ON THE PRINCETON HEALTHCARE CAMPUS, BLOCK 1701, LOT 4.05, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY, , PREPARED BY FRENCH & PARRELLO ASSOCIATES DATED 07/25/2016.
4. MAP ENTITLED, "PROPOSED PSE&G EASEMENT ON LOTS 4.04, 4.05, & 4.06, BLOCK 1701, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY FRENCH & PARRELLO ASSOCIATES , DATED JULY 13, 2016.
5. MAP ENTITLED, "REDEVELOPMENT - PRINCETON HEALTHCARE FINAL SUBDIVISION PLAT, LOTS 3 & 4, BLOCK 1701, LOTS 1, 2, & 3, BLOCK 1703, LOT 1, BLOCK 1704, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, N.J.", PREPARED BY STIRES ASSOCIATES, P.A., DATED FEBRUARY 12, 2008, REVISED TO JANUARY 8, 2009, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON FEBRUARY 5, 2009 AS MAP NO. 6533, FILE NO. 989, SHEETS 1 AND 2.
6. MAP ENTITLED, "FINAL MAJOR SUBDIVISION OF LOT 4.03, BLOCK 1701, TAX MAP SHEET NO. 17, TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY FRENCH & PARRELLO ASSOCIATES , DATED NOVEMBER 13, 2013, REVISED NOVEMBER 24, 2014, AND FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON JUNE 24, 2015 AS MAP NO. 6708, FILE NO. 989.
7. THE OFFICIAL TAX MAP SHEET OF THE TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY SHEET NO. 17.



KEY MAP
SCALE: 1"=300'±

ZONING AREAS: -

REDEVELOPMENT AREA - FMC CORPORATION / PRINCETON HEALTHCARE SYSTEM REDEVELOPMENT AREA
SR - SERVICE RESIDENTIAL
PMUD - PLANNED UNIT DEVELOPMENT
I-100 - LIMITED INDUSTRIAL

SHEET INDEX	
DRAWING NUMBER	DRAWING NAME
C.1C.01	COVER SHEET
C.1C.02	EXISTING CONDITIONS DEMOLITION PLAN
C.1C.03	SITE AND LAYOUT PLAN
C.1C.04	UTILITY PLAN
C.1C.05	GRADING AND DRAINAGE PLAN
C.1C.06	STORMWATER PROFILES
C.1C.07	SOIL EROSION AND SEDIMENT CONTROL PLAN
C.1C.08	SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C.1C.09	EXISTING LIGHTING PLAN
C.1C.10	PROPOSED LIGHTING PLAN
C.1C.11	LIGHTING DETAIL
C.1C.12	LANDSCAPING PLAN
C.1C.13	LANDSCAPING DETAILS (1)
C.1C.14	LANDSCAPING DETAILS (2)
C.1C.15	WOODLAND MANAGEMENT PLAN
C.1C.16	CONSTRUCTION DETAILS (1)
C.1C.17	CONSTRUCTION DETAILS (2)
C.1C.18	CONSTRUCTION DETAILS (3)

MIDDLESEX COUNTY GENERAL NOTES:

1. A STORMWATER MAINTENANCE AGREEMENT WILL BE FILED WHICH SETS FORTH DOCUMENTATION THAT ANY PROPOSED DRAINAGE SYSTEM AND ANY AND ALL STORMWATER (DRAINAGE WALES/DETENTION/RETENTION/RECHARGE FACILITIES) WILL BE ADEQUATELY MAINTAINED IN ACCORDANCE WITH THE STANDARDS OF MIDDLESEX COUNTY. REFER TO THE PARAGRAPH IN THE STORMWATER MAINTENANCE AGREEMENT ENTITLED 'RIGHT OF COUNTY OF MIDDLESEX TO MAINTAIN DRAINAGE BASINS'. CONDITIONS THAT AFFECT NON-COUNTY FACILITIES SHOULD BE REVIEWED AND APPROVED BY THE APPROPRIATE JURISDICTIONAL AGENCY.
2. SHOULD ANY WORK BE CONTEMPLATED WITHIN THE COUNTY RIGHT-OF-WAY AND/OR ANY SPECIFIC AREA UNDER THE MIDDLESEX COUNTY'S JURUSDICTION, A COUNTY ROAD OPENING PERMIT SHALL BE OBTAINED FROM THE MIDDLESEX COUNTY DEPARTMENT OF HIGHWAYS AND BRIDGES.

APPROVED AS A PRELIMINARY AND FINAL MAJOR SITE PLAN BY THE TOWNSHIP OF PLAINSBORO PLANNING BOARD ON

CHAIRMAN _____ DATE _____

SECRETARY _____ DATE _____

300 0 300 600
SCALE IN FEET

Princeton Forward

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ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

COVER SHEET

C.1C.01

04/10/2023 CURRENT PACKAGE

3/14/2023 10:55:56 AM
D:\22119\Models\Civil\01 - Cancer Center\Sheet\22119_01.dgn - Penn Medical Cancer Center\CADD\DWG\SHEET - Parking Garage\SHEET 2023 - SVR GA.dwg C.1C.01 COVER
Penn Medicine Princeton Health Cancer Center Garage

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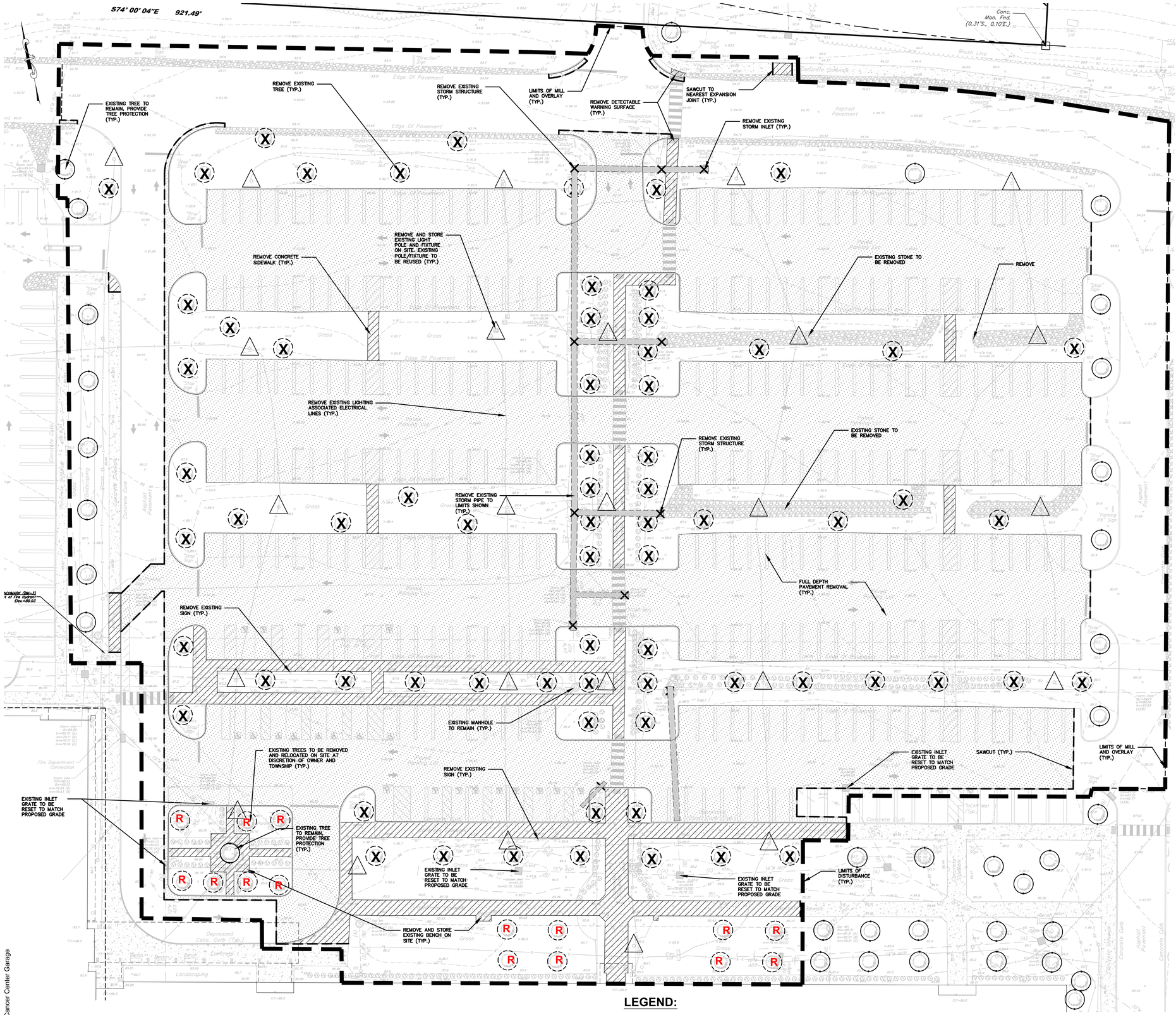

DEMOLITION NOTES:

1. ALL EXISTING SITE FEATURES AND STRUCTURES SHALL BE DEMOLISHED AND REMOVED SHALL BE DONE IN SUCH A MANNER SO AS TO MINIMIZE DISTURBANCE TO THE SURROUNDING PROPERTIES, NO DUST, PARTICLES OF DEBRIS OR WATER FROM THE DUST CONTROL SHALL BE PERMITTED OUTSIDE OF THE DESIGNATED WORK AREAS.
2. ALL EXISTING SITE FEATURES AND STRUCTURES SHALL BE DEMOLISHED IN THEIR ENTIRETY, OR AS REQUIRED TO CONSTRUCT SITE IMPROVEMENT ELEMENTS. THE CONTRACTOR IS RESPONSIBLE TO FILL EXCAVATED VOIDS WITH DENSE GRADED AGGREGATE WHICH MUST BE PLACED AND COMPACTED PER THE SPECIFICATIONS. ALL DISTURBED AREAS MUST BE FINE GRADED, COVERED WITH A MINIMUM OF 5" OF TOPSOIL AND THEN SEEDED IN ACCORDANCE WITH SPECIFICATIONS.
3. DURING ALL DEMOLITION AND CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL A SILT FENCE AND HAY BALE SEDIMENT BARRIERS AROUND THE PERIMETERS OF THE WORK AREAS TO MAINTAIN ADEQUATE SILT AND SOIL EROSION CONTROL AND ADEQUATE WATER DRAINAGE AROUND DISTURBED AREAS TO MAINTAIN ADEQUATE CONTROL UNTIL BACKFILLING AND REGRADING OPERATIONS ARE COMPLETED AND THE AREA IS STABILIZED.
4. UPON COMPLETION OF THE CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL REMOVE ALL MATERIALS AND DEBRIS FROM THE PROJECT SITE AND AS DIRECTED BY THE OWNER. THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR FERTILIZING AND SEEDING ALL EXPOSED AREAS IN THE PROJECT SITE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL DEBRIS, CONCRETE, ASPHALT, STONE, SOIL MATERIALS, TOPSOIL, VEGETATION AND ANY MATERIALS GENERATED DURING HIS DEMOLITION AND CONSTRUCTION ACTIVITIES. ALL EXCESS DEBRIS AND MATERIALS MUST BE REMOVED TO A NJDEP APPROVED LANDFILL. NO ON-SITE BURIAL OF DEBRIS WILL BE ALLOWED.

UTILITY NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION OR CONSTRUCTION ACTIVITIES TO DETERMINE THE EXACT LOCATIONS AS NECESSARY AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. UTILITY LOCATIONS SHOWN ON THESE PLANS ARE FROM ABOVE-GROUND OBSERVATIONS. IN ADDITION, THE LOCATION AND TYPE OF THE EXISTING UTILITIES SHOWN ON THESE PLANS IS NOT GUARANTEED TO BE ACCURATE NOR ALL INCLUSIVE. THE CONTRACTOR SHALL USE THE EXISTING UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS. THE CONTRACTOR MUST CONTACT THE "ONE CALL SYSTEM" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE EXACT LOCATION OF THE EXISTING UTILITIES, AS REQUIRED TO PERFORM THE DEMOLITION AND CONSTRUCTION ACTIVITIES WHICH MAY INCLUDE EXCAVATION OF TEST PITS, HAND EXCAVATION, RETAIN THE SERVICES OF AN UNDERGROUND UTILITY LOCATION CONTRACTOR, PERFORMING GROUND PENETRATION RADAR OR OTHER MEANS AND METHODS AS REQUIRED BY THE CONTRACTOR TO LOCATE AND PROTECT THE UTILITIES AS INDICATED ON THE PLANS AND SPECIFICATIONS FROM DAMAGE OR DISRUPTION BY HIS ACTIVITIES.
3. IF ANY UTILITY FACILITIES ARE DISRUPTED OR DAMAGED DURING THE CONSTRUCTION WORK ASSOCIATED WITH THIS PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR RESTORING THE UTILITY FACILITIES BY THE END OF THE WORKING DAY AT NO ADDITIONAL EXPENSE TO THE OWNER.
4. THE CONTRACTOR SHALL PROCURE ALL NECESSARY PERMITS AND LICENSES REQUIRED TO CARRY OUT HIS WORK IN FULL ACCORDANCE WITH REQUIREMENTS OF ALL REGULATIONS AND AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND ALL CODES, RULES AND REGULATIONS OF HEALTH, PUBLIC OR OTHER AUTHORITY CONTROLLING OR LIMITING THE METHODS, MATERIAL TO BE USED, OR THE ACTIONS OF OF THOSE EMPLOYED IN WORK OF THIS KIND. ALL WORK, LABOR OR MATERIAL NECESSARY TO COMPLY WITH THESE LAWS, CODES, RULES AND REGULATIONS SHALL BE PERFORMED AND FURNISHED BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FERTILIZING AND SEEDING ALL AREAS DISTURBED BY HIS ACTIVITIES WITHIN THE LIMITS OF THE PROJECT SITE. PAVEMENT REPLACEMENT AND ALL OTHER SITE RESTORATION WORK WITHIN THE PROJECT SITE SHALL MEET THE REQUIREMENTS OUTLINED IN THE SPECIFICATIONS AND CONTRACT PLANS.
6. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL NECESSARY EQUIPMENT AND METHODS TO KEEP EXCAVATIONS FREE OF WATER AND PROTECT WORK AND ADJACENT STRUCTURES FROM DAMAGE BY WATER DURING ALL STAGES OF HIS ACTIVITIES. NO SEPARATE PAYMENT WILL BE MADE FOR DEWATERING OPERATIONS AND ALL COSTS THEREOF SHALL BE INCLUDED IN THE PRICE BID FOR THIS PROJECT.
7. THE CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN SHEETING, BRACING, SHORING AND OTHER SUPPORTS REQUIRED BY HIS WORK AND TO PROTECT ADJACENT STRUCTURES. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND ALL COSTS THEREOF SHALL BE INCLUDED IN THE PRICE BID FOR THIS PROJECT.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE ANY AND ALL SAFETY BARRIERS TO PROPERLY SECURE HIS PROJECT WORK AREA. THE SAFETY STANDARDS MUST INCLUDE BUT ARE NOT LIMITED TO SAFETY CONES, SNOW PLASTIC FENCE, TEMPORARY FENCING, BARRICADES, SIGNAGE AND FLAGMAN AS REQUIRED TO MAINTAIN A SAFE AND SECURE WORK AREA.
9. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO ASSIST WITH SECURING THE PARKING, ACCESS DRIVEWAYS AND/OR WALKWAYS AS MAY BE REQUIRED TO PERFORM THE DEMOLITION.

LEGEND:

- LIMITS OF FULL DEPTH PAVEMENT REMOVAL
- LIMITS OF CONCRETE SIDEWALK/PATIO REMOVAL
- REMOVE CONCRETE CURB
- SAWCUT
- REMOVE EXISTING UTILITIES
- REMOVE
- LIMIT OF DISTURBANCE
- LIMITS OF MILL AND OVERLAY
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN, PROVIDE TREE PROTECTION.
- EXISTING TREE TO BE REMOVED AND RELOCATED ON SITE
- REMOVE AND STORE EXISTING LIGHT POLE AND LIGHT FIXTURE ON SITE. EXISTING POLE/FIXTURE TO BE REUSED, SEE LIGHTING PLAN

20 0 20 40
SCALE IN FEET

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ANDREW L. FRENCH, P.E.
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NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

EXISTING CONDITIONS AND DEMOLITION PLAN

C.1C.02

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:59 AM
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P23-03 DRC 05/18/23

S74° 00' 04"E 921.49'

CRESCENT PARCEL 1 AND 2 "HAD" DISTRICT

FLASHING "PEDESTRIAN CROSSING" W11-2 AND W16-7P SIGN, SOLAR POWERED

DIRECTIONAL SIGN TO BE RELOCATED

PEDESTRIAN CROSSING AHEAD SIGN W11-2 AND W16-9P

HOSPITAL DRIVE

SAWCUT (TYP.)

NO PARKING FIRE LANE

FIRE LANE STRIPING, YELLOW (2" OFF CURB LINE) (TYP.)

PROVIDE DOUBLE YELLOW LINE, 4" WIDE (TYP.)

PROPOSED SIX LEVEL PARKING GARAGE

75' SETBACK FROM PERIMETER LOT LINE (TYP.)

RECONSTRUCTED CONCRETE SIDEWALK

CONCRETE PAD UNDER OVERHANG

SLOPE BREAK

POROUS PAVEMENT SYSTEM (TYP.)

ADA VAN ACCESSIBLE PARKING SIGN (TYP.)

ADA ACCESSIBLE PARKING SIGN (TYP.)

ADA VAN ACCESSIBLE PARKING STALL (TYP.)

ADA ACCESSIBLE PARKING STALL (TYP.)

ADA DETECTABLE WARNING SURFACE (TYP.)

STANDARD PAVEMENT (TYP.)

EV MAKE READY SPACE (TYP.)

EV MAKE READY ADA PARKING STALL

PAINTED CROSSWALK, 10' WIDE

RESET STOP SIGN

DELIVERY DROP-OFF AREA

CONCRETE PAVER (TYP.)

RAIN GARDEN AREA

VALET AREA

DEPRESSED CURB

PATIENT DROP OFF AREA

EDUCATION BUILDING

EXISTING ENTRANCE

EXISTING STAFF ENTRANCE

METAL BENCH AND TRASH CAN – SEE LANDSCAPE PLAN FOR DETAILS

3' X 4' WHEELCHAIR SPOT

Multi-Level Building "Medical Arts Pavilion"

LEASE AREA (DB6222-PG.144)

LEGEND:

POROUS PAVEMENT

CONCRETE SIDEWALK

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SCALE IN FEET

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NO.	DATE	DESCRIPTION

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Penn Medicine Princeton Health Cancer Center Garage

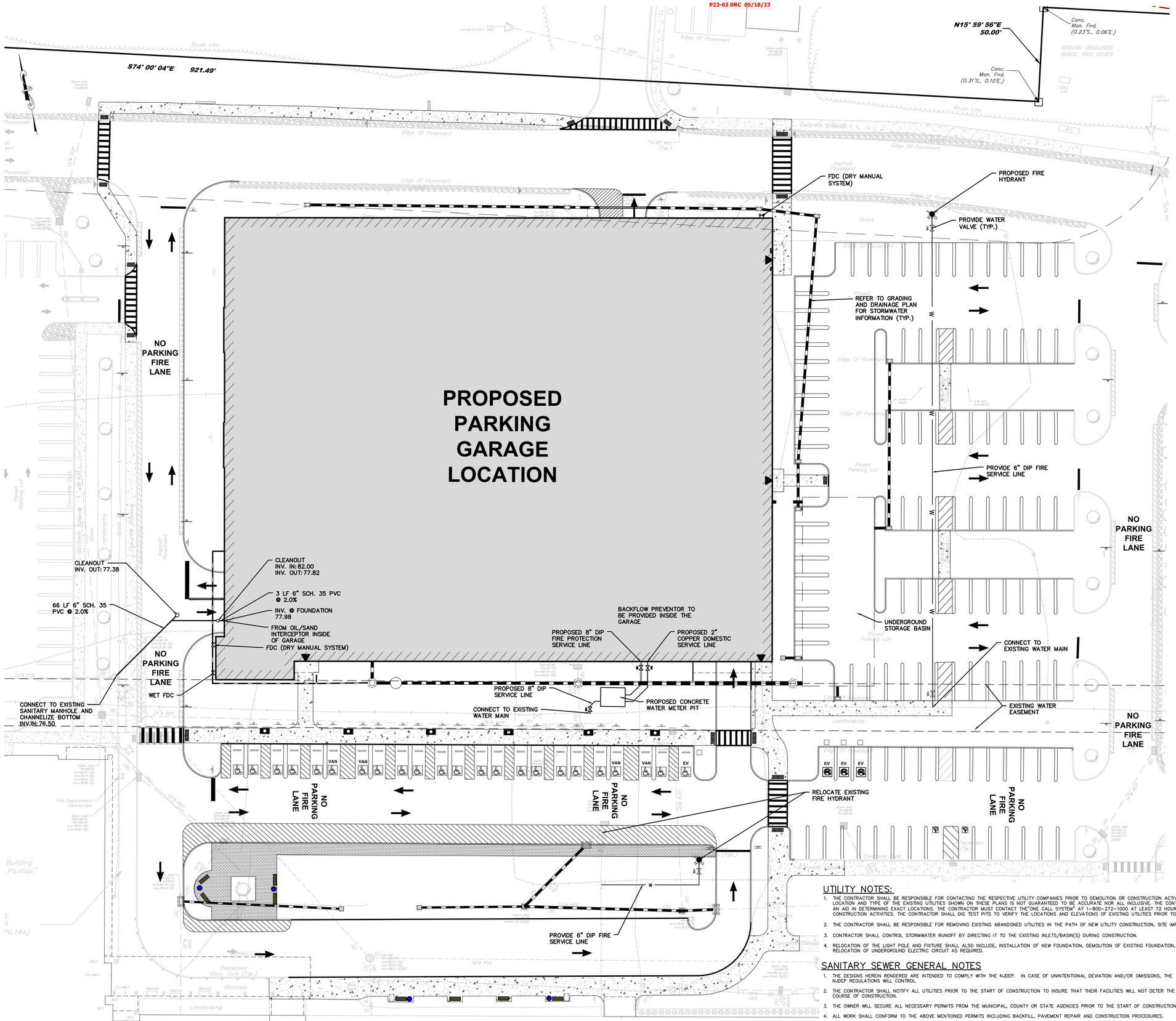
1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

SITE AND LAYOUT PLAN

C.1C.03

04/14/2023 SITE PLAN SUBMISSION



UTILITY NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION OR CONSTRUCTION ACTIVITIES TO DETERMINE THE EXACT LOCATIONS AS NECESSARY. THE LOCATION AND TYPE OF THE EXISTING UTILITIES SHOWN ON THESE PLANS IS NOT GUARANTEED TO BE ACCURATE NOR ALL INCLUSIVE. THE CONTRACTOR SHALL USE THE EXISTING UTILITY LOCATIONS SHOWN AS AN AID IN DETERMINING EXACT LOCATIONS. THE CONTRACTOR MUST CONTACT THE"ONE CALL SYSTEM" AT 1-800-272-1000 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION AND/OR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DIG TEST PITS TO VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO BID, DEMOLITION, OR CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING ABANDONED UTILITIES IN THE PATH OF NEW UTILITY CONSTRUCTION, SITE IMPROVEMENTS, AND/OR BUILDING CONSTRUCTION.
3. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF BY DIRECTING IT TO THE EXISTING INLETS/BASIN(S) DURING CONSTRUCTION.
4. RELOCATION OF THE LIGHT POLE AND FIXTURE SHALL ALSO INCLUDE, INSTALLATION OF NEW FOUNDATION, DEMOLITION OF EXISTING FOUNDATION, RESTRIPING OF PARKING STALLS AS NECESSARY, AND RELOCATION OF UNDERGROUND ELECTRIC CIRCUIT AS REQUIRED.

SANITARY SEWER GENERAL NOTES

1. THE DESIGNS HEREIN RENDERED ARE INTENDED TO COMPLY WITH THE NJDEP. IN CASE OF UNINTENTIONAL DEVIATION AND/OR OMISSIONS, THE NJDEP REGULATIONS WILL CONTROL.
2. THE CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION TO INSURE THAT THEIR FACILITIES WILL NOT DETER THE COURSE OF CONSTRUCTION.
3. THE OWNER WILL SECURE ALL NECESSARY PERMITS FROM THE MUNICIPAL, COUNTY OR STATE AGENCIES PRIOR TO THE START OF CONSTRUCTION.
4. ALL WORK SHALL CONFORM TO THE ABOVE MENTIONED PERMITS INCLUDING BACKFILL, PAVEMENT REPAIR AND CONSTRUCTION PROCEDURES.
5. ALL CONCRETE AS NOTED IN APPURTENANT DESIGNS SHALL BE 3,000 PSI, UNLESS OTHERWISE NOTED.
6. ALL LATERAL LOCATIONS SHALL BE VERIFIED IN THE FIELD.
7. ALL SANITARY SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DETAILS.
8. ANY ADJUSTMENTS OR REPAIRS TO EXISTING SANITARY FACILITIES DAMAGED AS A RESULT OF THE CONTRACTORS OPERATIONS SHALL BE MADE AT THE CONTRACTORS EXPENSE AND SHALL BE SUBJECT TO REVIEW, INSPECTION, APPROVAL AND ACCEPTANCE BY THE AUTHORITY ENGINEER.
9. WHEN CORING A NEW CONNECTION TO EXISTING MANHOLE, CORE SHALL BE MADE AT LEAST SIX (6) INCHES FROM MANHOLE BARREL JOINTS.
10. SANITARY SEWER LINES SHALL BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY OR THE PIPES SHALL BE IN SEPARATE TRENCHES WITH THE SEWER AT LEAST 18 INCHES BELOW THE WATER MAIN. WHERE APPROPRIATE SEPARATION FROM THE WATER MAIN IS NOT POSSIBLE, THE SEWER SHALL BE ENCASED IN CONCRETE OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR AWAY FROM THE WATER LINE AS POSSIBLE.

NEW JERSEY AMERICAN WATER (NJAW) NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH NJAW TO SCHEDULE TIME 8" WET TAP CONNECTION FOR THE PROPOSED WATER SERVICE TO PARKING GARAGE AND 6" WET TAP CONNECTION FOR THE PROPOSED FIRE HYDRANT SERVICE LINE ON EAST SIDE OF PARKING GARAGE
2. CONTRACTOR IS RESPONSIBLE TO FURNISH AND CONSTRUCT THE 8" WATER SERVICE WITH VALVE TO PROPOSED WATER METER CHAMBER, THE WATER METER CHAMBER AND THE APPURTENANCES, 2" DOMESTIC WATER SERVICE WITH SHUT OFF VALVE, 8" FIRE PROTECTION SERVICE LINE WITH VALVE AND COORDINATE WITH NJAW FOR METER SETTING WITH THE METER CHAMBER.
3. CONTRACTOR IS RESPONSIBLE TO FINISH AND CONSTRUCT THE 6" DIP FIRE SERVICE LINE INCLUDING ALL VALVES AND THE FIRE HYDRANTS SHOWN.
4. CONTRACTOR IS RESPONSIBLE TO PERFORM ALL TESTING REQUIRED BY NJAW AND OBTAIN NJAW ACCEPTANCE TO ALLOW WATER SERVICE LINES TO BE ACTIVE AND OPERATIONAL.

20 0 20 40
SCALE IN FEET

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NO. DATE DESCRIPTION

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Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

UTILITY PLAN

C.1C.04

04/14/2023 SITE PLAN SUBMISSION

P23-03 DRC 05/18/23

S74° 00' 04"E 921.49'

PROPOSED SIX LEVEL PARKING GARAGE

NO PARKING FIRE LANE

INLET #A-1 GR: 93.03 INV. OUT: 89.00

INLET #A-2 GR: 93.02 INV. IN: 88.31 (15") INV. OUT: 88.31

INLET #A-3 GR: 94.02 INV. IN: 87.93 (15") INV. OUT: 87.93

INLET #A-4 GR: 93.29 INV. IN: 87.77 INV. OUT: 86.52

INLET #B-1 GR: 91.65 INV. OUT: 86.54

INLET #A-5 GR: 88.63 INV. IN: 85.22 (15") INV. OUT: 85.22

INLET #A-6 GR: 88.15 INV. IN: 84.96 (15") INV. OUT: 84.96

INLET #B-2 GR: 88.84 INV. IN: 85.66 (15") INV. OUT: 81.49

INLET #A-7 GR: 88.22 INV. IN: 84.17 (15") INV. OUT: 84.17

INLET #B-3 GR: 88.32 INV. OUT: 81.48

INLET #B-5 GR: 84.80 INV. IN: 79.67 (15") (EX) INV. OUT: 79.67

15" TRENCH DRAIN ELEV. 93.40 4.7' DEEP

137 LF 15" HDPE @ 0.50%

17 LF 15" HDPE @ 0.50%

60 LF 15" HDPE @ 0.50%

31 LF 15" HDPE @ 0.52%

130 LF 15" RCP @ 1.00%

88 LF 15" HDPE @ 1.00%

25 LF 15" RCP @ 1.03%

8 LF 15" RCP @ 1.01%

96 LF 18" HDPE @ 0.50%

114 LF 24" RCP @ 0.50%

5 LF 24" RCP @ 0.00%

63 LF 15" RCP @ 1.80%

45 LF 15" RCP @ 0.37%

18 LF 15" RCP @ 0.44%

56 LF 12" HDPE @ 0.50%

85 LF 12" HDPE @ 0.49%

55 LF 6" HDPE @ 1.0%

28 LF 6" HDPE @ 2.0%

45 LF 6" HDPE @ 1.0%

25 LF 6" HDPE @ 1.0%

11 LF 18" HDPE @ 0.50%

13 LF 18" HDPE @ 1.00%

5 LF 6" HDPE @ 1.0%

100 LF 15" RCP @ 1.00%

89 LF 15" HDPE @ 1.00%

2 LF 18" HDPE @ 0.96%

5 LF 18" HDPE @ 1.02%

2 LF 15" RCP @ 1.00%

8 LF 15" HDPE @ 1.04%

8 LF 15" HDPE @ 1.01%

6 LF 15" HDPE @ 1.09%

2 LF 15" RCP @ 1.00%

5 LF 24" RCP @ 0.00%

24" NYLOPLAST DRAIN BASIN W/ GRATE. GR: 94.10 INV. IN: 89.30 INV. OUT: 88.38

24" NYLOPLAST DRAIN BASIN W/ GRATE. GR: 94.10 INV. IN: 89.30 INV. OUT: 88.14

24" NYLOPLAST DRAIN BASIN W/ GRATE. GR: 93.05 INV. IN: 87.90 INV. OUT: 86.35

36" NYLOPLAST DRAIN BASIN W/ GRATE GR: 87.56 INV. IN: 89.35 INV. OUT: 89.85

36" NYLOPLAST DRAIN BASIN W/ GRATE GR: 87.90 INV. IN: 84.35 INV. OUT: 84.65

12" NYLOPLAST DRAIN BASIN W/ GRATE GR 89.40 INV. IN: 85.20 INV. OUT: 85.20

12" NYLOPLAST DRAIN BASIN W/ GRATE GR 88.45 INV. IN: 885.25(N) INV. IN: 83.90(S) INV. OUT: 81.53

12" NYLOPLAST DRAIN BASIN W/ GRATE GR 88.50 INV. IN: 84.75 INV. OUT: 84.75

12" NYLOPLAST DRAIN BASIN W/ GRATE GR 88.40 INV. IN: 83.95 INV. OUT: 83.95

12" NYLOPLAST DRAIN BASIN W/ GRATE GR 87.95 INV. IN: 84.50 INV. OUT: 84.50

4" ROOF LEADER FROM CANOPY, CONNECT TO 15" HDPE

4" ROOF LEADER FROM CANOPY, CONNECT TO 6"HDPE

4" ROOF LEADER FROM CANOPY, CONNECT TO 24" RCP

MANHOLE #C-1 RIM: 88.40 INV. IN: 80.97 (18") INV. OUT: 80.95

MANHOLE #A-8 RIM: 87.59 INV. IN: 80.34 (18") INV. IN: 80.34 (24") INV. OUT: 80.17 (EX. 24")

5' DIAMETER FIRST DEFENSE OPTIMUM (HYDRO INTERNATIONAL) RIM: 88.34 INV. IN: 80.82 (18") INV. OUT: 80.82

EXISTING 24" RCP TO REMAIN

UP-FLO FILTER WITH SERIES 370 TIDEFLEX VALVE ON OUTFLOW PIPE INV. IN: 84.73 INV. OUT: 81.73

12 ROWS OF 18" PERFORATED HDPE, 95 LF EACH

MEET EXISTING GRADE

MEET EXISTING GRADE (TYP.)

SEE "ENLARGED AREA" FOR DETAILED GRADING, STORMWATER SYSTEM INVERTS, AND SIZING

OUTLET CONTROL STRUCTURE GR: 87.97 INV. IN: 80.91 (24") INV. OUT: 80.91

YARD INLET #A-7A GR: 87.65 INV. OUT: 84.25

YARD INLET #B-1 GR: 84.90 INV. OUT: 81.00

YARD INLET #B-3 GR: 84.90 INV. OUT: 81.63

EXISTING INLET #C-2 GR: 84.63 INV. IN: 80.58 (12") (EX) INV. IN: 80.58 (EX) INV. OUT: 79.43

RECONSTRUCT EXISTING YARD INLET #B-3 GR: 84.50 INV. IN: 81.35 (12") INV. IN: 81.35 (15") INV. OUT: 81.35

RECONSTRUCT EXISTING YARD INLET #B-4 GR: 84.06 INV. IN: 79.85 (15") (EX) INV. IN: 79.85 INV. OUT: 79.75

HIGH POINT

VAN

EV

Conc. Mon. Fnd (0.31'S., 0.10'E.)

DENSE TREE COVER

Paved Parking Lot

Asphalt Pavement

Edge Of Pavement

Concrete Curb

Concrete Landscaping

Depressed Conc. Curb (Typ.)

10"ø PVC

No Flow Over Curb

Flow Over Curb

ENLARGED AREA
SCALE: 1" = 10'

20 0 20 40
SCALE IN FEET

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Penn Medicine Princeton Health Cancer Center Garage

Princeton Forward

Penn Medicine Princeton Health

1 Plainsboro Road
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FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

Penn Medicine Princeton Health Cancer Center Garage

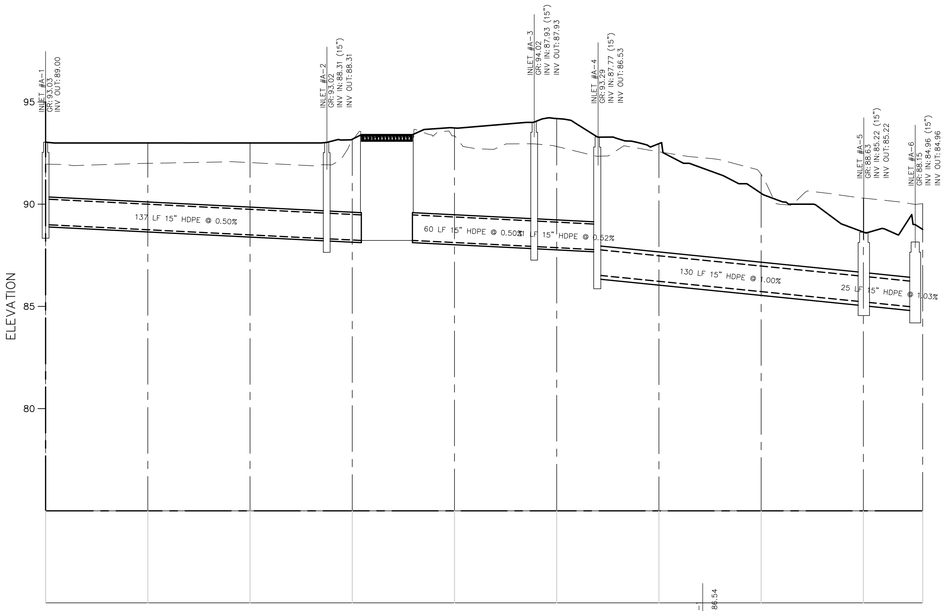
1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

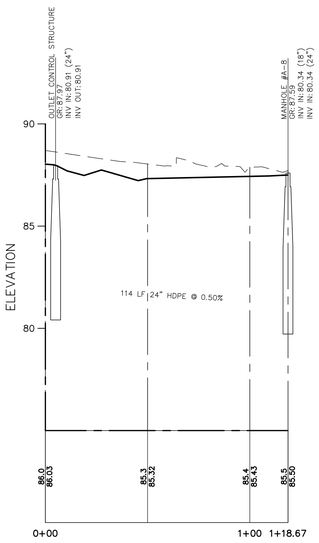
GRADING AND DRAINAGE PLAN

C.1C.05

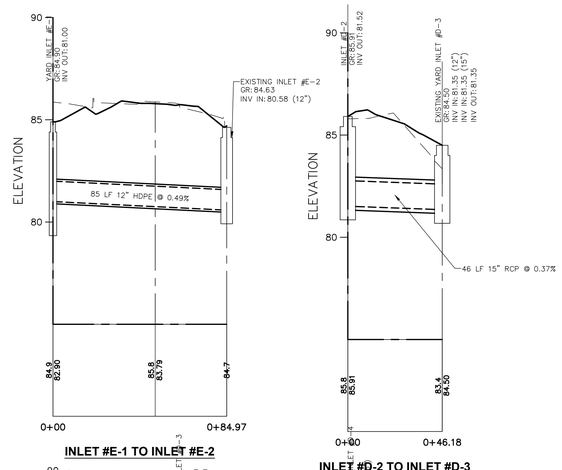
04/14/2023 SITE PLAN SUBMISSION



INLET #A-1TO #A-6

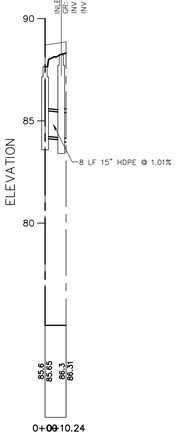


OUTLET CONTROL STRUCTURE TO INLET #A-8

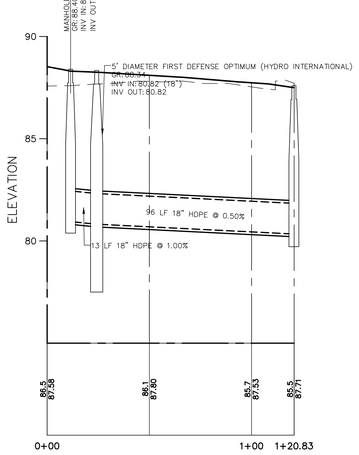


INLET #E-1 TO INLET #E-2

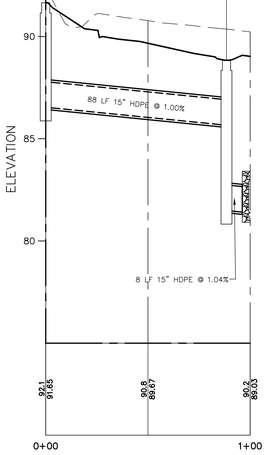
INLET #D-2 TO INLET #D-3



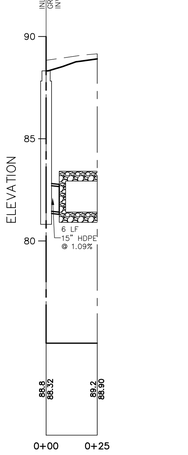
INLET #A-7A TO INLET #A7



GARAGE ROOF LEADER TO MANHOLE #A-8



INLET #B-1 TO UNDERGROUND BASIN



INLET #B-3 TO UNDERGROUND BASIN

INLET #D-1 TO INLET #D-5

SCALE IN FEET

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Penn Medicine
Princeton Health

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ANDREW L. FRENCH, P.E.
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NO. DATE DESCRIPTION

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

STORMWATER PROFILES

C.1C.06

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:06 AM
Autodesk Docs://3267 Penn Medicine Princeton Health/PPHS-PMPH-CAR.rvt
Penn Medicine Princeton Health Cancer Center Garage

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SILT FENCE (TYP.)

NO PARKING FIRE LANE

PROPOSED SIX LEVEL PARKING GARAGE

TEMPORARY STOCKPILE (TYP.)

NO PARKING FIRE LANE

HAY BALES, AS NEEDED (TYP.)

NO PARKING FIRE LANE

NO PARKING FIRE LANE

NO PARKING FIRE LANE

NO PARKING FIRE LANE

NO PARKING FIRE LANE

TREE PROTECTION (TYP.)

INLET PROTECTION (TYP.)

LIMIT OF DISTURBANCE (TYP.)
219,343 SF (5.04 AC.)

KEY MAP
NOT TO SCALE

20 0 20 40
SCALE IN FEET

3/14/2023 10:55:59 AM
Autodesk Docs://5267 Penn Medicine Princeton Health/PHS-PMPH-GAR-AR.rvt

Penn Medicine Princeton Health Cancer Center Garage

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NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

SOIL EROSION AND SEDIMENT CONTROL PLAN

C.1C.07

04/14/2023 SITE PLAN SUBMISSION

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE FREEHOLD SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY SOIL DISTURBING ACTIVITY.
2. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
4. N.J.S.A 4:24-39 ET. SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THE DISTRICT DETERMINES THAT A PROJECT OR PORTION THEREOF IS IN FULL COMPLIANCE WITH THE CERTIFIED PLAN AND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY AND A REPORT OF COMPLIANCE HAS BEEN ISSUED. UPON WRITTEN REQUEST FROM THE APPLICANT, THE DISTRICT MAY ISSUE A REPORT OF COMPLIANCE WITH CONDITIONS ON A LOT-BY-LOT OR SECTION-BY-SECTION BASIS, PROVIDED THAT THE PROJECT OR PORTION THEREOF IS IN SATISFACTORY COMPLIANCE WITH THE SEQUENCE OF DEVELOPMENT AND TEMPORARY MEASURES FOR SOIL EROSION AND SEDIMENT CONTROL HAVE BEEN IMPLEMENTED, INCLUDING PROVISIONS FOR STABILIZATION AND SITE WORK.
5. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN SIXTY (60) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW OR EQUIVALENT MATERIAL, AT A RATE OF 2 TO 2 ½ TONS PER ACRE, ACCORDING TO STATE STANDARD FOR STABILIZATION WITH MULCH ONLY.
6. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AND A MULCH ANCHOR, IN ACCORDANCE WITH STATE STANDARDS.
7. A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS TO STABILIZE STREETS, ROADS, DRIVEWAYS, AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN FIFTEEN (15) DAYS OF THE PRELIMINARY GRADING.
8. THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS REQUIRES THE INSTALLATION OF A PAD OF CLEAN CRUSHED STONE AT POINTS WHERE TRAFFIC WILL BE ACCESSING THE CONSTRUCTION SITE. AFTER INTERIOR ROADWAYS ARE PAVED, INDIVIDUAL LOTS REQUIRE A STABILIZED CONSTRUCTION ENTRANCE CONSISTING OF ONE INCH TO TWO INCH (1" - 2") STONE FOR A MINIMUM LENGTH OF TEN FEET (10') EQUAL TO THE LOT ENTRANCE WIDTH. ALL OTHER ACCESS POINTS SHALL BE BLOCKED OFF.
9. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS WILL BE REMOVED IMMEDIATELY.
10. PERMANENT VEGETATION IS TO BE SEEDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING.
11. AT THE TIME THAT SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT IT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
12. IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS/ACRE, (OR 450 LBS/50 FT OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12' OF SETTLED SOIL WITH A PH OF 5 OR MORE, OR 24' WHERE TREES OR SHRUBS ARE TO BE PLANTED.
13. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
14. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER. ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE STANDARD FOR DEWATERING.
15. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED AS REQUIRED BY THE STANDARD FOR DUST CONTROL.
16. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STOCKPILES NOT LOCATED WITHIN THE LIMIT OF DISTURBANCE WILL REQUIRE CERTIFICATION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN. CERTIFICATION OF A NEW SOIL EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED FOR THESE ACTIVITIES IF AN AREA GREATER THAN 5,000 SQUARE FEET IS DISTURBED.
17. ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL NOTE #6.
18. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BELOW STORMWATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

FREEHOLD SOIL CONSERVATION DISTRICT
4000 KOZLOSKI ROAD
FREEHOLD NEW JERSEY 07728
(732) 683-8500

ACID SOILS NOTES

IN ORDER TO PROVIDE SUITABLE CONDITIONS FOR GROWTH AND VEGETATION AND TO PREVENT THE ACIDIFYING OF DRAINAGE WATER IN THOSE AREAS UNDERLAIN WITH ACID FORMATIONS WITH A ph BELOW 4.0 THE FOLLOWING REQUIREMENT SHALL BE MET:

1. LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID PRODUCING SOILS ARE ENCOUNTERED.
2. TOPSOIL STRIPPED FROM THE SITE SHALL BE STORED SEPARATELY FROM TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOILS.
3. STOCKPILES OF HIGH ACID PRODUCING SOIL SHOULD BE LOCATED ON LEVEL LAND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THIS MATERIAL HAS A HIGH CLAY CONTENT.
4. TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOIL MATERIAL TO BE STORED MORE THAN 48 HOURS SHOULD BE COVERED WITH PROPERLY ANCHORED, HEAVY GRADE SHEETS OF POLYETHYLENE WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF 3 TO 6 INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. SILT FENCE SHALL BE INSTALLED AT THE TOE OF SLOPE TO CONTAIN MOVEMENT OF THE STOCKPILED MATERIAL. TOPSOIL SHALL NOT BE APPLIED TO THE STOCKPILES TO PREVENT TOPSOIL CONTAMINATION WITH HIGH ACID PRODUCING SOIL.
5. HIGH ACID PRODUCING SOILS WITH A pH OF 4 OR LESS, OR CONTAINING IRON SULFIDE, (INCLUDING BORROW FROM CUTS OR DREDGED SEDIMENT) SHALL BE ULTIMATELY PLACE OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS PER ACRE (OR 450 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SETTLED SOIL WITH A pH OF 5 OR MORE EXCEPT AS FOLLOWS:
   A. AREAS WHERE TREES OR SHRUBS ARE PLANTED SHALL BE COVERED WITH A MINIMUM OF 24 INCHES OF SOIL WITH A pH OF 5 OR MORE.
   B. DISPOSAL AREAS SHALL NOT BE LOCATED WITHIN 24" OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES AND OTHERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
6. EQUIPMENT USED FOR MOVEMENT OF HIGH ACID-PRODUCING SOILS SHOULD BE CLEANED AT THE END OF EACH DAY TO PREVENT SPREADING OF HIGH ACID-PRODUCING SOIL MATERIALS TO OTHER PARTS OF THE SITE, INTO STREAMS OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED RUSTING.
7. NON-VEGETATIVE EROSION CONTROL PRACTICES (STONE TRACKING PADS, STRATEGICALLY PLACED LIMESTONE CHECK DAM, SEDIMENT BARRIER, WOOD CHIPS) SHOULD BE INSTALLED TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF THE SITE.
8. FOLLOWING BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOIL, TOPSOILING AND SEEDING OF THE SITE (SEE TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, AND TOPSOILING), MONITORING MUST CONTINUE FOR A MINIMUM OF 6 MONTHS TO ENSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH ACID-PRODUCING SOIL PROBLEMS EMERGE. IF PROBLEMS STILL EXIST, THE AFFECTED AREA MUST BE TREATED AS INDICATED ABOVE TO CORRECT THE PROBLEM.

CONSTRUCTION SCHEDULE AND PROCEDURE FOR IMPLEMENTATION OF SOIL EROSION AND SEDIMENT CONTROL MEASURES

1. PROVIDE TEMPORARY STABILIZATION OF ALL DISTURBED AREAS AND INSTALL SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE AND ALL OTHER NECESSARY SOIL EROSION MEASURES. (1 WEEK)
2. PERFORM SITE CLEARING. (2 WEEKS)
3. CLEAR AND ESTABLISH ROUGH GRADES AS NECESSARY TO CONSTRUCT PARKING GARAGE AND SITE IMPROVEMENTS. (2 WEEKS)
4. INSTALL STORM DETENTION SYSTEM, INLETS AND CONNECTING PIPES (5 WEEKS)
5. INSTALL ALL UNDERGROUND UTILITIES. (3 WEEKS)
6. INSTALL CURB, POROUS PAVEMENT STONE, AND PAVEMENT BASE COURSE (4 WEEKS)
7. CONSTRUCT PARKING GARAGE (12 WEEKS)
8. ESTABLISH FINISHED GRADE, AND PROVIDE PERMANENT VEGETATIVE COVER. (2 WEEKS)
9. PAVE DRIVEWAYS, ACCESS DRIVE AND COMPLETE LIGHTING. (3 WEEKS)
10. REMOVE ACCESS PROTECTION, AND SILT FENCE AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED. (1 WEEK)

THE ABOVE SCHEDULE IS FOR THE IMPLEMENTATION AND INSTALLATION OF SOIL EROSION AND SEDIMENT CONTROL MEASURES ONLY. CONTRACTOR MAY MODIFY AND/OR CREATE HIS OWN SCHEDULE. IF THE CONSTRUCTION SCHEDULE IS MODIFIED, A REVISION TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED.

PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. IMMEDIATELY PRIOR TO SEEDING AND TOPSOILING APPLICATION, THE SUBSOIL SHALL BE EVALUATED FOR COMPACTION IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.
   C. TOPSOIL SHOULD BE HANDLED ONLY WHEN ITS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS REQUIRED ON ALL SITES. TOPSOIL SHALL BE AMENDED WITH ORGANIC MATTER, AS NEEDED, IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING.
   D. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
2. SEEDBED PREPARATION
   A. UNIFORMLY APPLY GROUND LIMESTONE AND FERTILIZER TO TOPSOIL WHICH HAS BEEN SPREAD AND FIRMED, ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS COOPERATIVE EXTENSION OFFICES (HTTP://NJAES.RUTGERS.EDU/COUNTY/). FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 S.F. OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE AND IS INCORPORATED INTO THE SURFACE 4 INCHES. IF FERTILIZER IS NOT INCORPORATED, APPLY ONE-HALFTHE RATE DESCRIBED ABOVE DURING THE SEEDBED PREPARATION AND REPEAT ANOTHER ONE-HALF RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING.
   B. WORK LIME AND FERTILIZER INTO THE TOPSOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.
   C. HIGH ACID PRODUCING SOIL: SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED PREPARATION. SEE ACID SOIL NOTES.
3. SEEDING
   A. PERMANENT SEEDING SHALL CONSISTING OF THE FOLLOWING MIXES OR APPROVED EQUAL – ACCEPTABLE SEEDING DATES ARE BETWEEN MARCH 1 THRU APRIL 30 AND OPTIMAL SEEDING DATES ARE AUGUST 15 THRU OCTOBER 15:

HARD FESCUE	@ 4.0#/1,000 S.F.
PERENNIAL RYEGRASS	@ 1.0#/1,000 S.F.
KENTUCKY BLUEGRASS	@ 1.0#/1,000 S.F.

   PERMANENT SEEDING SHALL BE PROVIDED ON ALL THE DETENTION BASIN SIDE SLOPES AND BASIN BOTTOM. THE SEED MIX SHALL BE SEED MIXTURE 17 AND CONSIST OF THE FOLLOWING MIXTURE OR APPROVED EQUAL – ACCEPTABLE SEEDING DATES ARE BETWEEN MARCH 1 THRU AUGUST 14 AND OPTIMAL SEEDING DATES ARE AUGUST 15 THRU OCTOBER 1:

CREEPING BENTGRASS	@#/1,000 S.F.
CREEPING RED FESCUE	@#/1,000 S.F.
ALKALI SALTGRASS	@#/1,000 S.F.

   PLEASE NOTE THAT OTHER SEED MIXTURES CAN BE USED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
   B. CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF ½ TO ¾ INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE ¼ INCH DEEPER ON COARSE-TEXTURED SOIL.
   C. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.
   D. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK, OR TRAILER-MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER, AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT-FINERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. WHEN POOR SEED TO SOIL CONTACT OCCURS, THERE IS A REDUCED SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.
   E. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.
4. MULCHING
   A. MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS REQUIREMENT.
      A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, APPLIED AT THE RATE OF 1 ½ TO 2 TONS ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT MORE IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO PRESENCE OF WEED SEED.
      APPLICATION- SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTION 70 TO 90 POUNDS WITHIN EACH SECTION.
      ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.
   1. PEG AND TWINE. DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
   2. MULCH NETTING. STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTING TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
   3. CRIMPER (MULCH ANCHORING COULTER TOOL) – A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE INCREASED. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
   4. LIQUID MULCH BINDERS–MAY BE USED TO ANCHOR SALT HAY OR STRAW MULCH.
      A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
      B. USE ONE OF THE FOLLOWING:
   1. ORGANIC AND VEGETABLE BASED BINDERS – NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES AND WEATHER CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS. MANY NEW PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.
   2. SYNTHETIC BINDERS – HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.
      NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A COMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.
   3. WOOD-FIBER OR PAPER-FIBER MULCH. SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS, USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.
   4. PELLETIZED MULCH. COMPRESSED AND EXTRUDE PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORMA MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75LBS/1,000 SQUARE FEET WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE.
      APPLY THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.
   5. IRRIGATION (WHERE FEASIBLE)
      IF SOIL MOISTURE IS DEFICIENT, AND MULCH IS NOT USED, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH APPLIED UP TO TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.

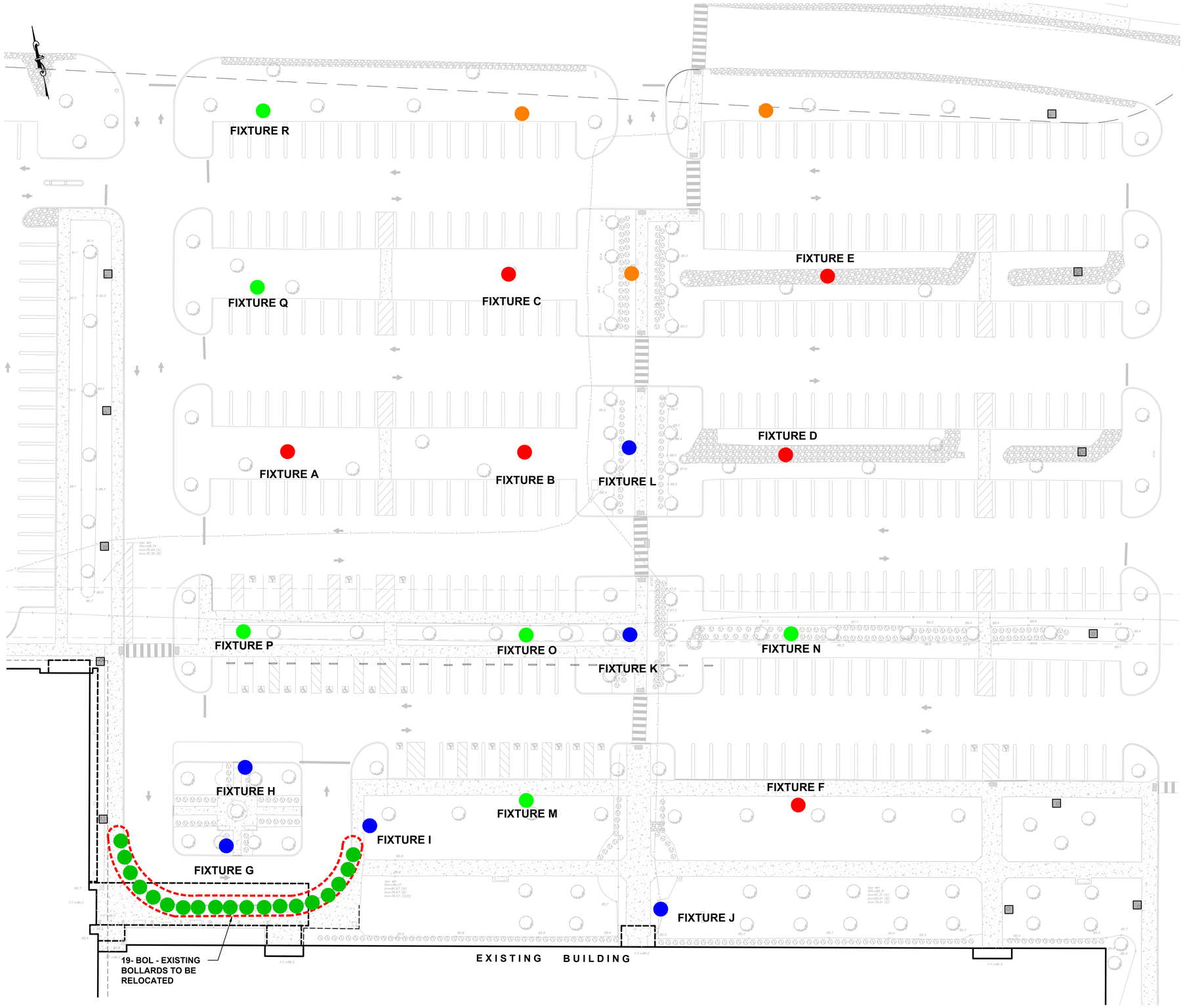
STABILIZATION WITH MULCH

METHODS AND MATERIALS

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.
2. PROTECTIVE MATERIALS
   A. UN-ROTTED SMALL-GRAIN STRAW, OR SALT HAY AT 2.0 TO 2.5 TONS PER ACRE IS SPREAD UNIFORMLY AT 90 TO 115 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING TIE DOWN. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT. THE APPROVED RATES ABOVE HAVE BEEN MET WHEN THE MULCH COVERS THE GROUND COMPLETELY UPON VISUAL INSPECTION, ie. THE SOIL CAN NOT BE BELOW THE MULCH.
   B. ASPHALT EMULSION IS RECOMMENDED AT THE RATE OF 600 TO 1,200 GALLONS PER ACRE. THIS IS SUITABLE FOR A LIMITED PERIOD OF TIME WHERE TRAVEL BY PEOPLE, ANIMALS OR MACHINES IS NOT A PROBLEM.
   C. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.
   D. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A HYROSEEDER.
   E. MULCH NETTING, SUCH AS PAPER JUTE, EXCELSIOR, COTTON, OR PLASTIC, MAY BE USED.
   F. WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.
   G. GRAVEL, CRUSHED STONE, OR SAG AT THE RATE OF 9 CUBIC YARDS PER 1,000 SQ. FT. APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 3 INCHES MAY BE USED. SIZE 2 OR 3 (ASTM-C-33) IS RECOMMENDED.
3. MULCH ANCHORING – SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA AND STEEPNESS OF SLOPES.
   A. PEG AND TWINE – DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
   B. MULCH NETTING – STAPLE PAPER, COTTON, OR PLASTIC NETTINGS OVER MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED. NETTING IS USUALLY AVAILABLE IN ROLLS 4 FEET WIDE AND UP TO 300 FEET LONG.
   C. CRIMPER MULCH ANCHORING COULTER TOOL – A TRACTOR-DAWN IMPLEMENT ESPECIALLY DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SURFACE. THIS PRACTICE AFFORDS MAXIMUM EROSION CONTROL BUT IS USE IS LIMITED TO THOSE SLOPES UPON WHICH THE TRACTOR CAN OPERATE SAFELY. SOIL PENETRATION SHOULD BE ABOUT 3 TO 4 INCHES. ON SLOPING LAND, THE OPERATION SHOULD BE ON THE CONTOUR.
   D. LIQUID MULCH –BINDERS
      1. APPLICATION SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
      2. USE ONE OF THE FOLLOWING:
   A. ORGANIC AND VEGETABLE BASED BINDER – NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES AND WEATHER CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS. MANY NEW PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.
      B. SYNTHETIC BINDERS – HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS, FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRAD



LEGEND:

- EXISTING LIGHT FIXTURE AND POLE TO REMAIN
- EXISTING LIGHT FIXTURE AND POLE TO BE STORED FOR FUTURE USE
- REUSE/RELOCATE LIGHT FIXTURE AND 25' POLE (FIXTURES A THROUGH F)
- REUSE/RELOCATE LIGHT FIXTURE, STORE 14' POLE (FIXTURES G THROUGH L)
- REUSE/RELOCATE 25' POLE, STORE LIGHT FIXTURE FOR FUTURE USE (FIXTURES M THROUGH R)
- BOL — EXISTING BOLLARD TO BE REUSED/RELOCATED AS SHOWN ON PROPOSED LIGHTING PLAN (19 TOTAL)

LIGHTING NOTES:

1. THIS PLAN SHALL BE USED FOR THE LOCATIONS OF THE EXISTING EXTERIOR LIGHTING WITHIN THE PROPOSED CANCER CENTER LIMIT OF DISTURBANCE ONLY.
2. THE CONTRACTOR SHALL REMOVE ALL EXISTING LIGHT FIXTURES AS SHOWN FOR RE-USE AND/OR STORAGE. THE CONTRACTOR SHALL CONSULT WITH THE LIGHTING MANUFACTURER FOR DIRECTIONS FOR PROPER STORAGE OF THE EXISTING LIGHTS. THE STORAGE LOCATION SHALL BE DETERMINED BY THE OWNER.
3. ANY LIGHTS THAT ARE TO REMAIN SHALL BE PROPERLY PROTECTED FROM CONSTRUCTION ACTIVITIES. ANY DAMAGE THAT OCCURS TO THESE LIGHTS SHALL BE REMEDIED BY THE CONTRACTOR AT NO COST TO THE OWNER.
4. ANY DAMAGE THAT OCCURS TO IMPROPER STORAGE OF THE LIGHTS DURING CONSTRUCTION SHALL BE REMEDIED BY THE CONTRACTOR AT NO COST TO THE OWNER.

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SCALE IN FEET

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NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

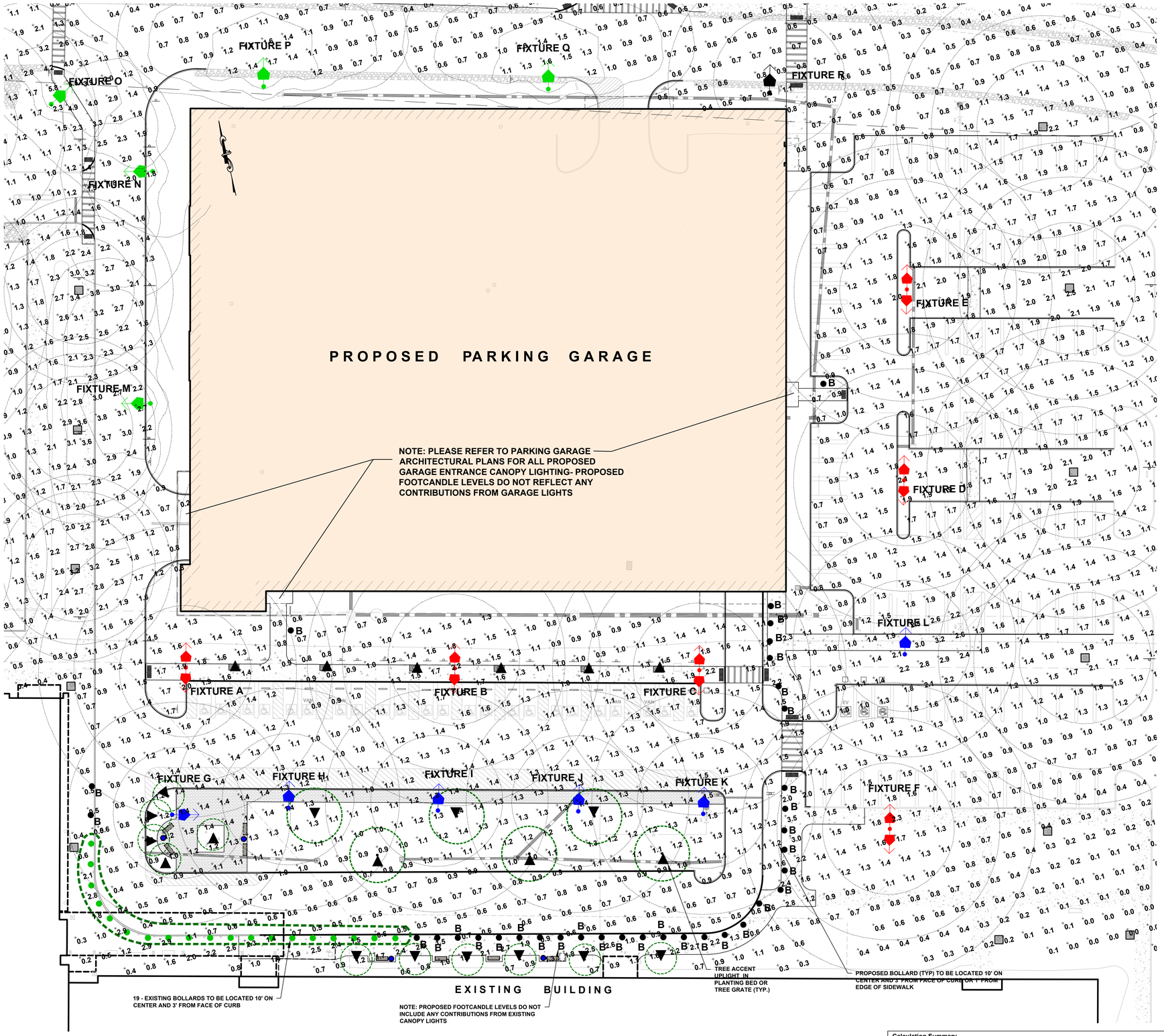
EXISTING LIGHTING PLAN

C.1C.09

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
Autodesk Docs://2587 Penn Medicine Princeton Health/PMH-FAPH-CA-BA.rvt
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.



LIGHTING NOTES:

1. DO NOT INSTALL PROPOSED LIGHTS DIRECTLY ON TOP OF ANY PROPOSED OR EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF UTILITIES AND ADJUST LIGHTS AS NEEDED AS DIRECTED BY THE PROJECT PROFESSIONAL TO ACCOMMODATE ANY POTENTIAL CONFLICTS.
2. ALL BOLLARDS AND POLE MOUNTED LIGHTS SHALL BE PLACED AS FOLLOWS:
   a. FACE OF BOLLARD SHALL BE PLACED 2 FT FROM THE FACE OF THE CURBLINE IN DROP OFF AREA. FACE OF BOLLARD SHALL BE PLACED 1.5 FROM EDGE OF SIDEWALKS.
   b. POLE MOUNTED LIGHTS SHALL BE INSTALLED IN THE CENTER OF ISLANDS OR AS INDICATED OR A MINIMUM OF 3.5' FROM THE BACK OF THE CURB OR EDGE OF SIDEWALK TO THE FACE OF THE POLE.
   c. THE CENTER OF ALL POLE MOUNTED LIGHTS LONG THE SIDEWALK TO THE SOUTH OF THE PARKING GARAGE SHALL BE PLACED ON THE SIDEWALK 1.5 FT FROM THE EDGE (SEE DETAIL).
3. IN THE EVENT THAT THERE ARE DISCREPANCIES BETWEEN THE QUANTITIES SHOWN IN THE LIGHTING SCHEDULE AND THE PLAN, THE LIGHTING PLAN SHALL GOVERN.
4. THE HOSPITAL SHALL BE OPEN 24 HOURS PER DAY, 7 DAYS A WEEK. ALL EXTERIOR LIGHTS WILL REMAIN ON, HOWEVER, ALL DOUBLE FIXTURE LIGHTS SHALL BE DIMMED BY 50% BETWEEN THE HOURS OF MIDNIGHT AND 5 AM.
5. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS OF ALL LIGHT FIXTURES AND POLES FOR REVIEW AND APPROVAL BY THE APPROPRIATE ENTITIES.
6. THE APPLICANT WILL ENSURE THAT THE POLE/FIXTURE FINISH AND COLOR AND THE LIGHT SOURCE COLOR RENDITION OF ALL PROPOSED LIGHT FIXTURES AND POLES SHALL MATCH THE EXISTING POLES AND FIXTURES USED THROUGHOUT THE PENN MEDICINE CAMPUS. FINAL DETAILS AND COLORS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY PLAINSBORO TOWNSHIP.

LEGEND:

- EXISTING LIGHT FIXTURE AND POLE TO REMAIN
- B — PROPOSED BOLLARD
- EXISTING RELOCATED BOLLARD
- REUSE/RELOCATED LIGHT FIXTURE AND 25' POLE (FIXTURES A THROUGH F)
- REUSE/RELOCATE LIGHT FIXTURE, STORE 14' POLE, PROVIDE NEW 25' POLE (FIXTURES G THROUGH L)
- REUSE/RELOCATE 25' POLE, STORE EXISTING LIGHT FIXTURE, PROVIDE NEW LIGHT FIXTURE (FIXTURES M THROUGH Q)
- REUSE/RELOCATE 25' POLE, STORE EXISTING LIGHT FIXTURE, PROVIDE NEW LIGHT FIXTURE (FIXTURES R)
- PROPOSED TREE ACCENT UPLIGHT

Diversifed NJ Luminaire Schedule

Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	AFG (FT)	Description
	ARCHITECTURAL AREA LIGHTING	M22-P-36L-615-3K7-3-CL-COLOR-CONFIRM EXISTING POLE DIA-VOLTS R56	3000k	7630	0.880	71.13	NEW FIXTURE ON EXISTING 25' POLE	25	SINGLE TYPE 3
	ARCHITECTURAL AREA LIGHTING	M22-P-36L-615-3K7-5W-CL-COLOR-X"_ODMNT VOLTS R56	3000k	7787	0.880	71.13	NEW FIXTURE ON EXISTING 25' POLE	25	SINGLE TYPE 3
B	FORMS+SURFACES	LBCB500/SECTOR180/VOLTS/COLOR/R56	3000K	539	0.880	21.1	NEW BOLLARD	3.5	BOLLARD
	ARCHITECTURAL AREA LIGHTING	M22-2P-36L-615-3K7-5W-CL-COLOR-X"_ODMNT VOLTS R56	3000k	7787	0.880	71.13	REUSE EXISTING FIXTURES AND 25' POLE	25	TWIN TYPE 5
	ARCHITECTURAL AREA LIGHTING	M22-P-36L-615-3K7-5W-CL-COLOR-X"_ODMNT VOLTS R56	3000k	7787	0.880	71.13	REUSE EXISTING FIXTURE ON NEW 25' POLE	25	SINGLE TYPE 5

*- SEE DETAIL SHEET FOR PROPOSED TREE UPLIGHTING INFORMATION

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DROP OFF AREA	Illuminance	Fc	1.07	1.7	0.4	2.68	4.25
ON PAVEMENT AT GRADE	Illuminance	Fc	1.29	4.9	0.2	6.45	24.50
SIDEWALK AT GRADE_1	Illuminance	Fc	1.01	2.9	0.4	2.53	7.25
SIDEWALK AT GRADE_2	Illuminance	Fc	1.28	2.2	0.6	1.83	3.14
SIDEWALK AT GRADE_3	Illuminance	Fc	1.45	3.5	0.2	7.25	17.50

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ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

PROPOSED LIGHTING PLAN

C.1C.10

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:58 AM
Autodesk Docs://2587 Penn Medicine Princeton Health/PMH-ExRA.rvt
Penn Medicine Princeton Health Cancer Center Garage

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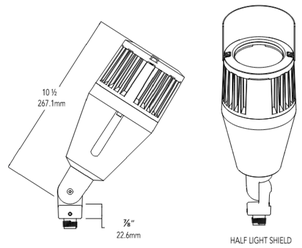
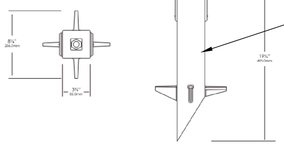




COMMERCIAL GRADE HEAVY DUTY PVC MOUNTING PEDESTAL MODEL CP-159 BY VISTA PROFESSIONAL OUTDOOR LIGHTING OR APPROVED EQUAL

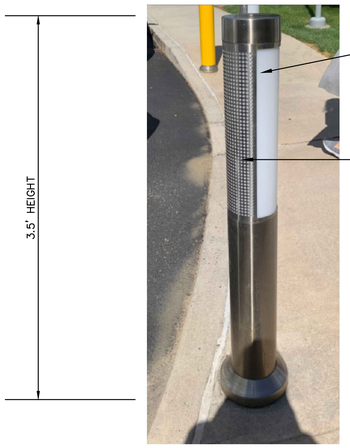
UPLIGHT MOUNTING PEDESTAL

TREE ACCENT LIGHT DETAIL

NOT TO SCALE

NOTES:

1. ACCENT LIGHT AND MOUNTING PEDESTAL SHALL BE MANUFACTURED BY VISTA PROFESSIONAL OUTDOOR LIGHTING OR APPROVED EQUAL.
2. HOUSING COLOR SHALL BE STANDARD COLOR BLACK AND SHALL HAVE HALF LIGHT SHIELD.



5" DIAMETER BOLLARD IN FINISH AND TEXTURE TO MATCH EXISTING CAMPUS BOLLARDS

PROVIDE SECTOR SHIELD WHERE BOLLARD FACES THE ROAD

FACE OF BOLLARD SHALL BE PLACED 2 FT FROM THE FACE OF THE CURBLINE IN FRONT PLAZA AREA.

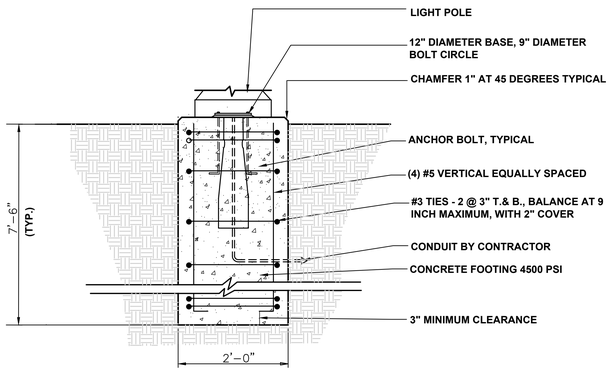
ALL OTHER SIDEWALK BOLLARDS SHALL BE PLACED 2.5 FT FROM THE EDGE OF THE SIDEWALK TO THE FACE OF THE BOLLARD.

NOTES:

1. BOLLARD SHALL BE MODEL "LIGHT COLUMN" ILLUMINATED BOLLARD WITH LED LIGHT SOURCE BY FORMS AND SURFACES OR APPROVED EQUAL.
2. THE PORTION OF THE BOLLARD FACING THE ROAD SHALL HAVE THE "SECTOR SHIELD" OPTION, THE PORTION FACING THE BUILDING SHALL NOT HAVE A SHIELD AS SHOWN IN THE PHOTO ABOVE.
3. THE FINISH OF THE BOLLARD HOUSING AND COLOR RENDITION OF LIGHT SOURCE SHALL MATCH THE EXISTING CAMPUS BOLLARDS, CONTRACTOR TO SUBMIT SHOP DRAWINGS.

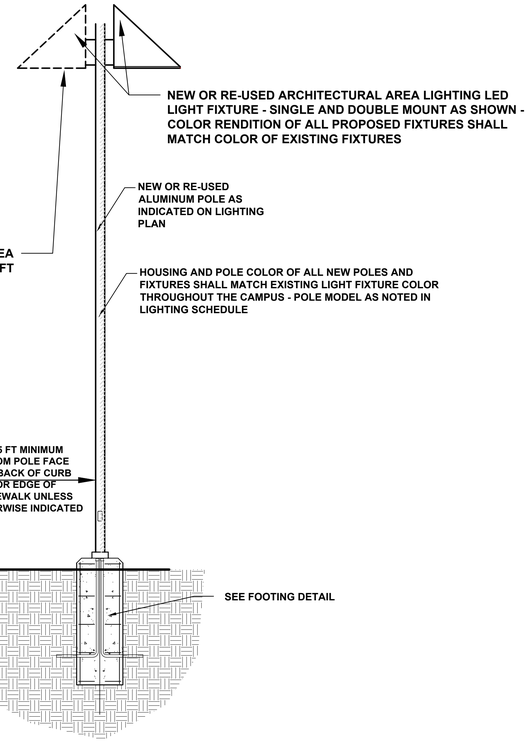
LIGHTED BOLLARD DETAIL

NOT TO SCALE



TYPICAL 25' HIGH POLE FOOTING DETAIL

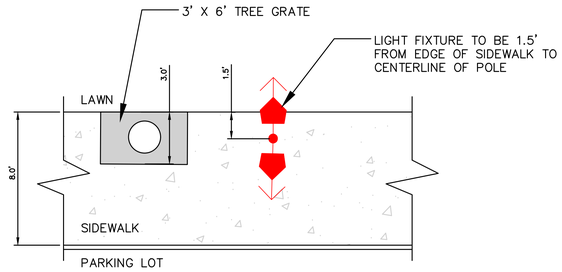
NOT TO SCALE



PARKING LOT AND SIDEWALK LIGHT FIXTURE AND POLE DETAIL

NOT TO SCALE

NOTE: THE CONTRACTOR IS ADVISED TO CONTACT THE MANUFACTURER TO OBTAIN INFORMATION REGARDING THE PROPER STORAGE OF EXISTING LIGHT POLES AND FIXTURES DURING CONSTRUCTION. ANY MATERIAL FOUND TO BE IN POOR SHAPE FROM IMPROPER STORAGE SHALL BE REPLACED AT NO COST TO THE OWNER



NOTE: LIGHT POLES TO BE 1.5' FROM EDGE OF SIDEWALK FOR FIXTURES A, B, AND C LOCATED ON SIDEWALK SOUTH OF PARKING GARAGE

LIGHT FIXTURE INSTALLATION DETAIL - SIDEWALK SOUTH OF PARKING GARAGE

NOT TO SCALE

SCALE IN FEET

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JOB NO: NBR22119.00

PHASE 1A

LIGHTING DETAIL

C.1C.11

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3/14/2023 10:55:56 AM
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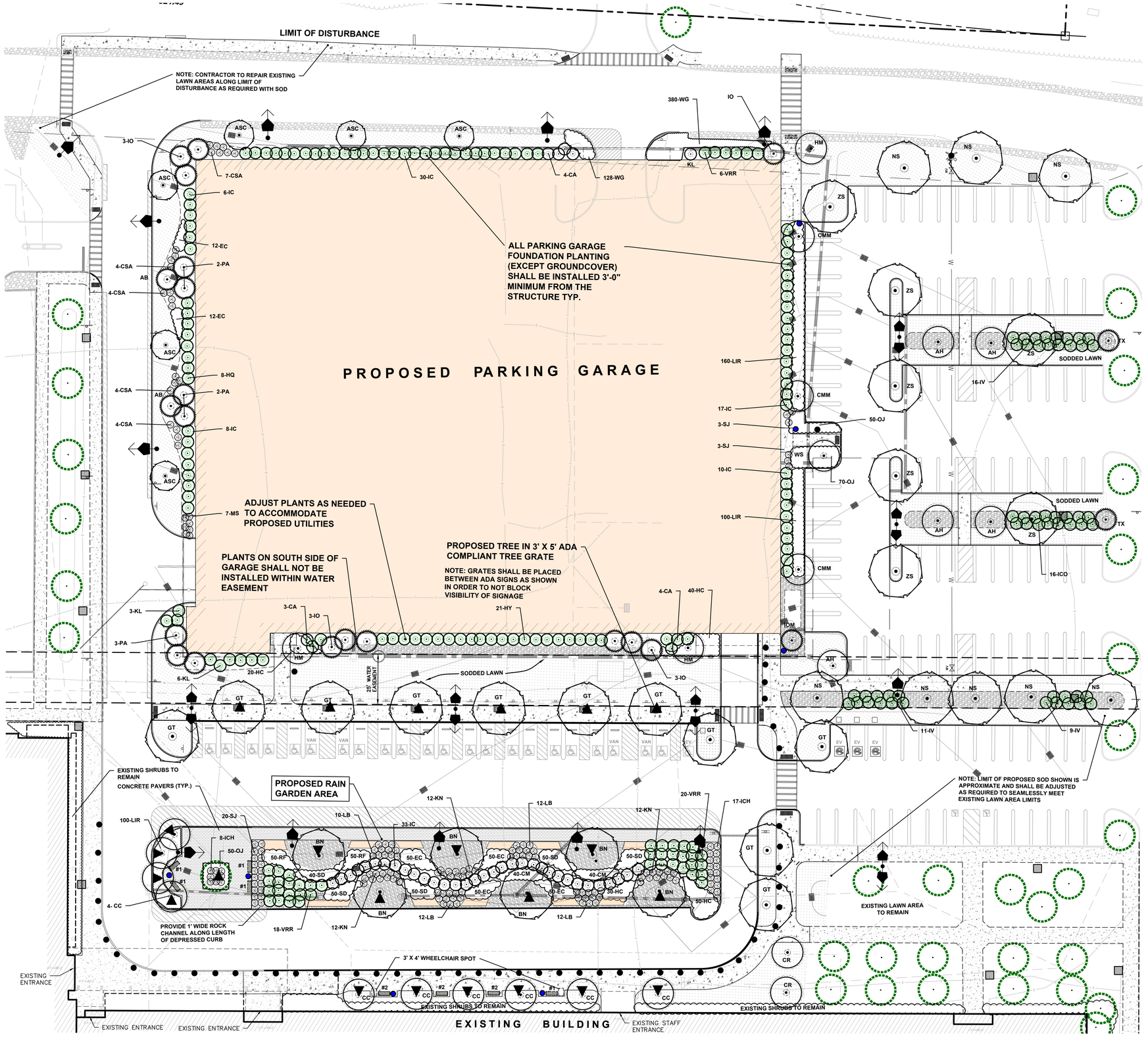

LEGEND:

- 4" THICK 2"-3" DIAMETER DELAWARE RIVER ROCK BED- COLOR TO MATCH EXISTING CAMPUS MATERIAL
- SODDED LAWN
- PROPOSED LIGHT FIXTURE
- EXISTING TREE TO REMAIN - PROTECTIVE FENCING/DEMARCATION TO BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AT THE DRIPLINE /CANOPY OF TREES
- APPROXIMATE CANOPY SIZE
- #1 EXISTING RELOCATED BENCH
- #2 PROPOSED BENCH
- PROPOSED TRASH CAN
- ANNUAL PLANTING BED
- PROPOSED PLANTS (APPROXIMATE CANOPY SIZE AT 20-25 YEARS GROWTH; APPROXIMATE SIZE AT INSTALLATION; APPROXIMATE CANOPY SIZE AT 20-25 YEARS GROWTH)

LANDSCAPE PLAN GENERAL NOTES:

1.) EXISTING TREES AND SHRUBS ALONG THE PERIPHERY OF THE CONSTRUCTION SHALL BE SELECTIVELY PRUNED AND THINNED AS REQUIRED BY A LICENSED LANDSCAPE PROFESSIONAL IN ORDER TO REMOVE ALL DISEASED AND DEAD LIMBS. BED LINES SHALL BE CREATED AS SHOWN AND MULCHED WITH 4" THICK WOOD MULCH.

2.) DO NOT INSTALL PROPOSED PLANT MATERIAL DIRECTLY ON TOP OF ANY PROPOSED OR EXISTING UNDERGROUND UTILITIES . FIELD ADJUST MATERIAL AS NEEDED FOR BOTH ABOVE AND BELOW GRADE FEATURES AS DIRECTED BY THE PROJECT PROFESSIONAL TO ACCOMMODATE ANY POTENTIAL CONFLICTS.

3.) A DRIP LINE IRRIGATION SYSTEM WILL BE PROVIDED WITHIN THE PROPOSED PROJECT AREA.

20 0 20 40
SCALE IN FEET

Princeton Forward

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SARAH REBAR BISAHA, L.L.A., P.P.
LICENSED LANDSCAPE ARCHITECT, N.J. LIC. No. AS000639

NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

LANDSCAPING PLAN

C.1C.12

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PLANTING NOTES

1. THE LANDSCAPE PLANS SHALL BE USED FOR LANDSCAPING PURPOSES ONLY. THE CONTRACTOR SHOULD EXAMINE ALL ENGINEERING DRAWINGS AND FIELD CONDITIONS FOR EXACT LOCATIONS OF UTILITIES, DRAINS, ETC., AND NOTIFY THE OWNER ABOUT ANY DISCREPANCIES BEFORE STARTING WORK.

2. ALL PLANTING SHALL BE IN CONFORMANCE WITH THE AMERICAN NURSERYMEN'S ASSOCIATION STANDARDS, CURRENT EDITION. ALL PLANT MATERIALS USED SHALL BE TRUE TO NAME AND SIZE IN CONFORMITY WITH THE CURRENT EDITION OF THE AMERICAN STANDARD OF NURSERY STOCK AND SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY. ALL PLANTS SHALL HAVE NORMAL, WELL-DEVELOPED BRANCHES AND VIGOROUS ROOT SYSTEMS. THEY SHALL BE SOUND, HEALTHY, VIGOROUS, FREE FROM DEFECTS, DISFIGURING KNOTS, ABRASIONS OF THE BARK, SUN SCALD INJURIES, PLANT DISEASES, INSECT EGGS, BORERS, AND ALL OTHER FORMS OF INFECTION. ALL PLANTS SHALL BE NURSERY GROWN. ALL PLANT MATERIAL SHALL BE TAGGED AT THE NURSERY SOURCE AND APPROVED BY THE PROJECT LANDSCAPE ARCHITECT PRIOR TO PLANTING.

3. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY ANY PERSON, VEHICLE, EQUIPMENT, OR TOOLS RELATED TO THE EXECUTION OF THIS CONTRACT.

4. EXCAVATION NEAR EXISTING UTILITIES TO BE CAREFULLY PERFORMED BY HAND.

5. ALL PLANT MATERIAL SHALL BEAR THE SAME RELATION TO FINISHED GRADE AS IT BORE TO EXISTING GRADE AT THE NURSERY. ALL PLANT MATERIAL SHALL BE PLANTED SO THAT THE TOP OF THE ROOTBALL IS NO HIGHER OR LOWER THAN THE EXISTING/FINISHED GRADE DEPENDENT UPON SOIL CONDITIONS.

6. IN THE EVENT THAT PLANTING DISCREPANCIES OR MATERIAL OMISSIONS OCCUR IN THE PLANT MATERIALS LIST, THE LANDSCAPING PLAN SHALL GOVERN. THE USE AND PLANTING OF BARE ROOT MATERIAL SHALL BE PROHIBITED.

7. ANY SUBSTITUTIONS OF PLANT MATERIAL WITH REGARDS TO SIZE, SPECIES, VARIETY, ETC., SHALL BE SUBJECT TO APPROVAL BY PLAINSBORO TOWNSHIP.

8. PLANTS SHALL ONLY BE INSTALLED WHEN THE SOIL IS FROST FREE.

9. UNDER NO CIRCUMSTANCES SHOULD THE MAIN LEADER OF A DECIDUOUS OR EVERGREEN TREE BE TOPPED. DECIDUOUS TREES SHALL BE PRUNED BY REMOVAL OF 1/3 OF THE INTERIOR BRANCHING STRUCTURE WITHOUT ALTERING THE ORIGINAL BRANCHING FORM OF THE TREE.

10. ALL DISTURBED AREAS, NOT BEING PLANTED, SHALL BE TOPSOILED 4" THICK, FERTILIZED, SEEDED, AND MULCHED WITH APPROVED MULCH. TOPSOIL SHALL BE NATURAL FRIABLE, FERTILE SOIL CHARACTERISTIC OF PRODUCTIVE SOIL IN THE VICINITY. IT SHALL BE FREE OF LUMPS OF CLAY, STONES, ROOTS, AND OTHER FOREIGN MATTER.

11. CUT AND LOOSEN SISAL HEMP CHOKE TIE AROUND TREE TRUNK. ALL PLASTIC MATERIAL SHALL NOT BE PERMITTED. ALL WIRE BASKETS AND PLASTIC LINERS OF CONTAINER GROWN TREES AND SHRUBS MUST BE COMPLETELY REMOVED. NO CONTAINER GROWN MATERIAL WILL BE ACCEPTED IF IT IS ROOT BOUND AND NOT ROOT PRUNED. THE USE OF NYLON TWINE ON ROOT BALLS IS PROHIBITED.

12. THE DEPTH OF PLANT PITS SHALL BE INCREASED BY 12" THROUGH THE ADDITION OF LOOSE AGGREGATE (3/4" TO 1 1/2" DIAMETER) WHEREVER POOR DRAINAGE OCCURS OR WHERE DIRECTED BY THE TOWNSHIP.

13. GUY WIRES SHALL BE LOCATED SO THAT THEY WILL NOT PULL CROTCH APART. GUY WIRES TO SECOND BRANCH (MINIMUM ONE-THIRD HEIGHT OF TREE). USE THREE GUYS PER TREE UNLESS OTHERWISE INDICATED. ALL TREE STAKES, GUY WIRES, TREE WRAPPING AND SAUCERS SHALL BE REMOVED AFTER ONE GROWING SEASON.

14. PLANTS PLANTED IN ROWS SHALL BE MATCHED SPECIMENS AND BE UNIFORM IN SIZE AND FORM.

15. IN THE EVENT THAT EXISTING VEGETATION IS REMOVED BEYOND THE CLEARING LIMITS SHOWN ON THE PLANS, ADDITIONAL PLANTING MUST BE PROVIDED AS APPROVED BY THE TOWNSHIP AND AT NO COST TO THE OWNER.

16. PLANTING BACKFILL MIXTURE SHALL CONSIST OF ONE PART TOPSOIL, ONE PART NATIVE SOIL AND ONE PART PEAT MOSS. NOTE THAT PLANTING MIXTURE MAY CHANGE BASED UPON SOIL CONDITIONS.

17. MULCH, 4" IN DEPTH, SHALL BE TREATED SHREDDED HARDWOOD BARK NOT EXCEEDING 2" IN GREATEST DIMENSION. MULCH SHALL BE INSTALLED WITH A MAXIMUM OF ONE (1) INCH WITHIN ONE (1) FOOT ON THE TREE'S ROOT FLARE. A NON-PLASTIC WEED RETARDANT BARRIER SHALL BE USED IN ALL NON GRASSED AREAS. MULCH SHALL BE FINE GRADED FOR A PLEASING APPEARANCE. THE USE OF MARBLE OR PINE BARK CHIPS IS PROHIBITED. MULCH VOLCANOES ARE NOT PERMITTED.

18. ALL PLANT MATERIAL SHALL BE GIVEN A MINIMUM OF 5 GALLONS OF WATER AT THE TIME OF INSTALLATION AND SHALL BE WATERED AT INTERVALS DURING ESTABLISHMENT TO ENSURE ADAPTATION TO THE SITE. PRIOR TO THE INSTALLATION OF THE PLANT MATERIAL, THE CONTRACTOR SHALL FILL EACH PLANTING PIT WITH WATER AND ALLOW IT TO FULLY PERCOLATE INTO THE GROUND PRIOR TO PLACEMENT OF THE PLANT. THE CONTRACTOR SHALL NOTIFY EITHER THE TOWNSHIP OR PROJECT LANDSCAPE ARCHITECT OF ANY PERCOLATION PROBLEMS PRIOR TO INSTALLATION.

19. PREFERRED PLANTING TIME PERIODS ARE FROM SEPTEMBER 1 TO NOVEMBER 30 OR MARCH 20 TO MAY 31. NO PLANTING SHALL BE EXECUTED DURING ABNORMALLY HOT WEATHER NOR WHEN THE GROUND IS FROZEN.

20. THE CONTRACTOR SHALL REMOVE ALL DAMAGED BRANCHES AND NURSERY TAGS AT THE TIME OF INSTALLATION.

21. ALL TURF SHALL RECEIVE FERTILIZER CONSISTING OF 10-6-4 (50% ORGANIC) COMPOSITION, APPLIED AT 3 LB. PER 100 SQ. FT. SLOW RELEASE FERTILIZER TABLETS OR PACKETS OF 20-10-5 COMPOSITION SHALL BE ADDED TO ALL PLANTING PITS AT THE FOLLOWING RATIOS: 1 PER SHRUB, 2 PER DECIDUOUS OR EVERGREEN TREES UP TO 2" IN CALIPER AND 3 FOR DECIDUOUS AND EVERGREEN TREES ABOVE 2" IN CALIPER.

22. EACH TREE THAT IS PLANTED MUST BE TAGGED WITH A DURABLE LABEL BEARING THE GENUS, SPECIES, VARIETY, PLANT PATENT NUMBER (IF APPLICABLE) AND CULTURAL REQUIREMENTS AND MUST BE INSPECTED PRIOR TO REMOVAL.

23. ALL GROUPED SHRUBS SHALL BE MULCHED TOGETHER TO FORM ONE CONTINUOUS PLANTING BED.

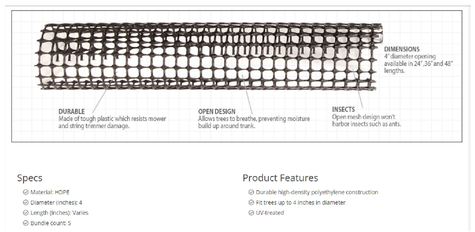
24. CONTRACTOR TO BE RESPONSIBLE FOR SEEDING AREAS BEING DISTURBED BY CONSTRUCTION. SEED MIXTURE TO BE IN ACCORDANCE WITH SOIL CONSERVATION DISTRICT'S STANDARDS.

25. ALL TREES FOUR (4) FEET OR GREATER IN HEIGHT SHALL BE STAKED.

26. ALL SHRUBS SHALL BE INSTALLED A MINIMUM OF THREE (3) FEET BEHIND THE CURB.

27. ANY PLANT RELOCATIONS SHALL BE SUBMITTED TO PLAINSBORO TOWNSHIP FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

28. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR PERIOD OF TWO YEARS FROM THE TIME OF PLANTING.



TREE TRUNK PROTECTION DETAIL

NOT TO SCALE

NOTE:

4' LONG, 4" DIAMETER TREE TRUNK PROTECTION MESH SHALL BE MANUFACTURED BY A.M. LEONARD (https://www.amleo.com/leonard-rigid-plastic-mesh-tree-guards-4-inch-diameter/p/VP-BG/1) OR APPROVED EQUAL.

GENERAL AREAS PLANT LIST (SEE UNIT PLANTING DETAILS FOR FOUNDATION PLANTING LISTS)

DECIDUOUS SHADE AND ORNAMENTAL TREES

SYM	QTY	BOTANICAL NAME	COMMON NAME	INSTALLED SIZE	MATURE SIZE	REMARKS
D N* ASC	6	ACER RUBRUM COLUMNAR	COLUMNAR RED MAPLE	2.5" CALIPER	50'-70' HEIGHT, 15' SPREAD	B & B, BRILLIANT RED-ORANGE-YELLOW FALL COLOR, SINGLE TRUNK, NARROW CANOPY
D N* AH	5	OSTRYA VIRGINIANA	HOPHORNBEAM	2.5" CALIPER	20'-35' HEIGHT, 25'-35' SPREAD	B & B, ORANGE/RED/YELLOW FALL COLOR, SMOOTH TRUNK,MULTI TRUNK
N&#* BN	6	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	2.5" CALIPER	50'-70' HEIGHT, 25'-35' SPREAD	B & B, YELLOW FALL COLOR, MULTI TRUNK
N* CC	10	CERCIS CANADENSIS 'FOREST PANSY'	FOREST PANSY REDBUD	8' HEIGHT	20'-30' HEIGHT AND SPREAD	B & B, MULTI-TRUNK, PINK FLOWERS, APRIL
D # CMM	3	LAGERSTROEMIA INDICA 'CATAWBA'	CATAWBA CREPE MYRTLE	6'-7' HEIGHT	10' -12' HEIGHT AND SPREAD	B & B, SMALL MULTI-TRUNK TREE , PURPLE FLOWERS SUMMER, MATCHED SPECIMENS
N* CR	2	MALUS "SUGAR TYME"	SUGAR TYME CRABAPPLE	2.5" CALIPER	20'-30' HEIGHT AND SPREAD	B & B, MULTI-TRUNK, PINK FLOWERS, APRIL
N #& GT	11	GLEDISTIA TRIACANTHOS INERMIS	THORNLESS HONEYLOCUST	2.5" CALIPER	50'-70' HEIGHT, 25'-35' SPREAD	B & B, YELLOW FALL COLOR, SINGLE TRUNK
D N # HM	3	HAMAMELIS VIRGINIANA 'ARNOLD'S PROMISE'	ARNOLD'S PROMISE WITCHAZEL	8' HEIGHT	15'-20' HEIGHT AND APREAD	B & B, MULTI TRUNK, DECIDUOUS TREE WITH YELLOW FLWRS, FEBRUARY
D N& NS	8	NYSSA SYLVATICA	BLACK GUM	2.5" CALIPER	30'-40' HEIGHT, 20'-30' SPREAD	B & B, BRIGHT RED FALL COLOR, SINGLE TRUNK
N&* TX	2	TAXODIUM DISTICHUM	BALD CYPRESS	2.5" CALIPER	40'-50' HEIGHT AND SPREAD	B & B, DECIDUOUS TREE WITH NEEDLE FOLIAGE
N# WS	1	CORYLUS AVALLENA 'CONTORTA'	HENRY LAUDERS WALKING STICK	4' HEIGHT	6'-8' HEIGHT AND SPREAD	B & B, DECIDUOUS SHRUB WITH TWISTED BRANCHING
D #* ZS	6	ZELKOVA SERRATA	JAPANESE ZELKOVA	2.5" CALIPER	50'-70' HEIGHT, 25'-35' SPREAD	B & B, LIGHT GREY BARK, SINGLE TRUNK, SPECIMEN

EVERGREEN TREES

D N AB	2	ABIES CONCOLOR	WHITE FIR	8' HEIGHT	50'-70' HEIGHT, 25'-35' SPREAD	B & B, BLUE GREY FOLIAGE
D N& IO	10	ILEX OPACA FEMALE	BERRIED AMERICAN HOLLY	8' HEIGHT	50'-70' HEIGHT, 25'-35' SPREAD	B & B, RED BERRIES IN THE WINTER
D N&# IOM	1	ILEX OPACA MALE	BERRIED AMERICAN HOLLY	8' HEIGHT	50'-70' HEIGHT, 25'-35' SPREAD	B & B
D # PA	7	PICEA ABIES	NORWAY SPRUCE	8' HEIGHT	50'-70' HEIGHT, 25'-35' SPREAD	B & B

SHRUBS

&# CA	11	CLETHRA ALNIFOLIA "CRYSTALINA"	CRYSTALINA SUMMERSWEET	3' HEIGHT	6'-8' HEIGHT AND SPREAD	#2 CONTAINERS, GREEN FOLIAGE, WHITE FLOWERS, JUNE
D N&#* CSA	23	CORNUS SERICEA 'FLAVIRAMEA'	YELLOW TWIG DOGWOOD	4' HEIGHT	5'-6' HEIGHT AND SPREAD	B & B, YELLOW TWIGS IN THE WINTER
N& HQ	8	HYDRANGEA QUERCIFOLIA 'PEE WEE'	PEE WEE OAKLEAF HYDRANGEA	3' HEIGHT	4'-5' HEIGHT AND SPREAD	B & B, WHITE FLWRS, SUMMER, OAK LEAF SHAPED FOLIAGE
& HY	21	HYDRANGEA MACROPHYLLA 'LETS DANCE'	LETS DANCE HYDRANGEA	2.5' HEIGHT	3'-4' HEIGHT AND SPREAD	B & B, BLUE FLWRS, SUMMER, DECIDUOUS SHRUB
D & IC	105	ILEX CRENATA CONVEXA	CONVEX JAPANESE HOLLY	4' HEIGHT	4'-6' HEIGHT AND SPREAD	# 7 CONT., EVERGREEN SHRUB, MATCHED SPECIMENS ONLY
D & # ICH	25	ILEX CRENATA HELLERI	HELLER JAPANESE HOLLY	2' HEIGHT	3'-4' HEIGHT AND SPREAD	# 7 CONT., EVERGREEN SHRUB, MATCHED SPECIMENS ONLY
D &# ICO	16	ILEX MESOG CHINA GIRL	CHINA GIRL HOLLY	4' HEIGHT	6'-8' HEIGHT AND SPREAD	B & B, RED BERRIES IN WINTER
N# IV	36	ILEX VERTICILLATA	WINTERBERRY HOLLY	4' HEIGHT	6'-8' HEIGHT AND SPREAD	B & B, RED BERRIES IN WINTER
D # KN	10	ROSA RADAZZ	KNOCK OUT ROSES	2'-3' HEIGHT	4'-5' HEIGHT AND SPREAD	B & B, DEEP PINK FLOWERS, MAY TO SEPTEMBER
D N KL	10	KALMIA LATIFOLIA	MOUNTAIN LAUREL	4' HEIGHT	5'-6' HEIGHT AND SPREAD	B & B, WHT FLWRS, MAY, EVERGREEN
D # SJ	26	SPIRAEA JAPANICA 'GOLDMOUND'	GOLDMOUND JAPANESE SPIRAEA	1' HEIGHT	2'-3' HEIGHT AND SPREAD	B & B, LILAC FLOWERS, MAY, ORANGE-RED FALL COLORS
# VRR	41	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	4' HEIGHT	10'-15' HEIGHT AND SPREAD	B & B, WHITE FLOWERS IN SPRING

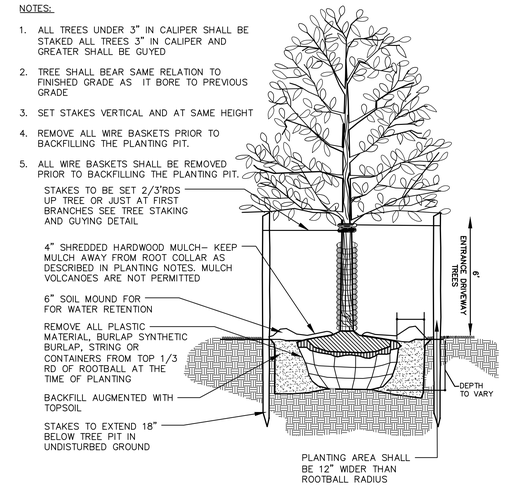
GROUNDCOVERS, PERENNIALS AND ORNAMENTAL GRASSES

D N# CM	80	COREOPSIS VERTICILATA 'MOONBEAM'	MOONBEAM THREADLEAF COREOPSIS	6"-8" HEIGHT	12"-25" HEIGHT AND SPREAD	1 GAL CONT., PERENNIAL, YELLOW FLWRS, JUNE-AUG., INSTALL AT 2' ON CENTER
D N# EC	221	ECHINACEA PURPUREA	PURPLE CONEFLOWER	6" HEIGHT	18" HEIGHT AND SPREAD	1 GAL. CONT, PERENNIAL, PURPLE FLWRS. SUMMER INSTALL AT 2' ON CENTER
D &# HC	400	HEMEROCALLIS STELLA D' ORO	STELLA D'ORO DAYLILLY	6" HEIGHT	12"-18" HEIGHT, 2'-2.5' SPREAD	1 GAL, CONT, PERENNIAL, ORANGE FLOWERS, SUMMER INSTALL AT 2.5' ON CENTER
D &# LB	46	FESTUCA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE	6" HEIGHT	8"-12" HEIGHT, 2'-2.5' SPREAD	1 GAL. CONT, DWARF ORNAMENTAL GRASS WITH WHITE FRONDS, AUGUST-OCTOBER INSTALL AT 2.5' ON CENTER
D &# LIR	360	LIRIOPE MUSCARI 'BIG BLUE'	BIG BLUE LILYTURF	6" HEIGHT	12" HEIGHT AND SPREAD	1 GALLON CONT, GRNDCVR., BLUE FLOWERS, AUGUST, INSTALL AT 2' ON CENTER
&# OJ	200	OPHIOPOGON PLANISCAPUS NIGRESCENS	BLACK MONDO GRASS	6" HEIGHT	12" HEIGHT AND SPREAD	1 GALLON CONT, GRNDCVR, WHITE FLWRS SUMMER, BLACK FOLIAGE, I INSTALL AT 2' ON CENTER
D &# MS	7	SCHIZACHYRIUM SCOPARIUM 'STANDING OVATION'	STANDING OVATION LITTLE BLUESTEM	6"-8" HEIGHT	24"-36" HEIGHT AND SPREAD	1 GAL CONT., ORNAMENTAL GRASS WITH GREEN FRONDS, SILVER PINK TASSELS, RED ORANGE FRONDS IN FALL
D N# RF	100	RUDBEKIA FULGIDA	BLACK EYED SUSAN	1' HEIGHT	1'-1.5' HEIGHT AND SPREAD	2 GALLON CONTAINERS, PERENNIAL, YELLOW FLOWERS JULY TO AUGUST, INSTALL AT 2' ON CENTER
D N SD	240	LEUCANTHEMUM X SUPERBUM	SHASTA DAISY	6" HEIGHT	2'-3' HEIGHT AND SPREAD	1 GALLON CONTAINERS, PERENNIAL, WHITE FLOWERS JUNE TO AUGUST, INSTALL AT 1.5' ON CENTER
N# WG	508	ASARUM CANADENSE	WILD GINGER	6" HEIGHT	6"-8" HEIGHT AND SPREAD	1 GALLON CONTAINERS, PERENNIAL, YELLOW FLOWERS JULY TO AUGUST, INSTALL AT 1' ON CENTER

KEY:

N = NATIVE PLANT OF NORTH AMERICA
& = SALT SPRAY TOLERANT
*** = SPRING INSTALLATION ONLY**
 # = SELDOM OR RARELY DAMAGED BY DEER AS PER RUTGERS AG AGENCY (HTTP://NJAES.RUTGERS.EDU)

D = DROUGHT TOLERANT AS PER THE FOLLOWING SOURCES:
1. **NEW YORK CITY DEPARTMENT OF PARKS AND RECREATION (WWW.NYCGOVPARKS.ORG)**
2. **LANDSCAPING FOR WATER CONSERVATION BY RUTGERS COOPERATIVE EXTENSION (PUBLICATION E80)**
3. **RUTGERS MASTER GARDENERS OF MERCER COUNTY, NEW JERSEY (mgofmc.org)**



DECIDUOUS TREE PLANTING DETAIL

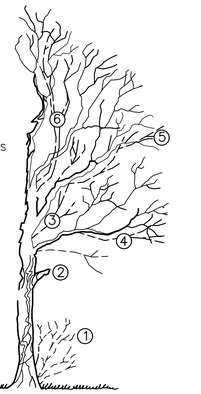
NOT TO SCALE

METAL BENCH AND TRASH CAN DETAIL

NOT TO SCALE

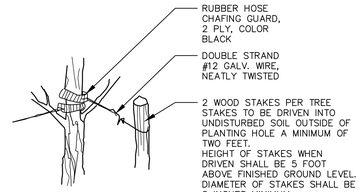
NOTES:

1. STEEL BENCH AND TRASH CAN SHALL BE MANUFACTURED BY LANDSCAPE FORMS OR APPROVED EQUAL, LOCAL REPRESENTATIVE MICHELLE HERTLER (MICHELLE@A-METRO.COM.)
2. BENCH STYLE SHALL BE PARK VUE, BACKED WITH ARMS, 26D" X 72L" X 36H" WITH SURFACE MOUNTING OPTION.
   TRASH CAN STYLE SHALL BE SCARBOROUGH, 25" DIAM X 33"H X 30 GALLON WITH SIDE OPENING AND SURFACE MOUNTED OPTIONS.
3. COLOR AND FINISH OF BENCHES AND TRASH CANS TO MATCH EXISTING CAMPUS FURNITURE. CONTRACTOR TO SUBMIT SHOP DRAWINGS AND COLOR SAMPLES FOR REVIEW AND APPROVAL.



TREE PRUNING DETAIL

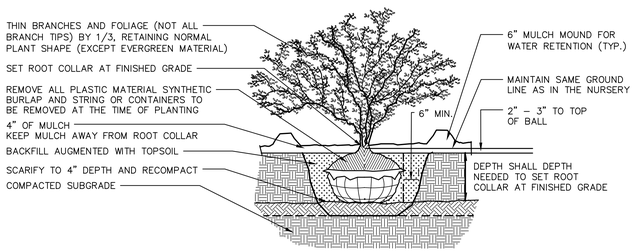
NOT TO SCALE



STAKING DETAIL

TREE STAKING DETAIL

NOT TO SCALE



SHRUB PLANTING DETAIL

NOT TO SCALE

NOTES:

1. CONTRACTOR TO PROVED A MULCHED PLANTING BED FOR SHRUBS GROUPED TOGETHER. MULCHED BEDS MAY VARY IN SHAPE AND SIZE TO CONFORM WITH SHRUB LAYOUT.
2. DO NOT PRUNE EVERGREEN SHRUBS EXCEPT TO REMOVE DEAD AND BROKEN BRANCHES

SCALE IN FEET

Princeton Forward

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New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

SARAH REBAR BISAHA, L.L.A., P.P.
LICENSED LANDSCAPE ARCHITECT, N.J. LIC. No. AS000639

NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

LANDSCAPING DETAILS (1)

C.1C.13

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
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Penn Medicine Princeton Health Cancer Center Garage

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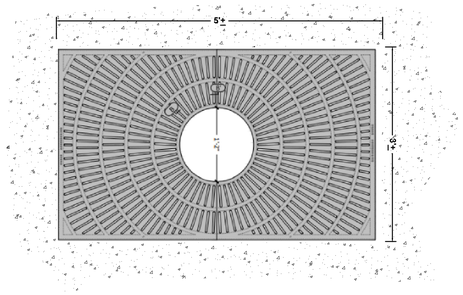
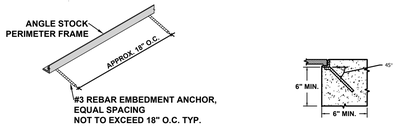


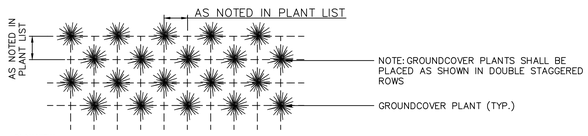


3' X 5' RECTANGULAR TREE GRATE DETAIL

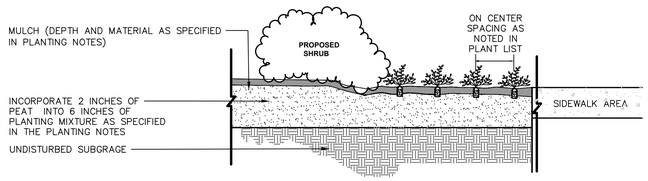
NOT TO SCALE

NOTES:

1. TREE GRATE SHALL BE MODEL "KIVA", 4' DIAM ROUND AND 4' SQUARE BY URBAN ACCESSORIES, TACOMA WASHINGTON OR APPROVED EQUAL.
2. GRATES SHALL CONFORM TO ADA ACCESSIBILITY GUIDELINES
3. MATERIAL SHALL BE 100% RECYCLED ALUMINUM PER ASTM B26 IN BRUSHED FINISH
4. GRATES SHALL BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS FOR CONCRETE SIDEWALKS, CONTRACTOR TO SUBMIT SHOP DRAWINGS



PLAN VIEW

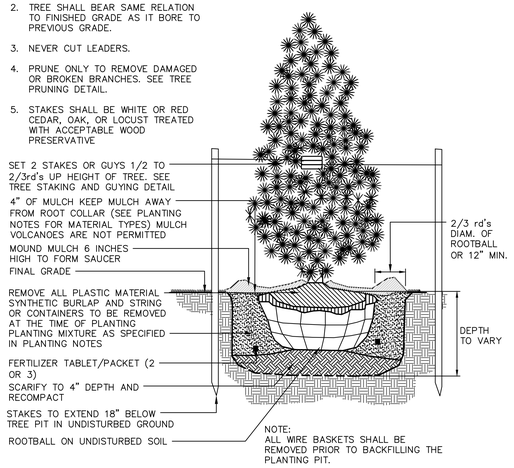


GROUNDCOVER PLANTING DETAIL

NOT TO SCALE

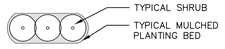
NOTES:

1. ALL EVERGREEN TREES TO BE STAKED AND/OR GUYED AS SPECIFIED IN THE DETAIL AND THE PLANTING NOTES
2. TREE SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO PREVIOUS GRADE.
3. NEVER CUT LEADERS.
4. PRUNE ONLY TO REMOVE DAMAGED OR BROKEN BRANCHES. SEE TREE PRUNING DETAIL.
5. STAKES SHALL BE WHITE OR RED CEDAR, OAK, OR LOCUST TREATED WITH ACCEPTABLE WOOD PRESERVATIVE

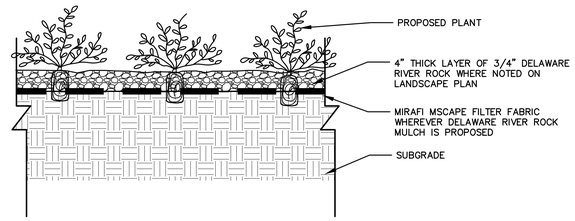


EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE



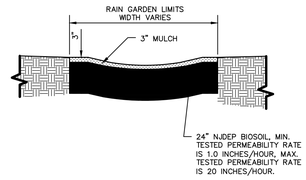
TYPICAL PLANTING BED PLAN VIEW



4" THICK DELAWARE RIVER ROCK IN PLANTING BED DETAIL

NOT TO SCALE

NOTE: CONTRACTOR TO REVIEW LANDSCAPE PLANS FOR DELAWARE RIVER ROCK LOCATIONS TO DETERMINE QUANTITIES



RAIN GARDEN TYPICAL SECTION DETAIL

NOT TO SCALE

RAIN GARDEN NOTES:

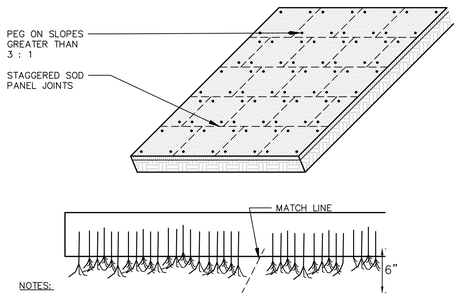
1. **GARDEN DESIGN AS PER THE RECOMMENDATIONS OF THE NATIVE PLANT SOCIETY OF NEW JERSEY.**
2. **GARDEN AREA SHALL RECEIVE A SOIL MIX CONSISTING THE FOLLOWING PROFILE:**

   A.) 3 INCHES THICK LAYER OF MULCH
   B.) 24 INCHES THICK LAYER OF NJDEP BIO BASIN SOIL MIX.

   SOIL MIX SHALL BE PLACED IN THE GARDEN SHOWN ON THE PLAN.
3. **ANY PLANT SUBSTITUTIONS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT AND OWNER.**
4. **REFER TO LANDSCAPE NOTES AND DETAILS ON LANDSCAPE DETAIL SHEET FOR ADDITIONAL PLANTING REQUIREMENTS AND INFORMATION.**
5. **ALL GARDEN PLANTING SHALL BE INSTALLED BY HAND. CAUTION SHALL BE TAKEN WHEREVER PLANTS ARE TO BE INSTALLED NEAR UNDERGROUND UTILITY LINES**

TEMPORARY IRRIGATION NOTES FOR RAIN GARDEN AREA

1. **THE CONTRACTOR SHALL PROVIDE A TEMPORARY AUTOMATIC (TIMER WITH DAY, TIME AND DURATION) IRRIGATION SYSTEM TO ENSURE PLANT ESTABLISHMENT. ALL NEW PLANT MATERIAL SHALL BE WATERED DAILY FOR A PERIOD OF 3 MONTHS FOLLOWING INSTALLATION UNLESS THERE IS SIGNIFICANT RAINFALL. IRRIGATION SYSTEM SHALL BE BY SOAKER HOSE, DRIP AND/OR MICRO SPRAY ONLY.**
2. **WATERING SHALL BE DONE IN THE EARLY MORNING. CONTRACTOR WILL CONTROL LENGTH OF WATERING TIME VIA TIMERS AS DIRECTED BY PROJECT LANDSCAPE ARCHITECT.**
3. **DAILY WATERING PERIOD MAY BE EXTENDED IF EXTREME DRY CONDITIONS EXIST AT THE DIRECTION OF THE PROJECT LANDSCAPE ARCHITECT.**
4. **THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS OF THE PROPOSED EQUIPMENT AND A SKETCH SHOWING THE PROPOSED LAYOUT OF THE SYSTEM.**
5. **THE CONTRACTOR MUST ENSURE THE LAYOUT OF THE PROPOSED TEMPORARY IRRIGATION LINES DO NOT CREATE TRIPPING HAZARDS.**

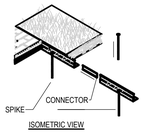


NOTES:

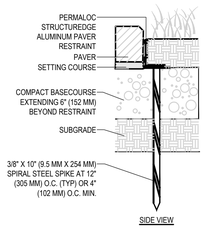
1. CULTIVATED SOD SHALL BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.
2. APPLY FERTILIZER AT THE RATE OF 500 POUNDS PER ACRE USING 10-20-10 RATIO OR AS DETERMINED BY SOIL TESTING.
3. SUPPLY PULVERIZED DOLOMITIC LIMESTONE AT THE RATE OF 2 TONS PER ACRE OR AS DETERMINED BY SOIL TESTING.
4. APPLY 300 POUNDS 38-0-0 PER ACRE IN LIEU OF TOP DRESSING OR AS DETERMINED BY SOIL TESTING.
5. PLACE SOD STRIPS ON THE CONTOUR STARTING AT THE BOTTOM.
6. PLACE SOD WITH SNUG EVEN JOINTS THAT ARE STAGGERED.
7. ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT.
8. ON SLOPES GREATER THAN 3 TO 1 SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES, OR SPLIT SHINGLES (8 TO 10 INCHES LONG BY 3/4 OF AN INCH).
9. ANCHOR SOD IN WATER CARRYING CHANNELS WITH HEAVY JUTE OR PLASTIC NETTING.
10. SOD SHOULD BE WATERED UNTIL MOISTURE PENETRATES THE SOIL LAYER BENEATH THE SOD TO A DEPTH OF 4 INCHES. MAINTAIN OPTIMUM MOISTURE FOR AT LEAST TWO WEEKS.

SOD INSTALLATION DETAIL

NOT TO SCALE



ISOMETRIC VIEW



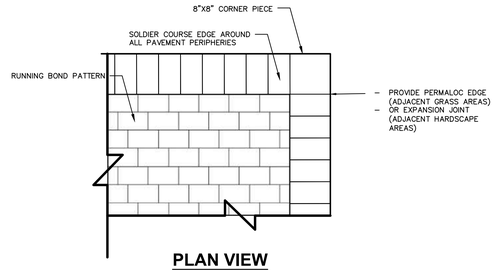
SIDE VIEW

EDGE NOTES:

1. **MANUFACTURER: PERMALOC CORPORATION, HOLLAND, MICHIGAN OR APPROVED EQUAL INFO@PERMALOC.COM 1.800.356.9660**
2. **PRODUCT: STRUCTREDGE ALUMINUM EDGE**
3. **SIZE: 3/16"X 1-5/8"**
4. **COLOR: BLACK DURAFLEX**
5. **INSTALL PER MANUFACTURER'S "INSTALLATION GUIDELINES".**
6. **CONNECTION BETWEEN SECTIONS TO UTILIZE MANUFACTURERS' SLIDING CONNECTOR SYSTEM.**
7. **CORNERS: NOTCH BASE ONLY AND FORM A CONTINUOUS CORNER.**

PERMALOC PAVER EDGE DETAIL

NOT TO SCALE



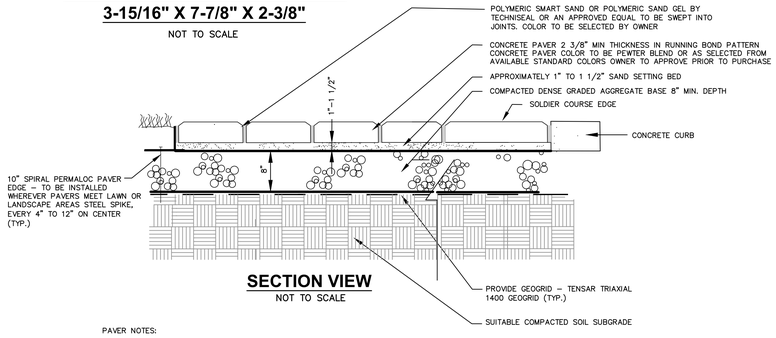
PLAN VIEW

NOT TO SCALE

E.P. HENRY BRICKSTONE SERIES

3-15/16" X 7-7/8" X 2-3/8"

NOT TO SCALE



SECTION VIEW

NOT TO SCALE

PAVER NOTES:

1. PAVER COLOR: AS SELECTED FROM AVAILABLE STANDARD COLORS BY OWNER
2. CONTRACTOR TO SUBMIT COLOR SAMPLES FROM THE MANUFACTURERS FULL RANGE OF COLORS OF THE ACTUAL MATERIAL FOR THE OWNERS REVIEW AND APPROVAL PRIOR TO ORDERING THE CONCRETE PAVER MATERIAL.
3. THE CONTRACTOR TO INSTALL THE POLYMERIC SAND OR GEL IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS. SUBMIT SHOP DRAWING FOR APPROVAL.
4. THE CONTRACTOR SHALL INSTALL THE PAVERS IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS FOR INSTALLING E.P. HENRY SYSTEM
5. CONCRETE PAVER MODEL: BRICKSTONE SERIES, 3-15/16" X 7-7/8" X 2-3/8"
6. MFGR.: E.P. HENRY (EPHENRY.COM) OR APPROVED EQUAL PHONE NO.: 1-800-44-HENRY

CONCRETE PAVERS DETAIL IN RUNNING BOND PATTERN

NOT TO SCALE

SEEDING/SOD NOTES:

1.) **SEED AND SOD NOTES - GENERAL LAWN AREAS:**

GENERAL LAWN AREAS - SHALL BE SEEDED/SODDED AS SHOWN WITH "ATHLETIC FIELD MIX - ERNMX- 106" BY ERNST CONSERVATION SEEDS, INC. SEED MIX SHALL INCLUDE:

- **30% BLACK CAT II PERENNIAL RYEGRASS**
- **30% RAPTOR II TALL FESCUE**
- **15% CLEARWATER KENTUCKY BLUEGRASS**
- **15% VOLT KENTUCKY BLUEGRASS**
- **10% ANNUAL RYEGRASS**

PREFERRED DATES FOR SEED/SOD INSTALLATION SHALL BE DURING THE PERIODS OF EITHER APRIL 1ST TO MAY 31ST OR AUGUST 15TH TO OCTOBER 16TH.

2.) **THE CONTRACTOR WILL BE RESPONSIBLE FOR RE-ESTABLISHING ALL AREAS DISTURBED BY CONSTRUCTION. THE SEEDING/SODDING WILL BE IN ACCORDANCE WITH FREEHOLD SOIL CONSERVATION DISTRICT STANDARDS.**

3.) **SLOPED AREAS 3:1 AND GREATER SHALL RECEIVE IN COMBINATION WITH THE ABOVE SPECIFIED GRASS MIXTURE AN EROSION CONTROL MATTING BY BONTERRA AMERICA, PINELANDS NURSERIES, COLUMBUS, NJ, MODEL # CS2 OR APPROVED EQUAL.**

SCALE IN FEET

Princeton Forward

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SARAH REBAR BISAHA, L.L.A., P.P.
LICENSED LANDSCAPE ARCHITECT, N.J. LIC. No. AS000639

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

LANDSCAPING DETAILS (2)

C.1C.14

04/14/2023 SITE PLAN SUBMISSION

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BLOCK 1701

Lot 3.01

LEGEND

- (X) EXISTING TREE TO BE REMOVED TO REMAIN
- ( ) EXISTING TREE TO REMAIN. PROVIDE TREE PROTECTION.
- (R) EXISTING TREE TO BE REMOVED AND RELOCATED ON SITE

WOODLANDS MANAGEMENT PLAN NOTES:

1.) A TOTAL OF 70 TREES SHALL BE REMOVED AS SHOWN ON THE WOODLANDS MANAGEMENT PLAN AS FOLLOWS:

TREES TO BE REMOVED:
---- 0 EVERGREEN TREES
---- 70 DECIDUOUS SHADE TREES

70 TREES TOTAL TO BE REMOVED

2.) THE 70 TREES TO BE REMOVED SHALL BE REPLACED AT A 1:1 RATIO WITH NEW DECIDUOUS TREES INSTALLED AT 2.5" MINIMUM CALIPER OR EVERGREEN TREES WITH A MINIMUM INSTALLED HEIGHT OF 7 FEET AT SUGGESTED LOCATIONS AT THE DISCRETION OF THE OWNER AND TOWNSHIP.

3.) THE FOLLOWING IS THE BREAKDOWN OF THE REQUIRED REPLACEMENT TREES:

A.) 7 TREES OR 10% OF THE TOTAL PLANTINGS SIZED AT 2"-2.5" CALIPER, B&B

B.) 14 TREES OR 20% OF THE TOTAL PLANTINGS SIZED AT 1.75"-2" CALIPER, B&B

C.) 21 TREES OR 30% OF THE TOTAL PLANTINGS SIZED AT 1.25"-1.5" CALIPER, B&B

D.) 28 TREES OR 40% OF THE TOTAL PLANTINGS SIZED AT 6'-8' TALL WHIPS, B&B

TOTAL REQUIRED TREES = 70 TREES

4.) THE FOLLOWING IS THE BREAKDOWN OF THE PROPOSED REPLACEMENT TREES:

A.) 15- 6"-8" CALIPER CRABAPPLE (MALUS SP.)TREES SHALL BE RELOCATED FROM THE LOD. (TO SATISFY THE 100% OF THE REQUIREMENTS OF ITEM 3.A AND 57% OF THE REQUIREMENTS IN ITEM 3.B)

B.) 6 TREES OF THE TOTAL PLANTINGS SIZED AT 1.75"-2" CALIPER, B&B

C.) 21 TREES OR 30% OF THE TOTAL PLANTINGS SIZED AT 1.25"-1.5" CALIPER, B&B

D.) 28 TREES OR 40% OF THE TOTAL PLANTINGS SIZED AT 6'-8' TALL WHIPS, B&B

TOTAL PROPOSED REPLACEMENT TREES = 70 TREES

NOTE:

THE LOCATION FOR THE PROPOSED REPLACEMENT TREES SHALL BE ON THE HEALTHCARE CAMPUS IN THE VICINITY OF THE CRESCENT PARKING LOT IN ORDER TO HELP VISUALLY ENHANCE THE AREA. THE EXACT LOCATION AS WELL AS SPECIFIC TREE SPECIES TO BE PLANTED SHALL BE DETERMINED BY THE OWNER AND PLAINSBORO TOWNSHIP AT A LATER DATE.

TREE RELOCATION NOTES:

1.) A TOTAL OF 15 6"-8" TREES (CRABAPPLE) SHALL BE RELOCATED ON SITE IN LOCATIONS TO BE DETERMINED BY THE OWNER AND TOWNSHIP. PLEASE SEE OVERALL SITE PLAN FOR SUGGESTED LOCATIONS.

2.) THE FINAL PLACEMENT OF THE RELOCATED TREES AND ANY PLANT SPECIES SUBSTITUTIONS INVOLVING THE REPLACEMENT TREES SHALL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE PLANNING BOARD ENGINEERS OFFICE.

3.) ANY RELOCATED TREES THAT DO NOT SURVIVE SHALL BE REPLANTED IN KIND BY A SIMILAR TREE MEASURING A MINIMUM OF 2.5 CALIPER INCHES AT THE TIME OF PLANTING.

4.) THE 15 TREES TO BE RELOCATED SHALL BE MOVED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. TREES SHALL BE RELOCATED T IN ACCORDANCE WITH THE FOLLOWING GUIDELINES/RECOMMENDATIONS:

A. TRANSPLANTING SHOULD BE EXECUTED BY A PROFESSIONAL TREE TRANSPLANTING SERVICE.

B. TRANSPLANTING SHALL BE DONE IN THE FALL OR EARLY SPRING OR DURING THE DORMANT SEASON PROVIDED THE GROUND IS NOT FROZEN.

C. ROOT PRUNE THE TREES AT LEAST SIX (6) MONTHS PRIOR TO THE TRANSPLANT.

D. THE DIAMETER OF THE CIRCULAR AREA TO BE DUG SHALL BE AT LEAST ONE FOOT ACROSS FOR EVERY INCH OF TREE TRUNK DIAMETER.

E. PERMANENT TREE PITS SHOULD BE THREE TIMES THE DIAMETER OF THE ROOT BALL. THE TOP OF THE ROOT BALL SHALL SIT AT OR SLIGHTLY ABOVE THE FINISHED GRADE. TREES SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANTING NOTES AND DETAILS SHOWN FOR THIS PROJECT.

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH
99 Chauncy Street 4th Floor
Boston, MA 02111
T:617.423.1700 | F:800.934.9691
sheplеybulfinch.com
Design Architect

THA Consulting, Inc.
550 Township line Road
Suite 100
Blue Bell, PA 19422
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www.tha-consulting.com
Architect / Structural Engineer / Parking Consultant

BR+A Consulting Engineers
105 Madison Avenue 10th Floor
New York, NY, 10016
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Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

FPA FRENCH & PARRELLO ASSOCIATES
Corporate Office:
1800 Rt 34, Suite 101
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732.312.9800
FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

SARAH REBAR BISAHA, L.L.A., P.P.
LICENSED LANDSCAPE ARCHITECT, N.J. LIC. No. AS000639

NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

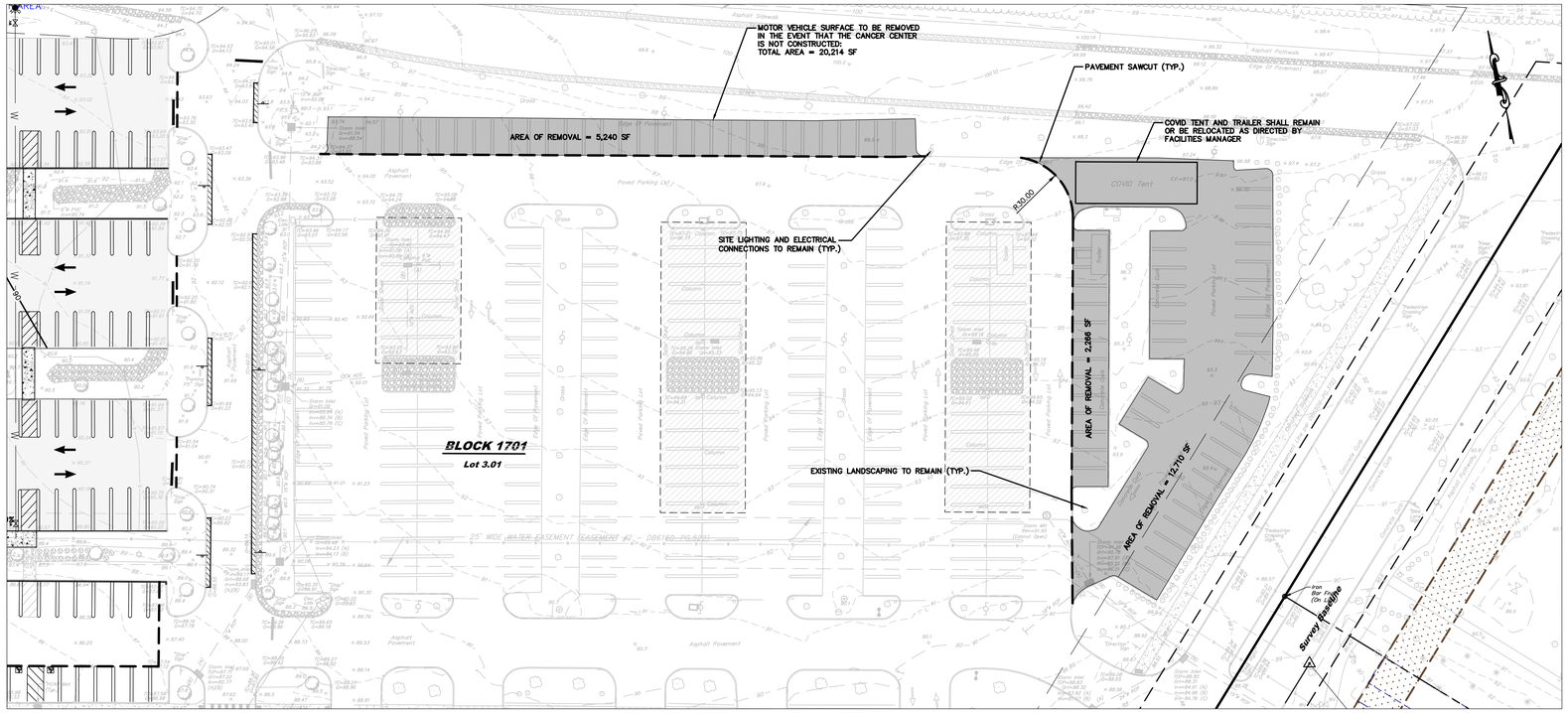
PHASE 1A

WOODLAND MANAGEMENT PLAN

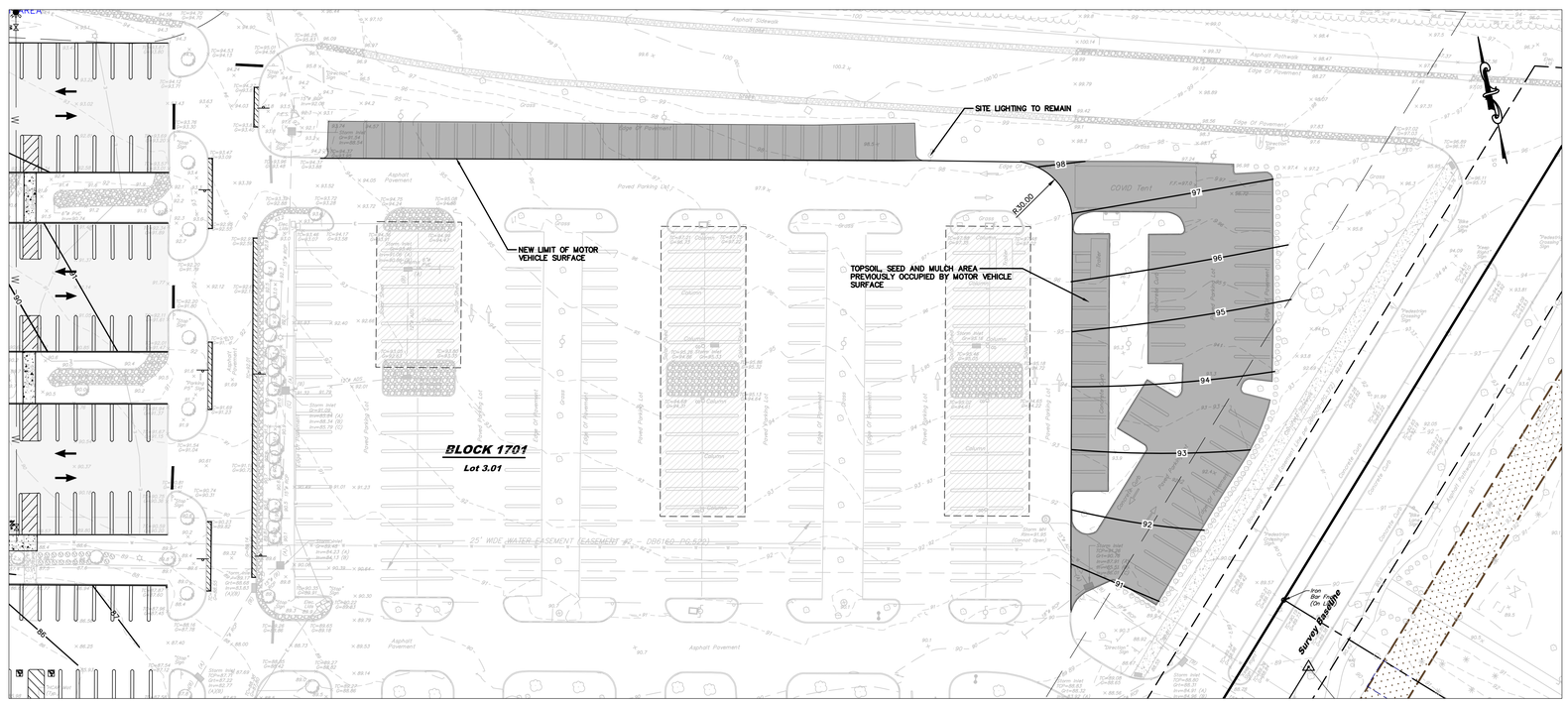
C.1C.15

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
Autodesk Docs://2587 Penn Medicine Princeton Health/PMB-PMPHC&R-ALR.rvt
Penn Medicine Princeton Health Cancer Center Garage
THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.



MOTOR VEHICLE SURFACE REMOVAL
SCALE: 1" = 30'



SEEDING AREA
SCALE: 1" = 30'

30 0 30 60
SCALE IN FEET

3/14/2023 10:55:58 AM
Autodesk Docs://2587 Penn Medicine Princeton Health/UPHS-PRPH-GAR-ARC.rvt
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.

Princeton Forward

Penn Medicine
Princeton Health

1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

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Wall, New Jersey 07719
732.312.9800

FPAengineers.com

New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

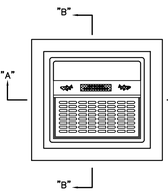
PHASE 1A

MOTOR VEHICLE SURFACE REMOVAL PLAN

C1.C.16

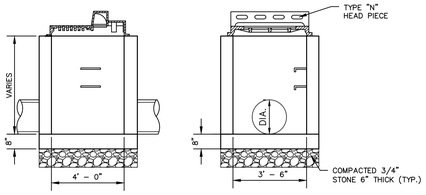
04/14/2023 SITE PLAN SUBMISSION

P23-03 DRC 05/18/23



NOTES:

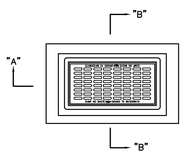
1. FOOTING TO BE N.J.D.O.T., CLASS "B"
2. INVERT TO BE CLASS "B"
3. IF WALL CONSTRUCTION IS OTHER THAN PRECAST CONCRETE, THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER
4. FRAME AND GRATE TO BE No. 2618 AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR APPROVED EQUAL. TYPE "N" ECO HEAD PIECE.
5. PROVIDE ALUMINUM LADDER RUNGS @ 12" CENTER TO CENTER
6. WHEN ADDITIONAL DEPTH IS SCHEDULE WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO THE INVERT, SHALL BE 12" THICK. THE FOUNDATION DIMENSIONS SHALL BE INCREASED TO 12" WIDTH AND TO 12' IN DEPTH.
7. FOUNDATION AND INVERT TO BE CONSTRUCTED IN 2 STAGES. TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.
8. CONTRACTOR SHALL ORDER PRECAST INLET 1' SHORTER THAN ANTICIPATED TO ACCOMMODATE FOR UNCONFIRMED PIPE INVERTS UNLESS INVERTS HAVE BEEN CONFIRMED DURING THE PRE-CONSTRUCTION INVESTIGATION.



SECTION B-B
"THROUGH" INVERT DETAIL

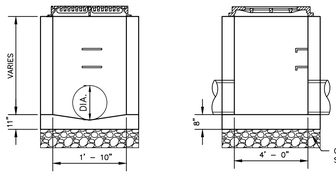
SECTION A-A
"TERMINAL" INVERT DETAIL

TYPE "B" INLET DETAIL
NOT TO SCALE



NOTES:

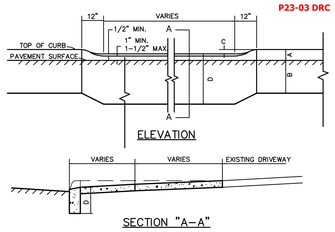
1. INVERT TO BE CLASS "C"
2. IF WALL CONSTRUCTION IS OTHER THAN PRECAST CONCRETE, THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER
3. FRAME AND GRATE (BICYCLE GRATE) TO BE No.3425 AS MANUFACTURED BY CAMPBELL FOUNDRY CO. OR APPROVED EQUAL.
4. PROVIDE POLYETHYLENE LADDER RUNGS @ 12" CENTER TO CENTER
5. WHEN ADDITIONAL DEPTH IS SCHEDULE WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO THE INVERT, SHALL BE 12" THICK. THE FOUNDATION DIMENSIONS SHALL BE INCREASED TO 12" WIDTH AND TO 12' IN DEPTH.



SECTION B-B
"THROUGH" INVERT DETAIL

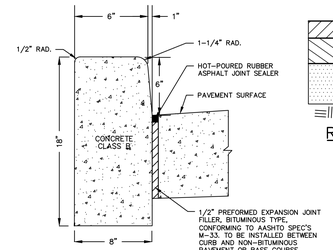
SECTION A-A
"TERMINAL" INVERT DETAIL

TYPE "A" INLET DETAIL
NOT TO SCALE

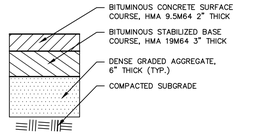


	A	B	C	D
CONCRETE CURB TYPE I	6"	12"	4" MIN., 4-1/2" MAX.	18"
CONCRETE CURB TYPE II	6"	12"	4" MIN., 4-1/2" MAX.	18"
CONCRETE CURB TYPE III	8"	12"	6" MIN., 6-1/2" MAX.	20"
CONCRETE CURB TYPE IV	8"	12"	6" MIN., 6-1/2" MAX.	20"
CONCRETE CURB TYPE V	8"	12"	6" MIN., 6-1/2" MAX.	20"

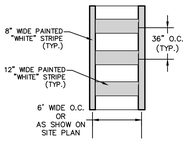
METHOD OF DEPRESSING CURB AT DRIVEWAY DETAIL
NOT TO SCALE



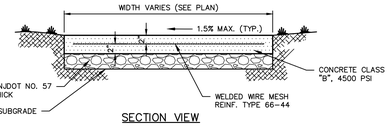
CONCRETE VERTICAL CURB DETAIL
NOT TO SCALE



ROADWAY PAVEMENT SECTION DETAIL
NOT TO SCALE



STANDARD OFF-SITE CROSSWALK DETAIL
NOT TO SCALE

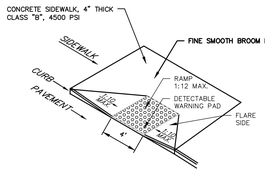


SECTION VIEW

NOTES:

1. PREFORMED BITUMINOUS CELLULAR JOINT FILLERS 1/2" THICK, SHALL BE PLACED AT INTERVALS NOT EXCEEDING TWENTY (20) FEET. DUMMY (FORMED) JOINTS SHALL BE CUT INTO THE CONCRETE SIDEWALK BETWEEN THE EXPANSION JOINTS AT EQUAL INTERVALS NOT EXCEEDING THE WIDTH OF THE SIDEWALK.
2. THE SIDEWALK SUBGRADE SHALL BE NJDOT NO. 57 STONE, 6" THICK OR MATERIAL APPROVED BY THE TOWNSHIP ENGINEER, AND COMPACTED PRIOR TO THE PLACEMENT OF ANY SIDEWALK.
3. THE SIDEWALK SECTION SHALL BE 6" THICK WITH WELDED WIRE FABRIC AT DRIVEWAYS.
4. SIDEWALK SHALL BE 4' WIDE, EXCEPT WHERE ADJACENT TO VEHICLE PARKING AREAS WHERE THE SIDEWALK SHALL BE 6' WIDE.

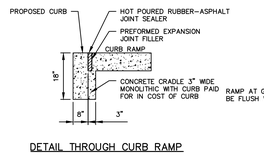
CONCRETE SIDEWALK, 4" THICK DETAIL
NOT TO SCALE



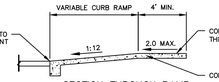
PLAN VIEW OF RAMP

NOTES:

1. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR OF OBSTRUCTIONS.
2. CURB (DEPRESSED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT 4" WIDE AT ALL CURB RAMPS.
3. SIDEWALK AND CURB RAMP TO BE PAID FOR AS CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
4. CONCRETE TO BE N.J.D.O.T., CLASS "B" 6. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI.
5. THE CONTRACTOR SHALL PROVIDE DETECTABLE WARNING ON ALL HANDICAP SIDEWALK RAMPS. THE DETECTABLE WARNING SHALL BE STRONGWARN TACTILE WARNING SURFACE, 2000 AS MANUFACTURED BY STRONGWALL INDUSTRIES, INC. (1-800-535-0668) OR APPROVED EQUIVALENT THAT CONFORMS TO ADA REQUIREMENTS. THE COLOR OF DETECTABLE WARNING MUST BE APPROVED BY THE ARCHITECT FROM AVAILABLE COLORS.
6. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI.

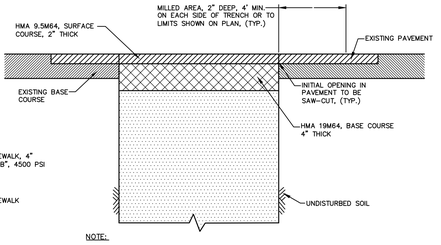


DETAIL THROUGH CURB RAMP



SECTION THROUGH RAMP

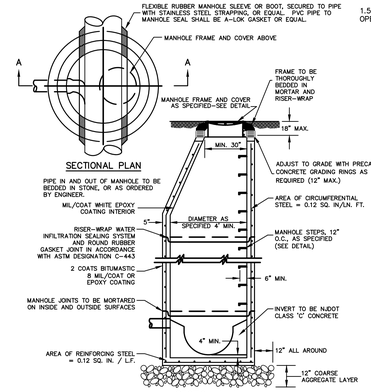
ADA COMPLIANT SIDEWALK RAMP DETAIL
NOT TO SCALE



NOTE:

1. TEMPORARY PAVEMENT TO BE MAINTAINED BY CONTRACTOR. NO PERMANENT REPAIR TO BE MADE WITHOUT SPECIFIC APPROVAL OF THE TOWNSHIP ENGINEER AND COUNTY.

ROAD PAVEMENT REPAIR DETAIL
NOT TO SCALE



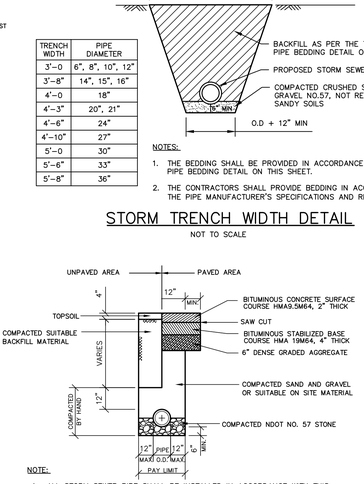
SECTIONAL PLAN

SECTION A-A

CONSTRUCTION NOTES:

1. PRECAST MANHOLE SECTIONS TO BE IN ACCORDANCE WITH LATEST ASTM DESIGNATION C-478, MINIMUM COMPRESSION STRENGTH TO BE 4000 PSI
2. FLEXIBLE RUBBER BOOT SHALL BE USED FOR CONNECTION OF PVC PIPE TO MANHOLE.
3. PRECAST CHANNELS SHALL NOT BE USED FOR BENDS GREATER THAN 45°. POURED CONCRETE LONG RADIUS CHANNELS SHALL BE CONSTRUCTED.
4. WHEN DESIGN CALLS FOR REGULAR OR LOCKING MANHOLE FRAME AND COVER, INSTALL CONE SECTION WITH 30" OPENING. FOR A WATERTIGHT FRAME AND COVER, INSTALL CONE SECTION WITH 24" OPENING.
5. RISER-WRAP WATER INFILTRATION SYSTEM TO BE INSTALLED AT ALL MANHOLE JOINTS AND FRAME BASE.

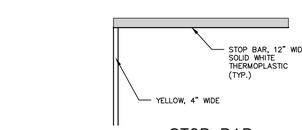
STANDARD PRECAST SANITARY MANHOLE
N.T.S.



NOTE:

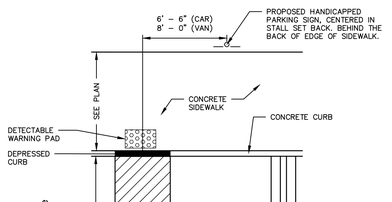
1. ALL STORM SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL AND THE PIPE MANUFACTURER'S SPECIFICATIONS.

TYPICAL STORM PIPE TRENCH DETAIL
NOT TO SCALE

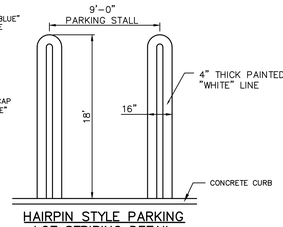


STOP BAR
NOT TO SCALE

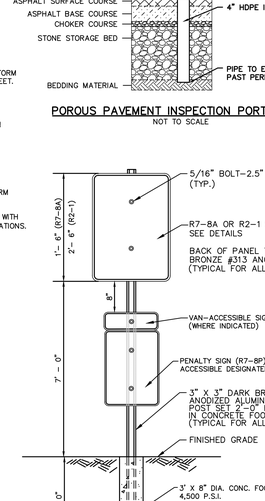
NOTE:
TO BE SET 4 FT FROM BEHIND CROSSWALK



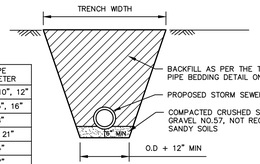
ADA COMPLIANT PARKING STALL DETAIL
NOT TO SCALE



HAIRPIN STYLE PARKING LOT STRIPING DETAIL
NOT TO SCALE



POROUS PAVEMENT GENERAL CROSS SECTION
NOT TO SCALE



TRENCH WIDTH	PIPE DIAMETER
3'-0	6", 8", 10", 12"
3'-8"	14", 15", 16"
4'-0	18"
4'-3"	20", 21"
4'-6"	24"
4'-10"	27"
5'-0	30"
5'-6"	33"
5'-8"	36"

NOTES:

1. THE BEDDING SHALL BE PROVIDED IN ACCORDANCE WITH STORM PIPE BEDDING DETAIL ON THIS SHEET.
2. THE CONTRACTORS SHALL PROVIDE BEDDING IN ACCORDANCE WITH THE PIPE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

STORM TRENCH WIDTH DETAIL
NOT TO SCALE

POROUS PAVEMENT INSPECTION PORT DETAIL
NOT TO SCALE

NOTES :

1. ALL SIGNS TO CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
2. SIGN TO BE LOCATED A MINIMUM OF 1.0 FOOT OFF OF THE EDGE OF ANY PROPOSED SIDEWALK.
3. THE MINIMUM MOUNTING HEIGHT OF THE PRIMARY SIGN WHERE PEDESTRIAN TRAFFIC IS PRESENT IS 7 FEET ABOVE FINISHED GRADE AS REQUIRED BY MUTCD.

TYPICAL TYPE "B" SIGN POST DETAIL
NOT TO SCALE

NOTES:

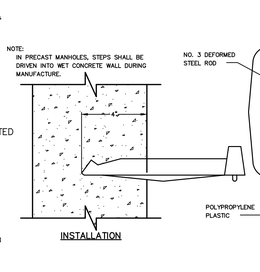
1. ORIENTATION SHALL BE IN THE DIRECTION OF TRAVEL OR FOR COMMON ROADWAYS IN THE DIRECTION OF INCOMING TRAVEL.
2. ALL LETTERS SHALL BE YELLOW.
3. ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL BE THERMOPLASTIC WITH GLASS BEADS OR APPROVED EQUAL.

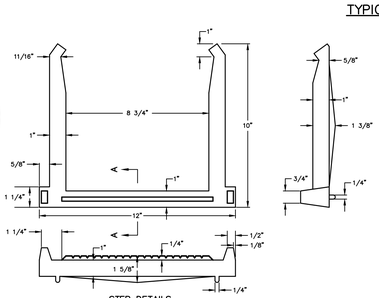
FIRE LANE ROADWAY STENCIL DETAIL
NOT TO SCALE

GENERAL NOTES:

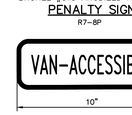
1. BACK OF PANEL TO BE DARK BRONZE #313 ANODIZED ALUMINUM

NO PARKING FIRE LANE SIGN
NOT TO SCALE

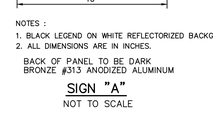




POLYPROPYLENE MANHOLE STEPS
N.T.S.



R7-8A
12" x 18"
BACK OF PANEL TO BE DARK BRONZE #313 ANODIZED ALUMINUM



NOTES :
1. BLACK LEGEND ON WHITE REFLECTORIZED BACKGROUND
2. ALL DIMENSIONS ARE IN INCHES.

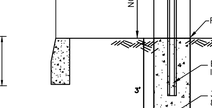
BACK OF PANEL TO BE DARK BRONZE #313 ANODIZED ALUMINUM

PENALTY SIGN
R7-8P

NOTES :
1. BLACK LEGEND ON WHITE REFLECTORIZED BACKGROUND
2. ALL DIMENSIONS ARE IN INCHES.

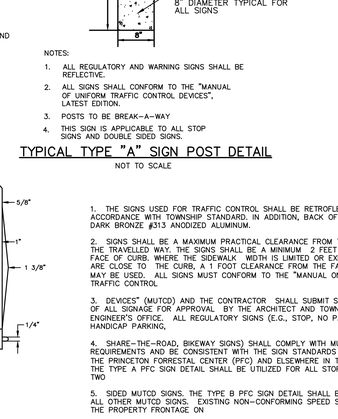
BACK OF PANEL TO BE DARK BRONZE #313 ANODIZED ALUMINUM

SIGN "A"
NOT TO SCALE



NOTE:
1. COLOR TO BE SAFETY RED

DETECTABLE WARNING PAD DETAIL
NOT TO SCALE



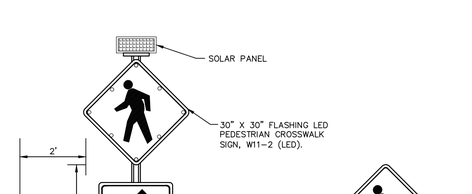
NOTES:

1. ALL REGULATORY AND WARNING SIGNS SHALL BE REFLECTIVE.
2. ALL SIGNS SHALL CONFORM TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
3. POSTS TO BE BREAK-A-WAY
4. THIS SIGN IS APPLICABLE TO ALL STOP SIGNS AND DOUBLE SIDED SIGNS.

TYPICAL TYPE "A" SIGN POST DETAIL
NOT TO SCALE

1. THE SIGNS USED FOR TRAFFIC CONTROL SHALL BE RETROFLECTIVE AND IN ACCORDANCE WITH TOWNSHIP STANDARD. IN ADDITION, BACK OF PANEL TO BE DARK BRONZE #313 ANODIZED ALUMINUM.
2. SIGNS SHALL BE A MAXIMUM PRACTICAL CLEARANCE FROM THE EDGE OF THE TRAVELLED WAY. THE SIGNS SHALL BE A MINIMUM 2 FEET FROM THE FACE OF CURB, WHERE THE SIDEWALK WIDTH IS LIMITED OR EXISTING POLES ARE CLOSE TO THE CURB, A 1 FOOT CLEARANCE FROM THE FACE OF CURB MAY BE USED. ALL SIGNS MUST CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL
3. DEVICES" (MUTCD) AND THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL SIGNAGE FOR APPROVAL BY THE ARCHITECT AND TOWNSHIP ENGINEER'S OFFICE. ALL REGULATORY SIGNS (E.G., STOP, NO PARKING, HANDICAP PARKING,
4. SHARE-THE-ROAD, BIKEWAY SIGNS) SHALL COMPLY WITH MUTCD REQUIREMENTS AND BE CONSISTENT WITH THE SIGN STANDARDS USED WITHIN THE PRINCETON FORRESTAL CENTER (PFC) AND ELSEWHERE IN THE TOWNSHIP. THE TYPE A PFC SIGN DETAIL SHALL BE UTILIZED FOR ALL STOP SIGNS AND TWO
5. SIDED MUTCD SIGNS. THE TYPE B PFC SIGN DETAIL SHALL BE USED FOR ALL OTHER MUTCD SIGNS. EXISTING NON-CONFORMING SPEED SIGNS ALONG THE PROPERTY FRONTAGE ON
6. HOSPITAL DRIVE SHALL BE REPLACED WITH PFC TYPE B CONFORMING SIGNS.

SIGNS
NOT TO SCALE



SIGN NOTES:

1. ALL PEDESTRIAN CROSSWALK IN THE DEVELOPMENT MUST BE SIGNED AND PAVEMENT MARKINGS PROVIDED PER MUTCD.
2. THE TWO CROSSWALK SIGNS ON HOSPITAL DRIVE TO BE TS40 PEDESTRIAN CROSSING FLASHING LED EDGE LIT SIGN OR APPROVED EQUAL. COORDINATE LOCATION WITH TOWNSHIP ENGINEER.
3. CONTRACTOR SHALL PROVIDE POST AND FOUNDATION AS PER MANUFACTURER REQUIREMENTS.
4. CONTRACTOR MUST SUBMIT SHOP DRAWING OR PEDESTRIAN CROSSING SIGNAGE FOR REVIEW AND APPROVAL.

NOTES:

1. ALL REGULATORY AND WARNING SIGNS SHALL BE REFLECTIVE.
2. ALL SIGNS SHALL CONFORM TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
3. POSTS TO BE BREAK-A-WAY

PEDESTRIAN CROSSING SIGNS AND FOUNDATION DETAIL
NOT TO SCALE

STOP SIGN
NOT TO SCALE

GENERAL NOTES:

1. BACK OF PANEL TO BE DARK BRONZE #313 ANODIZED ALUMINUM

DO NOT ENTER SIGN
NOT TO SCALE

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

SHEPLEY BULFINCH
99 Chauncy Street 4th Floor
Boston, MA 02111
T: 617.423.1700 | F: 800.934.9691
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Design Architect

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Architect / Structural Engineer / Parking Consultant

BR+A
BR+A Consulting Engineers
105 Madison Avenue 10th Floor
New York, NY, 10016
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brplusa.com
Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

FPA FRENCH & PARRELLO ASSOCIATES
Corporate Office:
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Wall, New Jersey 07719
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FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO. DATE DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd.
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

CONSTRUCTION DETAILS (1)

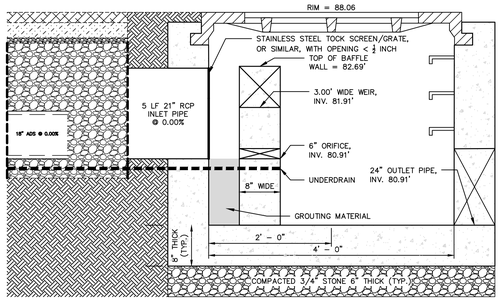
C.1C.17

04/14/2023 SITE PLAN SUBMISSION

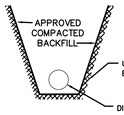
3/14/2023 10:55:56 AM
Autodesk Docs://SEF Penn Medicine Princeton Health/NJPHS-PARPH-GAR-AR.rvt
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.

P23-03 DRC 05/18/23



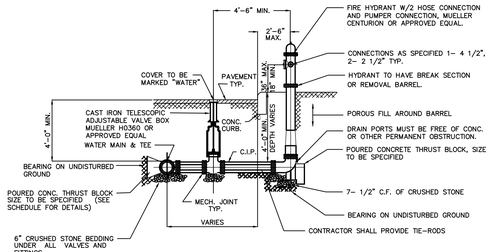
OUTLET CONTROL STRUCTURE
NOT TO SCALE



NOTES:

1. WHERE PIPE INVERTS ARE IN ROCK, EXCAVATE 6" BELOW INVERT OF PIPE AND FILL WITH 3/4" CRUSHED STONE.
2. WHERE PIPE INVERTS ARE IN SOFT ORGANIC SOIL AT LEAST 2 FEET OF CRUSHED STONE SHALL BE USED FOR BEDDING, UNDERLAIN BY A LAYER OF FILTER FABRIC SUCH AS MIRAFI OR EQUIVALENT AS DIRECTED BY THE ENGINEER.
3. COMPACTED BACKFILL SHALL BE AS A MINIMUM 90% OF MAXIMUM DRY DENSITY OF SOIL AS DETERMINED BY ASTM D-1557 (MODIFIED PROCTOR DENSITY).
4. COMPACTION OF THE TOP TWO FEET (2') OF THE TRENCH UNDER AREAS TO BE PAVED SHALL ACHIEVE AS A MINIMUM 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557.
5. WHERE PIPES ARE WITHIN TOWNSHIP ROADS, THE ROAD PAVEMENT TRENCH REPAIR AND REPLACEMENT, AND ALL RESTORATION IN TOWNSHIP ROADS SHALL MEET THE REQUIREMENTS OF THE TOWNSHIP ENGINEER.
6. SUITABLE BACKFILL MATERIAL SHALL BE SELECT MATERIAL I2 (NJDOT) WHEN ON–SITE SUITABLE MATERIAL IS NOT AVAILABLE.
7. BACKFILL SHALL BE MECHANICALLY COMPACTED IN TWELVE INCH LIFTS IN ORDER TO MEET THE MINIMUM REQUIREMENTS STATED ABOVE AND THE APPROVAL OF THE ENGINEER.
8. A MINIMUM OF 4' OF COVER MUST BE PROVIDED FROM THE TOP OF THE PROPOSED WATER MAINS AND SERVICE LINES TO THE FINISHED GRADE.
9. THE CONTRACTOR MUST COMPLY WITH ALL STATE AND FEDERAL CONFINED SPACE RULES, AND ALL APPLICABLE O.S.H.A. REQUIREMENTS.

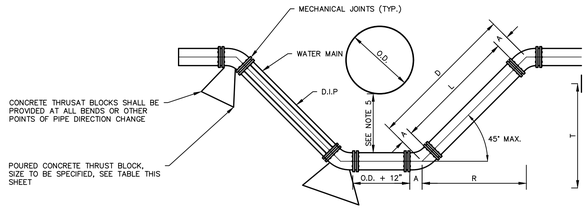
WATER MAIN BEDDING DETAIL
NOT TO SCALE



NOTES:

1. CONCRETE FOR THRUST BLOCKS TO BE NJDOT CLASS 'C'.
2. SIZE AND BEARING AREA FOR THRUST BLOCKS SHALL CONFORM TO CURRENT AWWA STANDARDS OR SHALL BE DESIGNATED ON THE PLANS.
3. FINISH PAINTING AND MARKING SHALL BE DESIGNATED ON THE PLANS OR CONTRACT DOCUMENTS OR SHALL BE AS DIRECTED BY THE ENGINEER.
4. TYPICAL HYDRANT LOCATION ADJACENT TO ROADWAY, FOR SPECIAL LOCATION REFER TO PLANS
5. SPECIAL HYDRANT ARRANGEMENT OR SETTINGS TO BE DETAILED BY CONTRACTOR AND SUBJECT TO THE ENGINEER;S APPROVAL.
6. ALL CONNECTIONS TO BE MECHANICAL JOINT OR LOCK RING TYPE JOINT AS SPECIFIED.

FIRE HYDRANT DETAIL
NOT TO SCALE



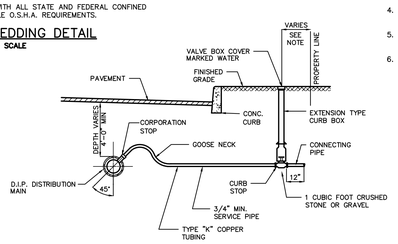
NOTES:

1. WATER MAIN MAY BE LOOPED ABOVE OBSTRUCTION, IF 3' MINIMUM COVER IS MAINTAINED ABOVE WATER MAIN
2. WATER MAIN MAY BE DUCTILE IRON CEMENT LINED PIPE ALL JOINTS SHALL BE MECHANICAL JOINT OR PUSH–ON AND ALL FITTINGS SHALL BE MECHANICAL JOINT CAST IRON
3. OFFSETS MAY BE SUBTITUTED FOR A OR T UP TO 24" IF APPROVED BY THE ENGINEER
4. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS OR OTHER POINTS OF PIPE DIRECTION CHANGE
5. MINIMUM CLEARANCE BETWEEN OBSTRUCTING PIPE AND WATER MAIN SHALL BE 18" MINIMUM. CLEARANCE BETWEEN WATER MAIN AND OTHER OBSTRUCTIONS SHALL BE 6"
6. TIE RODS SHALL BE UTILIZED TO RESTRAIN PIPE JOINTS. DETAILS OF THE TIE ROD ASSEMBLY SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. TIE RODS SHALL BE SUFFICIENT TO RESTRAIN THE THRUST DEVELOPED AT 100 P.S.I. WORKING PRESSURE

MECHANICAL JOINTS			
ANGLE	"D" EQUALS	"R" EQUALS	"L"* EQUALS
45°	Tx1.414	Tx1.000	D–2A
22 1/2°	Tx2.414	Tx2.414	D–2A
11 1/4°	Tx5.126	Tx5.027	D–2A

* CUT THE PIPE SOMEWHAT SHORTER THAN THEORETICAL TO ALLOW FOR SOME SLIGHT CLEARANCE IN THE JOINT

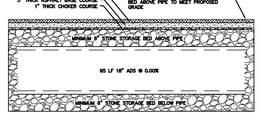
LOOPING WATER MAIN DETAIL
NOT TO SCALE



NOTE:

1. CURB STOP TO BE LOCATED 8' FROM PROPERTY LINE ON 50' R.O.W OR AS DIRECTED.

HOUSE SERVICE CONNECTION DETAIL
NOT TO SCALE



UNDERGROUND STORAGE AREA
NOT TO SCALE

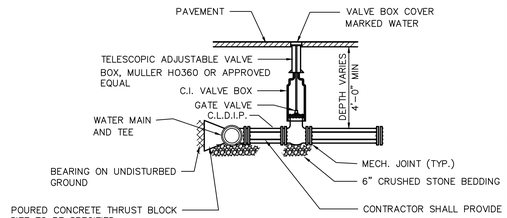
DIAMETER OF PIPE (d)	22 1/2° ELBOW "A"	45° ELBOW "A"	90° ELBOW "A"	TEE "A"	PLUG "A"
6"	0.5	1.1	2.0	1.4	1.4
8"	1.0	1.9	3.6	2.7	2.7
10"	1.5	3.0	5.5	4.2	4.2
12"	2.2	4.3	8.0	5.7	5.7
16"	4.5	7.7	14.2	10.0	10.0
20"	6.1	12.0	22.3	15.7	15.7
24"	8.8	17.2	32.0	22.7	22.7

"A" – CONTACT BEARING AREA OF BLOCK WITH EARTH, IN SQUARE FEET

NOTES:

1. BEARING AREAS ARE BASED ON UNDISTURBED SOIL WITH A BEARING CAPACITY OF 4000LBS. PER SQ. FT. FOR A LESSER SOIL BEARING CAPACITY, THESE AREAS SHALL BE INCREASED ACCORDINGLY.
2. ALL CONCRETE THRUST BLOCKS SHALL BE CLASS B.
3. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH.
4. THE COST OF THRUST BLOCKS SHALL BE INCLUDED IN THE PRICE BID UNDER ITEM, WATER MAINS.
5. TEST PRESSURE = 150 P.S.I.

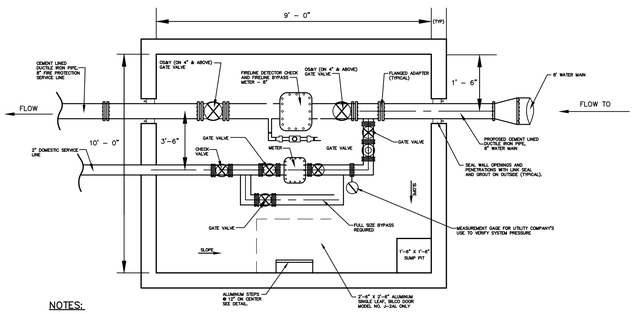
TABLE OF THRUST BLOCKS
NOT TO SCALE



NOTES

1. SIZE AND BEARING FOR THRUST BLOCK SHALL CONFORM TO CURRENT A.W.W.A. STANDARDS, OR SHALL BE DESIGNATED ON THE PLANS.
2. CONCRETE FOR THE THRUST BLOCKS TO BE N.J.D.O.T., CLASS "C".
3. ALL CONNECTIONS TO BE MECHANICAL JOINT, OR LOCK RING TYPE JOINTS, AS SPECIFIED.

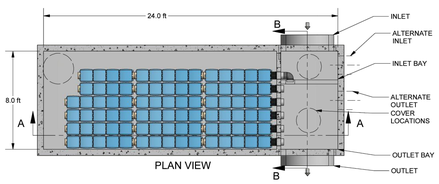
GATE VALVE ASSEMBLY
NOT TO SCALE



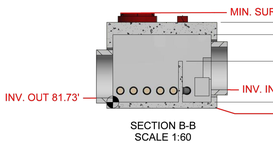
NOTES:

1. THE GENERAL CONTRACTOR SHALL PROVIDE THE CONCRETE WATER METER PIT CONCRETE WALLS ARE TO BE 8" REINFORCED CONCRETE OR 8" REINFORCED CONCRETE BLOCK WITH WALL RODS OR APPROVED EQUIVALENT.
2. THE CONCRETE WATER METER PIT SHALL MEET THE REQUIREMENTS OF ASTM C–913. THE CONCRETE WATER METER PIT SHALL BE INSTALLED WITHOUT COVER SLAB. COVER SLAB SHALL BE INSTALLED AFTER BOTH METERS HAVE BEEN INSTALLED AND APPROVED.
3. THE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI IN 28 DAYS. REINFORCING STEEL SHALL CONFORM TO ASTM A615 AND A185.
4. THE GENERAL CONTRACTOR SHALL PROVIDE A 2'–6" BY 2'–6" SINGLE LEAF, ALUMINUM BILCO DOOR MODEL NO. J–2AL.
5. THE GENERAL CONTRACTOR SHALL PROVIDE ADJUSTABLE PIPE SUPPORTS AS NECESSARY TO SECURE THE PROPOSED DOMESTIC AND FIRE SERVICE LINES AND THEIR APPURTENANCES WITHIN THE METER PIT.
6. THE PROPOSED WATER LINES SHALL BE INSTALLED WITH A 4'–0" MINIMUM COVER BETWEEN THE TOP OF THE PIPE AND THE FINISHED GRADE. THE HEIGHT OF THE METERS FROM THE FLOOR TO THE CENTERLINE OF THE PROPOSED PIPE IS 30" MAXIMUM AND 15" MINIMUM.
7. THE CONCRETE PIT BOTTOM, OR BASE SECTION, SHALL BE 12" THICK AND THE CONTRACTOR SHALL SLOPE FLOOR TO 1'–6" X 1'–6" BY 1'–0" DEEP SUMP PIT. IN ADDITION, THE CONTRACTOR SHALL PROVIDE A 12" THICK FOUNDATION BASE CONSISTING OF 3/4" CRUSHED STONE .
8. THE GENERAL CONTRACTOR SHALL PROVIDE A CENSUS FIRELINE WATER METER ASSEMBLY MODEL #FM–720 WITH 1.5" SR BYPASS METER AND MXU FOR RADIO READ FOR THE 8" DIP WATER MAIN.
9. PRESSURE REDUCING VALVE MUST BE AJUSTED TO PROVIDE 80 PSI, AT THE BUILDING ACCESS POINT OR AS REQUIRED BY BUILDING PLUMBING ENGINEER.
10. THE GATE VALVE AT THE CURB LINE MUST REMAIN OPEN PERMANENTLY AFTER SPRINKLER SYSTEM IS OPERATIONAL.
11. THE GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, INCLUDING BUOYANCY CALCULATIONS FOR ANTI–FLOATATION RING SIZE AND LAYOUT OF PIPES AND APPURTENANCES PRIOR TO ORDERING, FABRICATION AND/OR CONSTRUCTION OF THE CONCRETE WATER METER PIT FOR THE REVIEW AND APPROVAL BY NEW JERSEY AMERICAN WATER COMPANY AND TOWNSHIP ENGINEER.
12. THE GENERAL CONTRACTOR SHALL REFER TO THE PLUMBING PLANS FOR THE INTERNAL DOMESTIC PLUMBING AND FIRE SPRINKLER SYSTEM, INCLUDING BACKFLOW PREVENTION DEVICES, PRESSURE REDUCING VALVES AND OTHER REQUIRED APPURTENANCES.
13. BACKFLOW PROVENTER MUST BE LOCATED INSIDE THE BUILDING.

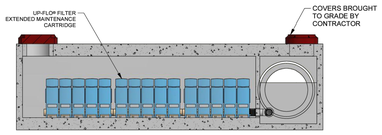
TYPICAL CONCRETE WATER METER PIT
NOT TO SCALE



PLAN VIEW



SECTION B-B
SCALE 1:60



SECTION A-A
ELEVATION VIEW

HYDRO FRAME AND COVER (INCLUDED)
GRADE RINGS BY OTHERS AS REQUIRED

CARTRIDGE HEIGHT (in)	TREATMENT FLOW PER CARTRIDGE (gpm)	TREATMENT AREA PER CARTRIDGE (ac)	RECOMMENDED HYDRAULIC DROP INVERT IN TO INVERT OUT (in)	MAXIMUM CARTRIDGES
18	5.4	0.05	18	100
27	8.9	0.08	27	95
36	12.4	0.12	36	88

ANY WARRANTY GIVEN BY HYDRO INTERNATIONAL WILL APPLY ONLY TO THOSE ITEMS SUPPLIED BY IT. ACCORDINGLY HYDRO INTERNATIONAL CANNOT ACCEPT ANY RESPONSIBILITY FOR ANY STRUCTURE, PLANT, OR EQUIPMENT, (OR THE PERFORMANCE THERE OF) DESIGNED, BUILT, MANUFACTURED, OR SUPPLIED BY ANY THIRD PARTY. HYDRO INTERNATIONAL HAVE A POLICY OF CONTINUOUS DEVELOPMENT AND RESERVE THE RIGHT TO AMEND THE SPECIFICATION. HYDRO INTERNATIONAL CANNOT ACCEPT LIABILITY FOR PERFORMANCE OF ITS EQUIPMENT, (OR ANY PART THEREOF). IF THE EQUIPMENT IS SUBJECT TO CONDITIONS OUTSIDE ANY DESIGN SPECIFICATION, HYDRO INTERNATIONAL OWNS THE COPYRIGHT OF THIS DRAWING, WHICH IS SUPPLIED IN CONFIDENCE. IT MUST NOT BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SUPPLIED AND MUST NOT BE REPRODUCED, IN WHOLE OR IN PART, WITHOUT PRIOR PERMISSION IN WRITING FROM HYDRO INTERNATIONAL

PROJECTION

IF IN DOUBT ASK

COMMENTS:

1. STRUCTURE WALL AND SLAB THICKNESS ARE NOT TO SCALE.
2. NOT FOR CONSTRUCTION CONTACT HYDRO FOR SITE SPECIFIC DRAWING
3. MINIMUM PERFORMANCE: 80% REMOVAL NJDEP - NJDEP BLEND: NJCAT, Sil-Co-Sil 106 (d50 = 22 microns) AT THE PEAK TREATMENT FLOW
4. NOT ALL SIZES AVAILABLE IN ALL AREAS
5. CARTRIDGE SIZES AVAILABLE IN 18", 27" AND 36"
6. FOR INSIDE VAULT HEIGHTS UNDER 66.0 in CONTACT HYDRO

*Using the maximum number of cartridges may require an alternate configuration. Please contact techsupport@hydro-int.com

REVISION HISTORY			
REV	BY	DESCRIPTION	DATE
-	EHR	INITIAL RELEASE	3/30/2020

DATE: 3/30/2020 SCALE: 1:60

UP-FLO® FILTER EXTENDED MAINTENANCE CARTRIDGE

8ft X 24ft

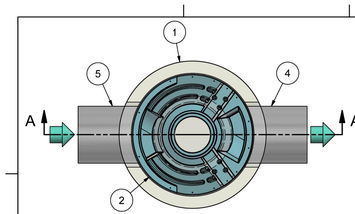
GENERAL ARRANGEMENT

Hydro International
94 Hutchins Drive
Portland, ME 04102
Tel: +1 (207) 756-6200
Fax: +1 (207) 756-6212
hydro-int.com

DRAWING NO.: UP-FLO® FILTER EMC

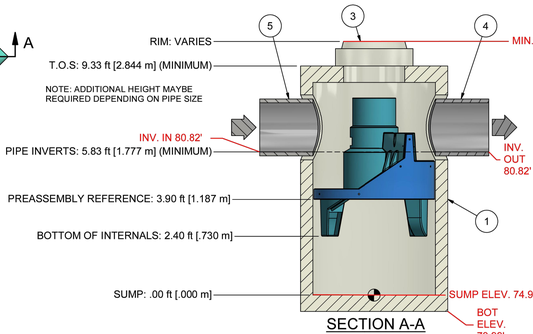
SHEET SIZE: B | SHEET: 1 OF 1 | Rev: -

UP–FLO FILTER (80% TSS REMOVAL)
NOT TO SCALE



PLAN VIEW

HYDRO FRAME AND COVER (INCLUDED)
GRADE RINGS BY OTHERS AS REQUIRED



SECTION A-A

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

PRODUCT SPECIFICATION:

1. Peak Hydraulic Flow: 20.0 cfs (566 l/s)
2. Min Sediment Storage Capacity: 1.1 cu. yd. (0.8 cu. m.)
3. Maximum Inlet/Outlet Pipe Diameters: 24 in. (600 mm)
4. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
5. For more product information including regulatory acceptances, please visit https://hydro-int.com/en/products/first-defense

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST					
ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION	
1	1	60	1500	I.D. PRECAST MANHOLE	
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)	
3	1	30	750	FRAME AND COVER (ROUND)	
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)	
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)	

PROJECTION

IF IN DOUBT ASK

DATE: 10/7/2019 SCALE: 1:30

DRAWN BY: ER | CHECKED BY: MRJ | APPROVED BY:

Title: 5-ft DIAMETER FIRST DEFENSE

GENERAL ARRANGEMENT

Hydro International
hydro-int.com
HYDRO INTERNATIONAL

WEIGHT: 19346 lbmass | MATERIAL:

STOCK NUMBER:

DRAWING NO.: FD GA-5

SHEET SIZE: B | SHEET: 1 OF 1 | Rev: -

FIRST DEFENSE OPTIMUM (50% TSS REMOVAL)
NOT TO SCALE

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

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Design Architect

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www.tha-consulting.com
Architect / Structural Engineer / Parking Consultant

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Mechanical, Electrical, Plumbing, Fire Protection, and Security Systems Engineer

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732.312.9800
FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO. DATE DESCRIPTION

Penn Medicine Princeton Health Cancer Center Garage
1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR2119.00

PHASE 1A

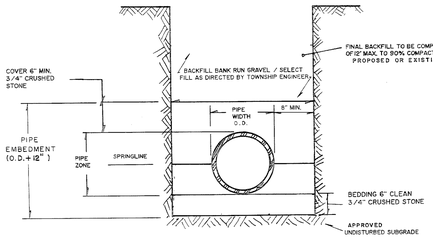
CONSTRUCTION DETAILS (2)

C.1C.18

04/14/2023 SITE PLAN SUBMISSION

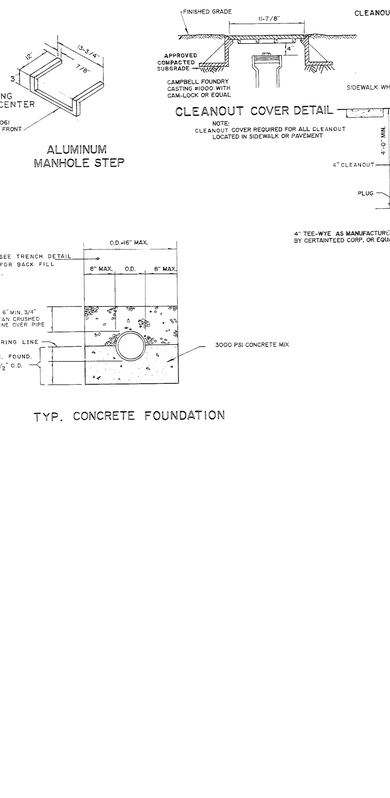
3/14/2023 15:55:58 AM
Autodesk Docs://5287 Penn Medicine Princeton Health/DPHS-PMPH-GAR-AR.rvt
Penn Medicine Princeton Health Cancer Center Garage

THE ORIGINAL OF THIS DRAWING IS 30" X 42". IF THIS COPY IS ANY OTHER SIZE, IT HAS EITHER BEEN REDUCED OR ENLARGED. TAKE APPROPRIATE PRECAUTIONS ACCORDINGLY.



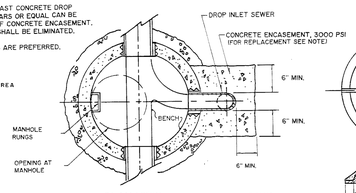
TRENCH DETAIL

NOTE: 1) PIPE EMBEDMENT SHALL BE 3/4" CLEAN CRUSHED STONE
2) WHERE SUBGRADE IS UNACCEPTABLE FOUNDATION SHALL BE REQUIRED AS SPECIFIED BY THE ENGINEER.
3) TYP. CONCRETE FOUNDATION IS SPECIFIED BELOW.
4) ENTIRE TRENCH WIDTH SHALL BE BACKFILLED AS SPECIFIED IN THE TRENCH DETAIL ABOVE.
5) FOR WIDE TRENCHES (GREATER THAN 6 PIPE DIA.) SEE TYP. SUBDITH TRENCH DETAIL BELOW.

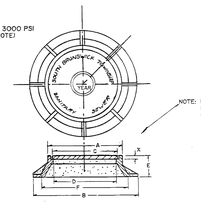


TYP. SUBDITCH TRENCH DETAIL FOR WIDE TRENCHES

NOTE:
1. ATLANTIC PRECAST CONCRETE DROP MANHOLE COLLARS OR EQUAL CAN BE USED IN PLACE OF CONCRETE ENCASEMENT. IF USED, FORMS SHALL BE ELIMINATED.
2. PRECAST UNITS ARE PREFERRED.



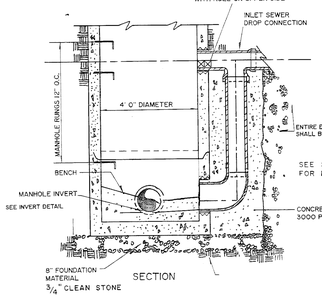
PLAN VIEW



NOTE: MANHOLE FRAME AND COVER AS MANUFATURED BY CAMPBELL FOUNDRY, TYPE 12020-7122 OR APPROVED EQUAL.

MANHOLE FRAME & COVER

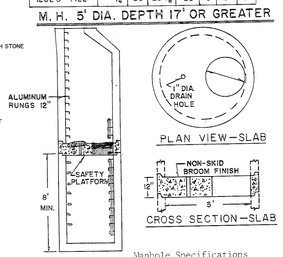
PATTERN NO.	DIMENSIONS IN INCHES							
ROUND FLANG	A	B	C	D	E	F	X
1202 B- 7122	27 3/4	39	25 3/16	23	9	31	2



SECTION

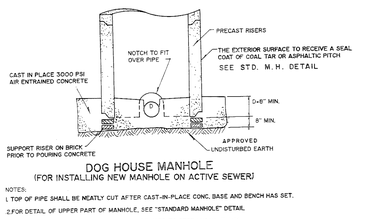
DROP MANHOLE

M. H. 5' DIA. DEPTH 17' OR GREATER



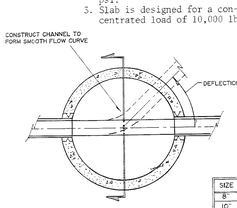
M.H. CROSS — SECTION 17 FT. OR GREATER

Manhole Specifications
1. Concrete is designed to obtain a strength of 4,000 psi in 28 days.
2. Reinforcing steel has a minimum yield strength of 60,000 psi.
3. Slab is designed for a concentrated load of 10,000 lbs.



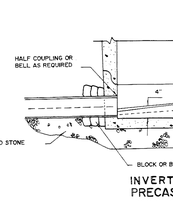
DOG HOUSE MANHOLE
(FOR INSTALLING NEW MANHOLE ON ACTIVE SEWER)

NOTES:
1. TOP OF PIPE SHALL BE NEATLY CUT AFTER CAST-IN-PLACE CONC. BASE AND BENCH HAS SET.
2. FOR DETAIL OF UPPER PART OF MANHOLE, SEE "STANDARD MANHOLE" DETAIL.
3. ACRYLIMIDE GEL GROUT INJECTION SHALL BE USED TO STOP LEAKS, IF ANY.



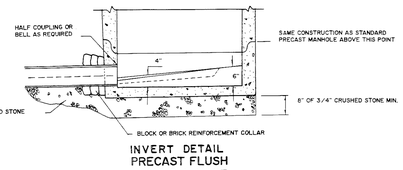
PLAN VIEW

SIZE	R	A
8"	4"	22"
10"	5"	26"
12"	6"	28"
14"	7"	30"
16"	8"	32"
18"	9"	34"
24"	12"	40"

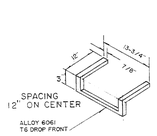


WATERTIGHT MANHOLE FRAME AND COVER

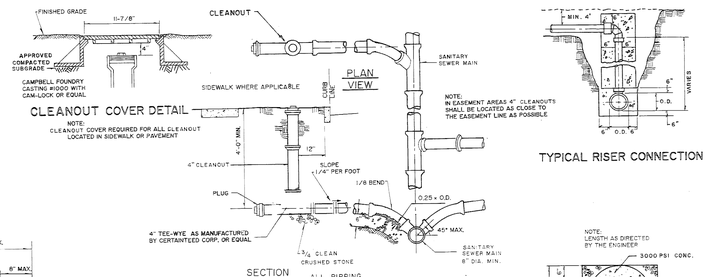
CAST IRON VENT CAP



INVERT DETAIL
PRECAST FLUSH
MANHOLE BASE



ALUMINUM MANHOLE STEP

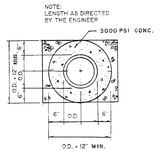


CLEANOUT COVER DETAIL
NOTE: CLEANOUT COVER REQUIRED FOR ALL CLEANOUT LOCATED IN SIDEWALK OR PAVEMENT

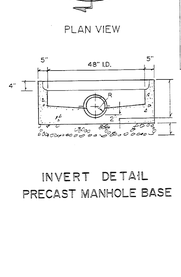
STANDARD HOUSE CONNECTION

TYPICAL RISER CONNECTION

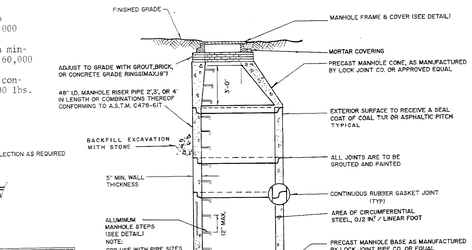
TYP. CONCRETE FOUNDATION



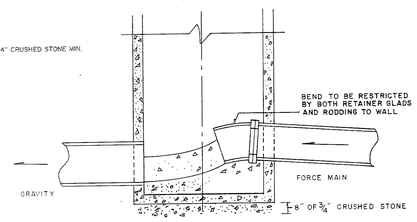
CONCRETE ENCASEMENT



INVERT DETAIL
PRECAST MANHOLE BASE



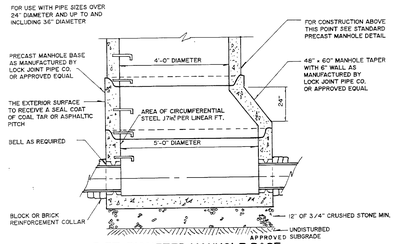
STANDARD PRECAST MANHOLE



PRESSURE TO GRAVITY TRANSITION CHAMBER

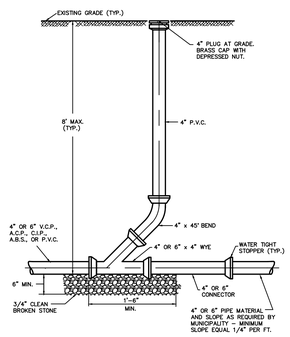
NOTE: (1) TRANSITION CHAMBER SHALL MEET ALL REQUIREMENTS OF STD. M.H.

NOTE
FOR USE WITH PIPE SIZES OVER 24" DIAMETER AND UP TO AND INCLUDING 36" DIAMETER



5 FT. DIAMETER MANHOLE BASE

NOTES:
1. Minimum easement width 25 feet - ORD.:175-59(G).
2. Easements NOT running parallel with and adjacent to public improved road R-O-W shall be compacted, graded and stabilized so as to provide a minimum width of 18 feet whose surface is firm, unyielding and shall have a positive drainage away from it. Drainage control measures shall be implemented as field conditions warrant or as directed by the Township Engineer.
3. All sanitary sewer lines that are to be owned and operated by the Township shall be so noted on the Plans.
4. Sanitary sewer pipe shall be PVC schedule 35.
5. Sanitary sewer gravity main shall be air tested prior to operation according to industry standard or as directed by the Township Engineer.
6. Force mains shall be water tested at 1.5 times the maximum rated pump output pressure, or 100 PSIg which ever is greater.
7. Minimum depth of sanitary sewer main, 4 ft.
8. All commercial or industrial building/units shall have a sampling manhole which is accessible to the Township for wastewater sample collection.
9. Non metallic/magnetic force main shall be installed with pipe locating tape.
10. Landscape plantings shall be installed so as not to interfere with the operation of the sanitary sewer and appurtenances.
11. All residential units shall have a clean out installed in the R-O-W between the property line and the edge of pavement.
12. Sewerage Pump Station:
    a) Proposals for individual pump stations serving isolated development shall not be considered unless and until it is demonstrated that a gravity system is PHYSICALLY infeasible. Individual pump stations shall be maintained by the development it serves.
    b) The following submission are required.
       i) Site plan of the pump station which shall include Building Construction plan.
       ii) Engineering Pump and Impeller data and Pump sizing calculations - NSPH- curve, hydraulic/energy grade line, name and type of pump, performance and efficiency curve, system curve clearly indicating operating region and pump supplier.
       iii) Four sets of shop drawings of all equipment proposed to be installed, which must be approved prior to construction.
13. As-Built shall indicated location of sanitary sewer line in plan and profile with distances and elevation according to USGS datum. The USGS Monument used as the Bench mark must be noted on the plans. Easements shall be shown on the As-Built plans with deed references (book, page, date of filing). Minimum list of information required on As- Builts are as follows:
    Inverts and rim elevations; pipe diameters and material; distances; grades; locations of lateral clean outs (by triangulation), profiles, utility crossings. These As-Built plans shall be marked clearly and be easily readable,be of the same scale as the construction plans, and shall be signed and sealed by a Licensed Professional Engineer.



4" OR 6" PROFILE STANDARD CLEANOUT DETAIL
NOT TO SCALE

SOUTH BRUNSWICK SEWER DEPARTMENT STANDARD DETAILS

SCALE IN FEET

Princeton Forward

Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536
OWNER

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ANDREW L. FRENCH, P.E.
PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

NO.	DATE	DESCRIPTION

N

Penn Medicine Princeton Health Cancer Center Garage

1 Plainsboro Rd,
Princeton, NJ 08540
JOB NO: NBR22119.00

PHASE 1A

CONSTRUCTION DETAILS (3)

C.1C.19

04/14/2023 SITE PLAN SUBMISSION

3/14/2023 10:55:56 AM
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Penn Medicine Princeton Health Cancer Center Garage

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P23-03 DRC 05/18/23

FRENCH & PARRELLO ASSOCIATES

ENGINEERING AND CONSULTING **SINCE 1974**

STORMWATER MANAGEMENT REPORT

For

Punia Boulevard Parking Lot
Block 1701, Lot 4.04
Township of Plainsboro
Middlesex County, New Jersey

Prepared For:

Princeton HealthCare System
A New Jersey Nonprofit Corporation
d/b/a Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536

_____

Andrew L. French
Professional Engineer, NJ License No # 42894

April 14, 2023| FPA No. 06C028T.003
1800 Route 34, Suite 101, Wall Township, NJ 07719

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Appendix A

Supporting Documents

- NRCS Soils Map
- NJ 24 Hour Rainfall Frequency Data
- Soils Testing Data

Appendix B

Present Conditions Runoff Calculations

- Time of Concentration Calculations
- Existing Condition Runoff Calculations

Appendix C

Water Quality Calculations

Appendix D

Proposed Conditions Calculations

- Basin Volume Calculations
- Proposed Conditions Runoff Calculations

FPA

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Delaware and Raritan Canal Commission

- Nonstructural Stormwater Strategies Point System (NSPS) worksheet

Appendix F

Drainage Area Maps

1.0 INTRODUCTION

The applicant/owner Princeton Healthcare System, a New Jersey nonprofit corporation, d/b/a Penn Medicine Princeton Health, is proposing to construct a new Cancer Center and Parking Garage on the hospital site known as Block 1701, Lot 3.01 in Plainsboro, New Jersey. Since existing parking spaces will be displaced during the construction of the Cancer Center and Parking Garage, the applicant/owner is proposing to construct a Temporary Parking Area on the east side of Punia Boulevard on Lot 4.04 to manage the parking during construction. The project proposes the construction of a temporary parking area on Lot 4.04 with approximately 600 parking stalls, and other site improvements, such as sidewalks, landscaping, lighting and stormwater management facilities.

This report contains the stormwater management calculations demonstrating compliance with the requirements of the Stormwater Management Rules at N.J.A.C. 7:8 for the proposed Punia Boulevard Parking Area on Lot 4.04 in the Township of Plainsboro, Middlesex County, New Jersey.

2.0 BASIS OF ENGINEERING ANALYSIS

The stormwater management systems, including collection and conveyance structures, groundwater recharge, water quality, and detention measures (BMP'S) have been designed in accordance with the provisions outlined in N.J.A.C. 7:8 New Jersey Stormwater Management Rules and the Plainsboro Township Stormwater Management Ordinance. The New Jersey Best Management Practices Manual dated April 2004 and last updated March 2021 was used for technical guidance to comply with the above regulations.

The soils map located in Appendix A, published by Natural Resources Conservation Service Web Soil Survey, National Cooperative Soil Survey, was used to obtain the required soil information for the project, including soil types and hydrologic soil groups. A subsurface soil assessment was performed to obtain site specific information to determine the seasonal high water table and on-site soil permeability conditions; see Appendix A for supporting documentation.

The calculation of the stormwater runoff rates and volumes were performed utilizing the procedures outlined in the New Jersey Best Management Practices Manual. The PondPack Connect Edition Update 2 Computer Program developed by the Haested Methods was used to generate the runoff hydrographs and hydrologic model for project site. Peak discharges, run-off volumes, and hydrographs were computed for the 2, 10, 25, and 100-year storm events utilizing the USDA Natural Resources Conservation Service (NRCS) methodology, as found in the NRCS National Engineering Handbook, Part 630-Hydrology. The NOAA Type D, 24-hour rainfall distribution, and 24-hour rainfall frequency data for Middlesex County, New Jersey published in August 2012 by NRCS were used in the computations. Runoff calculations and precipitation losses were calculated using the NRCS Curve Numbers (CNs), based upon the present and proposed watershed conditions. Times of Concentration (TC) were based upon estimates of overland, shallow concentrated, and open channel flow utilizing methods presented in Chapter 15 of the NEH, Part 630-Hydrology.

The rainfall distribution for the NJDEP Water Quality Design Storm (1.25 inches of rain falling nonuniformly in a 2-hour storm event), as shown on Table 5-2 of the New Jersey Stormwater Best Management Practices Manual was used to compute the peak runoff rate and runoff volume for this storm.

3.0 EXISTING CONDITIONS

The subject property consists of 8.80 acres and is located in the Township of Plainsboro, Middlesex County, New Jersey. The property is known as Block 1701, Lot 4.04. The site currently contains open fields that are being farmed with trees in the middle and an existing Regional Detention Basin located in the rear of the project site. The property fronts on Punia Boulevard to the northwest. The Maplewood at Princeton, an assisted living facility, is adjacent to property on the northeast. CHOP Specialty Care Center, Princeton at Plainsboro is adjacent to property on the southwest. Stormwater currently drains overland to the south and outlets to an existing detention basin shared by the Maplewood. The Regional Detention Basin was designed and approved by Plainsboro Township to manage the stormwater runoff quantity reductions for the full build out of the Day Care property, Maplewood property and Lot 4.04.

The following table summarizes the existing conditions peak runoff rates and establishes the allowable proposed conditions peak runoff rates in accordance with N.J.A.C. 7:8 New Jersey Stormwater Management Rules. Detailed calculations are presented in Appendix B of this report. We conservatively used CN values for the existing condition as Lawn area even though the property is used for farming and recently as staging area for Maplewood Sales Trailer and the construction of the Regional Detention Basin.

Table 3.1

Summary of Present Conditions Peak Runoff Rates			
Storm Frequency	**Peak Runoff (cfs)**	**Required Reduction**	**Allowable Proposed Conditions Runoff (cfs)**
2-Year	2.27	50%	0.50*2.27 = **1.14**
10-Year	7.25	75%	0.75*7.25 = **5.44**
25-Year	11.37	---	**11.37**
100-Year	19.65	80%	0.80*19.65 = **15.72**

4.0 PROPOSED CONDITIONS

The applicant is proposing to construction the temporary parking area to manage the displacement of parking spaces during the construction of the Cancer Center and Parking Garage. The project proposes the construction of a temporary parking area on Lot 4.04 with approximately 600 parking stalls, and other site improvements, such as sidewalks, landscaping, lighting and stormwater management facilities. After the completion and operation of the Cancer Center and Parking Garage, the applicant shall remove the temporary parking improvements and restore the project site to its existing condition.

Existing trees separate the open farm fields and the applicant is proposing to construct two parking areas to minimize the impact on the existing trees. The front parking area is intended to be used by Penn Medicine staff and the rear parking area shall be used by the contractors working on the Cancer Center and Parking Garage. The temporary parking lot will be designed to comply with the Township Stormwater Management requirements, which include stormwater quantity reductions, water quality treatment and groundwater recharge using Green Infrastructure (GI) elements.

The proposed stormwater management facilities consist of a pervious pavement system with underground storage areas. For water quality purposes, pervious pavement systems are being provided, which shall include 3-inch-thick stone with underdrains to handle the entire water quality storm. For water quantity purposes, the pervious pavement system includes two underground storage areas with Cultec 360HD Chambers and associated underdrains to handle the control and reductions of the 2, 10, and 100-year storm events.

5.0 COMPLIANCE

5.1 Groundwater Recharge

N.J.A.C. 7:8 New Jersey Stormwater Management Rules requires that the proposed project maintain the present conditions average annual groundwater recharge volume for the project site.

The property has been previously used as a temporary parking area during the construction of the Princeton Medical Center, temporary construction for the Maplewood Sales Trailer, staging area for the construction of the Regional Detention Basin and continues to be actively farmed. Over the past 15 years, the soil conditions of the property have been heavily disturbed and compacted where the soils are not providing infiltration of the groundwater. Throughout the property, we performed twenty-three (23) soil logs to approximate depth of 10 feet below the surface to assess the subsurface soil conditions, estimate the seasonal high water table, and perform soil percolation testing of the surface soils. The results of the soil logs were consistent with the subsurface soil conditions on the surrounding properties within the Redevelopment area, which included mostly silty clay loam. Based on the soil logs, the seasonal high water table was not encountered in any of the soil excavations, which is consistent with the findings of the subsurface soil conditions performed for the Regional Detention Basin located at the rear of the property. Also, on-site percolation testing was performed at each soil

log excavation at depths from 7" to 14" below the surface and all percolation testing failed during the pre-soak where the water elevation either did not drop at all or insignificantly after 1 hour. The on-site percolation testing results indicated that the existing surface soil conditions do not provide any infiltration of stormwater runoff into the groundwater. Therefore, the annual pre-construction groundwater recharge is zero and the requirement for post-construction recharge would be the same. Since there is no groundwater recharge under the existing conditions, the project meets the recharge requirements of N.J.A.C. 7:8 New Jersey Stormwater Management Rules or a waiver is hereby requested. Soil Logs and on-site percolation testing results are included in Appendix A of this report.

5.2 Water Quality

N.J.A.C. 7:8 New Jersey Stormwater Management Rules require that an 80% reduction of total suspended solids (TSS) must be achieved if the net increase in regulated motor vehicle surface is more than 0.25 acres. Currently, there is no existing motor vehicle surface within the proposed disturbance area. A total of 4.587 acres of new motor vehicle surface is proposed which will require 80% TSS removal. Water Quality treatment of 80% TSS removal will be achieved through the use of pervious pavement systems, which are an approved Green Infrastructure BMP. The pervious pavement systems are being provided to include 3-inch-thick stone below the pavement with underdrains to handle and treat the entire water quality storm. Therefore, the project complies with the Water Quality requirements of N.J.A.C. 7:8 New Jersey Stormwater Management Rules. The following provides a summary of the stone thickness required to contain the water quality storm volume below the pervious pavement:

Table 5.1

Water Quality Calculations Summary						
Pavement Section	**Pervious Pavement Area (SF)**	**Stone Void Space**	**Void Area (SF)**	**Thickness Required***		**Thickness Provided (in)**
				ft	**in**	
East Pervious Pavement	108,017 *(2.480 ac.)*	40%	43,207 *(0.992 ac.)*	0.22	2.6	3.0
West Pervious Pavement	91,781 *(2.107 ac.)*	40%	36,712 *(0.843 ac.)*	0.22	2.6	3.0

*Detailed computations are presented in Appendix C of this report.

5.3 Water Quantity

The governing regulations require that the proposed peak runoff rates for the 2-year, 10-year, and 100-year storm events from the proposed development be reduced to 50, 75, and 80 percent, respectively, of the projects present conditions peak runoff rates for the same storms. The proposed stormwater management facilities consist of pervious pavement system with underground storage areas. The pervious pavement system includes two underground storage areas with Cultec 360HD Chambers and associated underdrains to handle the control and reductions of the 2, 10, and 100-year storm events.

The proposed pervious pavement systems are approved Green Infrastructure BMPs that have been designed to meet the peak runoff reductions of N.J.A.C. 7:8 New Jersey Stormwater Management Rules.

The basin routing summary and the overall peak runoff rate reductions for the site are shown in the following tables:

Table 5.2

Proposed East Pervious Pavement Routing Summary			
Storm Frequency	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**	**Maximum Water Surface Elevation (ft)**
2-Year Storm	9.12	0.54	75.65
10-Year Storm	15.40	2.19	76.33
25-Year Storm	20.02	3.85	76.86
100-Year Storm	28.74	7.81	78.32

Table 5.3

Proposed West Pervious Pavement Routing Summary			
Storm Frequency	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**	**Maximum Water Surface Elevation (ft)**
2-Year Storm	7.62	0.59	79.32
10-Year Storm	12.30	2.17	79.93
25-Year Storm	15.65	3.72	80.39
100-Year Storm	21.84	7.16	81.52

Table 5.4

Comparison of Present Conditions vs. Proposed Conditions Peak Runoff Rates			
Storm Frequency	**Maximum Allowable Proposed Conditions Peak Runoff Rate (From Table 3.1) (cfs)**	**Estimated Proposed Conditions Peak Runoff Rate* (cfs)**	
2-Year Storm	1.14	1.13	OK
10-Year Storm	5.44	4.35	OK
25-Year Storm	11.37	7.55	OK
100-Year Storm	15.72	14.89	OK

Detailed computations are presented in Appendix D of this report.

*Addition is with respect to time.

5.4 Delaware and Raritan Canal Commission

This project is located within the Delaware and Raritan Canal Commission (DRCC) jurisdiction area. It is located in Review Zone B. The DRCC regulations, NJAC 7:45-8.5, have the same requirements as N.J.A.C. 7:8 for water quantity and recharge. For water quality, N.J.A.C. 7:45-8.5 requires that the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm be reduced by 80% of the anticipated load from the developed site, expressed as an annual average. This requirement differs from N.J.A.C. 7:8 in that the 80% TSS reduction is applicable to the impervious for the development, not just the increase in motor vehicle surfaces.

For the parking lot, the increase in impervious is equal to the increase in motor vehicle surfaces, therefore, the requirement for this project is the same.

The DRCC requires that the nonstructural stormwater management strategies be incorporated into the site design. A Nonstructural Stormwater Strategies Point System (NSPS) worksheet can be provided to demonstrate compliance. The NSPS worksheet can be found in Appendix E.

5.5 Soil Erosion and Sediment Control

The project proposes to discharge into the existing storm sewer system located near the existing stormwater basin to the southeast. The existing system discharges into the stormwater basin via two 24”-inch pipes that each outfall into separate riprap aprons. Therefore, per The Standards for Soil Erosion and Sediment Control in New Jersey, 7th Edition, January 2014, Revised July 2017; Chapter 21: Standard for Off-Site Stability, off-site stability conditions are stable due to the stormwater discharging into a stable conveyance pipe.

6.0 CONCLUSION

The proposed Temporary Parking Area on Lot 4.04 has been designed with pervious pavement system include underground storage area to comply with the Township Stormwater Management requirements, which include stormwater quantity reductions, water quality treatment and groundwater recharge using Green Infrastructure (GI) elements.

Based upon the calculations present in this report, the proposed stormwater management system meets the requirements of the N.J.A.C. 7:8 - New Jersey Stormwater Management Rules and the Plainsboro Township Stormwater Management Ordinance.

Appendix A
Supporting Documents

P23-03 DRC 05/18/23

Hydrologic Soil Group—Middlesex County, New Jersey
(LOD)

Map Scale: 1:1,680 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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Middlesex County, New Jersey
Survey Area Data: Version 18, Aug 30, 2022

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

Date(s) aerial images were photographed: Sep 6, 2020—Sep 21, 2020

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.

P23-03 DRC 05/18/23

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NknB	Nixon loam, 2 to 5 percent slopes	B	4.2	62.7%
NkrA	Nixon moderately well drained variant loam, 0 to 2 percent slopes	C	2.5	37.3%
Totals for Area of Interest			**6.6**	**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.

NEW JERSEY 24 HOUR RAINFALL FREQUENCY DATA

Rainfall amounts in Inches

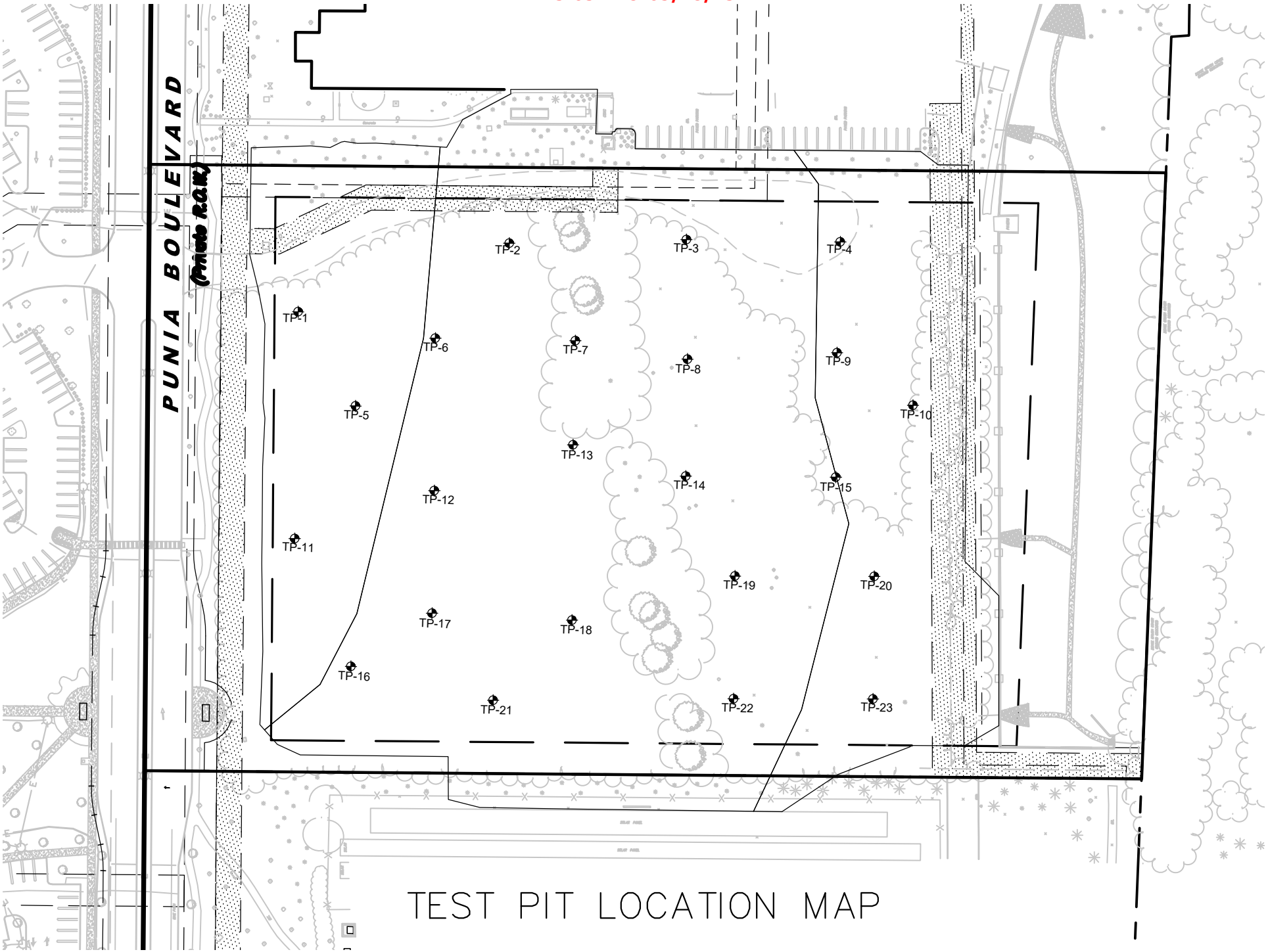
County	1 year	2 year	5 year	10 year	25 year	50 year	100 year
Atlantic	2.72	3.31	4.30	5.16	6.46	7.61	8.90
Bergen	2.75	3.34	4.27	5.07	6.28	7.32	8.47
Burlington	2.77	3.36	4.34	5.18	6.45	7.56	8.81
Camden	2.73	3.31	4.25	5.06	6.28	7.34	8.52
Cape May	2.67	3.25	4.22	5.07	6.34	7.47	8.73
Cumberland	2.69	3.27	4.25	5.09	6.37	7.49	8.76
Essex	2.85	3.44	4.40	5.22	6.44	7.49	8.66
Gloucester	2.71	3.29	4.24	5.05	6.29	7.36	8.55
Hudson	2.73	3.31	4.23	5.02	6.19	7.20	8.31
Hunterdon	2.80	3.38	4.26	5.00	6.09	7.02	8.03
Mercer	2.74	3.31	4.23	5.01	6.19	7.20	8.33
Middlesex	2.76	3.35	4.30	5.12	6.36	7.43	8.63
Monmouth	2.79	3.38	4.38	5.23	6.53	7.66	8.94
Morris	2.94	3.54	4.47	5.24	6.37	7.32	8.35
Ocean	2.81	3.42	4.45	5.33	6.68	7.87	9.20
Passaic	2.87	3.47	4.42	5.23	6.43	7.47	8.62
Salem	2.69	3.26	4.20	5.00	6.22	7.28	8.45
Somerset	2.76	3.34	4.25	5.01	6.15	7.13	8.21
Sussex	2.68	3.22	4.02	4.70	5.72	6.60	7.58
Union	2.80	3.39	4.35	5.17	6.42	7.49	8.69
Warren	2.78	3.34	4.18	4.89	5.93	6.83	7.82

Notes: The average point rainfall amounts listed above were developed from data contained in NOAA Atlas 14 Volume 2.

Point rainfall estimates for specific locations may be obtained from the Precipitation Frequency Data Server located at http://www.nws.noaa.gov/ohd/hdsc/

For most hydrologic design procedures, the rainfall amounts listed above may be rounded to the nearest tenth of an inch.

P23-03 DRC 05/18/23



TEST PIT LOCATION MAP

P23-03 DRC 05/18/23

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-1

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 87.2
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 10"	Topsoil/Organic Material
10"- 43"	Yellowish Brown *(10YR 5/6)* **silty clay loam**; angular blocky, firm
43"-70"	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**; subangular blocky, friable
70"- 120"	Dark Reddish Brown *(5YR 3/3)* **silty clay**; subangular blocky, firm
120"- 130"	Dark Yellowish Brown *(10YR 4/6)* **loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

P23-03 DRC 05/18/23

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-2

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 87.5
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 13"	Topsoil/Organic Material
13"- 40"	Yellowish Brown *(10YR 5/6)* **silty clay loam**; angular blocky, firm
40"-126"	Brownish Yellow *(10YR 6/6)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: ___/___/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-3

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 84.9
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 12"	Topsoil/Organic Material
12"- 48"	Yellowish Brown *(10YR 5/6)* **silty clay loam**; angular blocky, firm
48"-128"	Brownish Yellow *(10YR 6/6)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

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P23-03 DRC 05/18/23
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Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-4

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 83.2
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 45”	Yellowish Brown *(10YR 5/4)* **silty clay loam**; subangular blocky, firm
45”-72”	Yellowish Brown *(10YR 5/4)* **silty clay loam**; subangular blocky, extremely firm
72”-128”	Brownish Yellow *(10YR 5/6)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

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1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-5

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 86.0
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 36”	Yellowish Brown *(10YR 5/6)* **silty clay loam**; subangular blocky, firm
36”-88”	Yellowish Brown *(10YR 5/4)* **silty clay loam**; subangular blocky, firm
88”-125”	Dark Reddish Brown *(5YR 3/3)* **silty clay**; angular blocky, very firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
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Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-6

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 86.5
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 53”	Yellowish Brown *(10YR 5/4)* **silty clay loam**; angular blocky, firm
53”-126”	Light Yellowish Brown *(10YR 6/4)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
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Wall, New Jersey 07719

P23-03 DRC 05/18/23

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-7

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 86.5
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 46”	Brown *(10YR 5/3)* **silty clay loam**; subangular blocky, firm
46”-126”	Dark Reddish Brown *(5YR 3/4)* **sandy clay loam**; subangular blocky, extremely firm, with 20% gravel

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-8

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 83.4
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 9"	Topsoil/Organic Material
9"- 44"	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, very firm
44"-79"	Yellowish Brown *(10YR 5/4)* **sandy clay loam**; subangular blocky, friable
79"-122"	Dark Reddish Brown *(5YR 3/4)* **silty clay**; angular blocky, extremely firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
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Wall, New Jersey 07719

P23-03 DRC 05/18/23

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-9

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 82.3
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 128”	Brown *(10YR 5/3)* **silty clay loam**; subangular blocky, very firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: ___/___/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
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Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-10

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 79.9
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 9”	Topsoil/Organic Material
9”- 40”	Brown *(10YR 5/3)* **silty clay loam**; subangular blocky, very firm
40”-126”	Dark Reddish Brown *(5YR 3/4)* **silty clay**; angular blocky, extremely firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: / /
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
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Wall, New Jersey 07719

P23-03 DRC 05/18/23

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-11

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 85.8
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 11"	Topsoil/Organic Material
11"- 44"	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**; subangular blocky, firm
44"-128"	Light Yellowish Brown *(10YR 6/4)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-12

SHEET NO.: 1 OF 1

DATE: 11/15/2022

GROUND ELEVATION: 85.0
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 12"	Topsoil/Organic Material
12"- 30"	Dark Yellowish Brown *(10YR 4/4)* **silty clay**; angular blocky, very firm
30"-61"	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, very firm
61"-126"	Yellowish Brown *(10YR 5/6)* **sandy clay loam**; angular blocky, very firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

P23-03 DRC 05/18/23

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-13

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 85.2
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 12"	Topsoil/Organic Material
12"- 66"	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, firm
66"-122"	Yellowish Brown *(10YR 5/6)* **sandy clay loam**; subangular blocky, firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: / /____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-14

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 82.5
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 10"	Topsoil/Organic Material
10"- 33"	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, firm
33"-120"	Dark Reddish Brown *(5YR 3/4)* **silty loam**; angular blocky, extremely firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

P23-03 DRC 05/18/23

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-15

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 82.5
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 126”	Brown *(10YR 5/3)* **silty clay loam**; subangular blocky, firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-16

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 82.8
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 58”	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**; subangular blocky, firm
58”-128”	Light Yellowish Brown *(10YR 6/4)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-17

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 83.8
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 14"	Topsoil/Organic Material
14"- 42"	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**; subangular blocky, firm
42"-103"	Light Yellowish Brown *(10YR 6/4)* **silty clay**; subangular blocky, very firm
103"-128"	Yellowish Brown *(10YR 5/6)* **silty clay**; massive, cemented

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-18

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 83.4
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 12”	Topsoil/Organic Material
12”- 51”	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**; subangular blocky, firm
51”-96”	Light Yellowish Brown *(10YR 6/4)* **silty clay**; platy, cemented with 40% gravel

END OF SOIL LOG

Notes:
Soil too firm to continue after 96”

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
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Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-19

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 80.8
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 8”	Topsoil/Organic Material
8”- 44”	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, firm
44”-49”	Yellowish Brown *(10YR 5/4)* **sandy clay loam**; subangular blocky, friable
49”-130”	Dark Reddish Brown *(5YR 3/4)* **silty clay**; angular blocky, very firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
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SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-20

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 79.6
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0” - 10”	Topsoil/Organic Material
10”- 42”	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, firm
42”-54”	Yellowish Brown *(10YR 5/4)* **sandy clay loam**; subangular blocky, friable
54”-128”	Dark Reddish Brown *(5YR 3/4)* **silty clay**; angular blocky, very firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

P23-03 DRC 05/18/23

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-21

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 82.8
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 13"	Topsoil/Organic Material
13"- 67"	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**; subangular blocky, firm
67"-125"	Light Yellowish Brown *(10YR 6/4)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

P23-03 DRC 05/18/23

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-22

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 79.9
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organic Material
8"- 41"	Dark Yellowish Brown *(10YR 4/4)* **silty clay loam**; subangular blocky, firm
41"-122"	Dark Reddish Brown *(5YR 3/4)* **silty clay**; angular blocky, extremely firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: __/__/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: __/__/____
N.J.P.E. License No. 42894

FRENCH & PARRELLO ASSOCIATES, P.A.
P23-03 DRC 05/18/23
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

TEMPORARY PARKING LOT
BLOCK 1701, LOT 4.04
Township of Plainsboro, Middlesex County NJ
(FPA NO. 06C028T.003)

SOIL LOG NO.: TP-23

SHEET NO.: 1 OF 1

DATE: 11/16/2022

GROUND ELEVATION: 79.9
WATER ELEVATION: N/E
DEPTH OF WATER: N/E
ESHWT DEPTH: N/E
ESHWT ELEVATION: N/E

DEPTH	DESCRIPTION
0" - 7"	Topsoil/Organic Material
7"- 40"	Brown *(10YR 4/3)* **silty clay loam**; subangular blocky, firm
40"-53"	Yellowish Brown *(10YR 5/4)* **sandy clay loam**; subangular blocky, friable
53"-126"	Dark Reddish Brown *(5YR 3/4)* **silty clay**; angular blocky, extremely firm

END OF SOIL LOG

Notes:

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Andrew French, P.E. Date: / /
N.J.P.E. License No. 42894

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block 1701 Lot 4.04

1. Test Number **1 (TP-1)** Date Tested **11/15**

2. Depth **10" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block **1701** Lot **4.04**

1. Test Number **2 (TP-2)** Date Tested **11/15**

2. Depth **13" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/4 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

Percolation Test Data: Block **1701** Lot **4.04**

P23-03 DRC 05/18/23

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

1. Test Number **3 (TP-3)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

P23-03 DRC 05/18/23

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **4 (TP-4)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/8 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____

Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____

Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block **1701** Lot **4.04**

1. Test Number **5 (TP-5)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **6(TP-6)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block **1701** Lot **4.04**

1. Test Number **7 (TP-7)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

P23-03 DRC 05/18/23

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **8 (TP-8)** Date Tested **11/15**

2. Depth **9" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/8 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____

Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____

Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block 1701 Lot 4.04

1. Test Number **9 (TP-9)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/4 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block **1701** Lot **4.04**

1. Test Number **10 (TP-10)** Date Tested **11/15**

2. Depth **9" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   ___X___Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **11 (TP-11)** Date Tested **11/15**

2. Depth **11" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/4 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

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Date _____

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Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **12 (TP-12)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/4 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

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   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

P23-03 DRC 05/18/23

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **13 (TP-13)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/8 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **14 (TP-14)** Date Tested **11/15**

2. Depth **10" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

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Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **15 (TP-15)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **16 (TP-16)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block **1701** Lot **4.04**

1. Test Number **17 (TP-17)** Date Tested **11/15**

2. Depth **14" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
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Mark Kalusz, EIT

Date _____

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Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **18 (TP-18)** Date Tested **11/15**

2. Depth **12" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/8 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **19 (TP-19)** Date Tested **11/15**

2. Depth **8" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/8 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data: Block 1701 Lot 4.04

1. Test Number **20 (TP-20)** Date Tested **11/15**

2. Depth **10" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/4 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

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   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **21 (TP-21)** Date Tested **11/15**

2. Depth **13" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

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Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

P23-03 DRC 05/18/23

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **22 (TP-22)** Date Tested **11/15**

2. Depth **8" below grade**

3. Pre-soak:
   _____Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____Four Hour Pre-soak completed - Indicate result:
   _____Test Hole Drained within 15 to 24 hours after Pre-soak
   __X__Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation did not drop after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

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   K = 20/ min/in. = in/ hr /2 = **in/hr** Therefore, Use

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Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Andrew L. French, PE

License No. _____

P23-03 DRC 05/18/23

COUNTY/MUNICIPALITY PLAINSBORO / TOWNSHIP OF PLAINSBORO

Percolation Test Data:

Block **1701** Lot **4.04**

1. Test Number **23 (TP-23)** Date Tested **11/15**

2. Depth **7" below grade**

3. Pre-soak:
   _____ Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   X Test Hole did not Drain within 24 hours after Pre-soak

   Pre-Soak water elevation fell 1/4 an inch after 1 hour. Due to insignificant fall in water elevation, Percolation Test has failed, and soil is determined to be unsuitable for water infiltration.

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"		
7"		
7"		

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level
   b. Percolation Rate = a/6 = / 6=

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

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Signature of Site Evaluator _____

Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____

Andrew L. French, PE

License No. _____

Appendix B

Present Conditions and Runoff Calculations

FRENCH & PARRELLO ASSOCIATES

TELEPHONE : (732) 312-9800
FAX : (732) 312-9801

1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Punia Boulevard Parking Lot		
CALCULATED BY:	SP	DATE:	10/4/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

Sheet: 1 of 1

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	Existing Drainage Area	DRAINAGE AREA NOTATION:	DA-EX

Sheet Flow: Segment 1

Surface Type:	Grass: Dense grasses	
Slope of land surface, S:	0.035	ft/ft
n-value (from Table 15-1):	0.24	---
Limiting Length of flow, *l*:	78.0	ft
2-year, 24 hours rainfall, P_2:	3.300	in
Travel time, T_t:	9.2	minutes

calculations for sheet flow based upon Equation 15-8 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{0.007(n l)^{0.8}}{(P_2)^{0.5} S^{0.4}} \quad \text{(Eq 15-8)}$$

Shallow Concentrated Flow: Segment 2

Surface Type:	Minimum tillage cultivation, contour or strip-cropped, and woodlands	
Flow length, l:	398	ft
Slope of land surface, S:	0.020	ft/ft
n-value (from Table 15-3):	0.101	---
Average velocity, V:	0.712	ft/s
Travel time, T_t:	9.3	minutes

calculations for shallow concentrated flow based upon Equation 15-1 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{l}{3{,}600V} \quad \text{(Eq 15-1)}$$

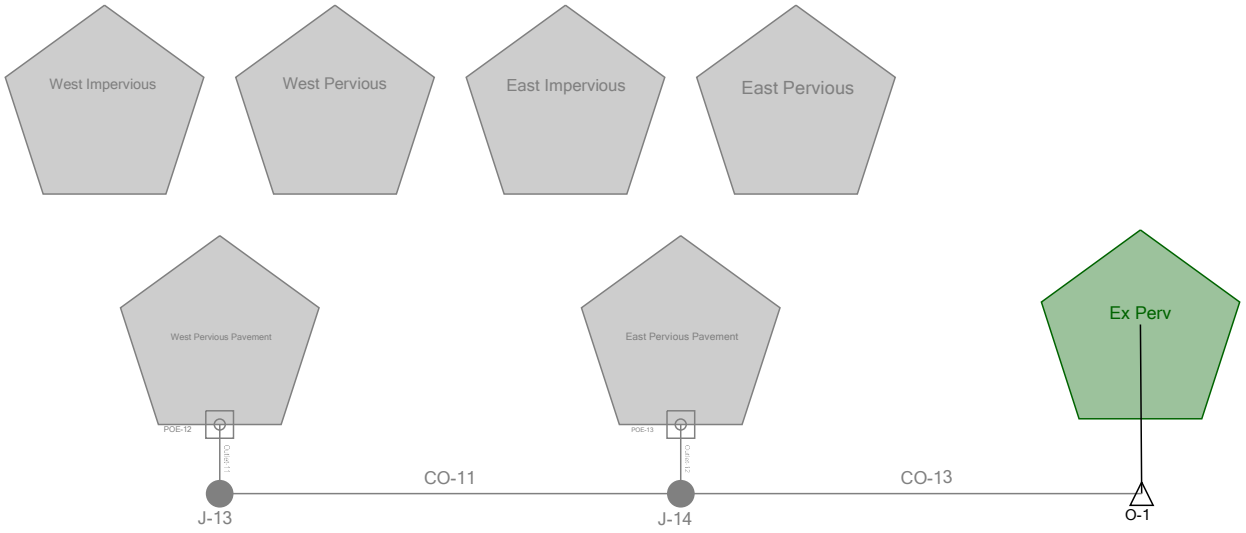
Shallow Concentrated Flow: Segment 3

Surface Type:	Minimum tillage cultivation, contour or strip-cropped, and woodlands	
Flow length, l:	190	ft
Slope of land surface, S:	0.014	ft/ft
n-value (from Table 15-3):	0.101	---
Average velocity, V:	0.595	ft/s
Travel time, T_t:	5.3	minutes

Total Time of Concentration:	24	minutes	user input

Project Summary	
Title	Punia Boulevard Parking
Engineer	Stefanie Pacifico
Company	French and Parrello Associates
Date	10/7/2022

Notes PRE-DEVELOPMENT CALCULATIONS



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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Ex Perv	Pre-Development 2 year	2	15,069.000	740.000	2.27
Ex Perv	Pre-Development 10 year	10	39,720.000	739.000	7.25
Ex Perv	Pre-Development 25 year	25	60,456.000	739.000	11.37
Ex Perv	Pre-Development 100 year	100	102,844.000	739.000	19.65

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
O-1	Pre-Development 2 year	2	15,069.000	740.000	2.27
O-1	Pre-Development 10 year	10	39,720.000	739.000	7.25
O-1	Pre-Development 25 year	25	60,456.000	739.000	11.37
O-1	Pre-Development 100 year	100	102,844.000	739.000	19.65

Subsection: Unit Hydrograph Summary
Label: Ex Perv
Scenario: Pre-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	24.000 min
Area (User Defined)	6.643 acres

Computational Time Increment	3.200 min
Time to Peak (Computed)	739.200 min
Flow (Peak, Computed)	2.27 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	740.000 min
Flow (Peak Interpolated Output)	2.27 ft³/s

Drainage Area	
SCS CN (Composite)	64.000
Area (User Defined)	6.643 acres
Maximum Retention (Pervious)	5.63 in
Maximum Retention (Pervious, 20 percent)	1.13 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.63 in
Runoff Volume (Pervious)	15,207.620 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	15,069.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	24.000 min
Computational Time Increment	3.200 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.82 ft³/s
Unit peak time, Tp	16.000 min
Unit receding limb, Tr	64.000 min
Total unit time, Tb	80.000 min

Subsection: Unit Hydrograph Summary
Label: Ex Perv
Scenario: Pre-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	24.000 min
Area (User Defined)	6.643 acres

Computational Time Increment	3.200 min
Time to Peak (Computed)	739.200 min
Flow (Peak, Computed)	7.26 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	739.000 min
Flow (Peak Interpolated Output)	7.25 ft³/s

Drainage Area	
SCS CN (Composite)	64.000
Area (User Defined)	6.643 acres
Maximum Retention (Pervious)	5.63 in
Maximum Retention (Pervious, 20 percent)	1.13 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.66 in
Runoff Volume (Pervious)	40,006.391 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	39,720.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	24.000 min
Computational Time Increment	3.200 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.82 ft³/s
Unit peak time, Tp	16.000 min
Unit receding limb, Tr	64.000 min
Total unit time, Tb	80.000 min

Subsection: Unit Hydrograph Summary
Label: Ex Perv
Scenario: Pre-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	24.000 min
Area (User Defined)	6.643 acres

Computational Time Increment	3.200 min
Time to Peak (Computed)	739.200 min
Flow (Peak, Computed)	11.38 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	739.000 min
Flow (Peak Interpolated Output)	11.37 ft³/s

Drainage Area	
SCS CN (Composite)	64.000
Area (User Defined)	6.643 acres
Maximum Retention (Pervious)	5.63 in
Maximum Retention (Pervious, 20 percent)	1.13 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.52 in
Runoff Volume (Pervious)	60,851.939 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	60,456.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	24.000 min
Computational Time Increment	3.200 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.82 ft³/s
Unit peak time, Tp	16.000 min
Unit receding limb, Tr	64.000 min
Total unit time, Tb	80.000 min

Subsection: Unit Hydrograph Summary
Label: Ex Perv
Scenario: Pre-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	24.000 min
Area (User Defined)	6.643 acres

Computational Time Increment	3.200 min
Time to Peak (Computed)	739.200 min
Flow (Peak, Computed)	19.65 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	739.000 min
Flow (Peak Interpolated Output)	19.65 ft³/s

Drainage Area	
SCS CN (Composite)	64.000
Area (User Defined)	6.643 acres
Maximum Retention (Pervious)	5.63 in
Maximum Retention (Pervious, 20 percent)	1.13 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.29 in
Runoff Volume (Pervious)	103,444.533 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	102,844.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	24.000 min
Computational Time Increment	3.200 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.82 ft³/s
Unit peak time, Tp	16.000 min
Unit receding limb, Tr	64.000 min
Total unit time, Tb	80.000 min

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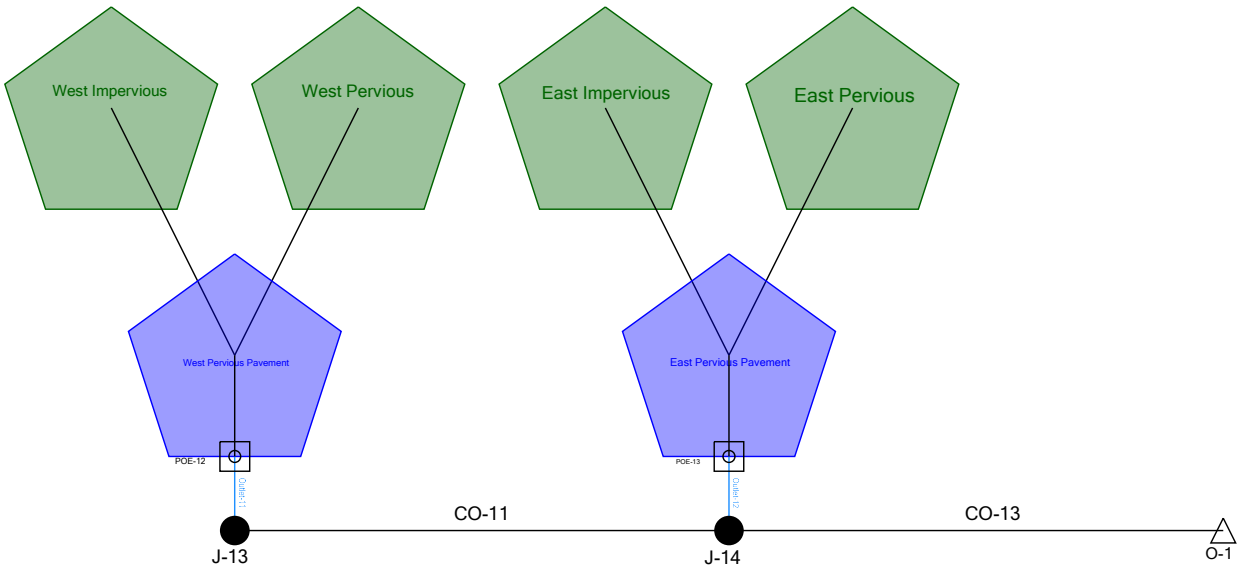
Master Network Summary...2

Appendix C
Water Quality Calculations

Project Summary	
Title	Punia Boulevard Parking
Engineer	Stefanie Pacifico
Company	French and Parrello Associates
Date	10/7/2022

Notes

WATER QUALITY CALCULATIONS



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Level Pool Pond Routing Summary, 1 years (Water Quality Storm) 10

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
East Impervious	Water Quality Storm	1	9,464.000	65.000	7.52
East Pervious	Water Quality Storm	1	5.000	107.000	0.00
West Impervious	Water Quality Storm	1	8,014.000	65.000	6.36
West Pervious	Water Quality Storm	1	55.000	91.000	0.02

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
J-13	Water Quality Storm	1	0.000	0.000	0.00
J-14	Water Quality Storm	1	0.000	0.000	0.00
O-1	Water Quality Storm	1	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
East Pervious Pavement (IN)	Water Quality Storm	1	9,469.000	65.000	7.52	(N/A)	(N/A)
East Pervious Pavement (OUT)	Water Quality Storm	1	0.000	0.000	0.00	0.22	9,469.000
West Pervious Pavement (IN)	Water Quality Storm	1	8,069.000	65.000	6.36	(N/A)	(N/A)
West Pervious Pavement (OUT)	Water Quality Storm	1	0.000	0.000	0.00	0.22	8,069.000

WATER QUALITY CALCULATION LISTED ABOVE ASSUMED A BASE ELEVATION OF 0.00 AND TOP ELEVATION OF 0.25 FOR A TOTAL DEPTH OF THREE (3) INCHES OF STONE USED FOR WATER QUALITY. THEREFORE, MAXIMUM WATER SURFACE ELEVATIONS SHOWN ARE REQUIRED THICKNESS NEEDED FOR WATER QUALITY TREATMENT.

Subsection: Unit Hydrograph Summary
Label: East Impervious
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.520 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	65.333 min
Flow (Peak, Computed)	7.53 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	65.000 min
Flow (Peak Interpolated Output)	7.52 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.520 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	9,463.854 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	9,464.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	34.26 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Pervious
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	1.393 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	106.667 min
Flow (Peak, Computed)	0.00 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	107.000 min
Flow (Peak Interpolated Output)	0.00 ft³/s

Drainage Area	
SCS CN (Composite)	63.000
Area (User Defined)	1.393 acres
Maximum Retention (Pervious)	5.87 in
Maximum Retention (Pervious, 20 percent)	1.17 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.00 in
Runoff Volume (Pervious)	4.829 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	5.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.94 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Impervious
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.134 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	65.333 min
Flow (Peak, Computed)	6.38 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	65.000 min
Flow (Peak Interpolated Output)	6.36 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.134 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	8,014.232 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	8,014.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.01 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Pervious
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.596 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	91.333 min
Flow (Peak, Computed)	0.02 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	91.000 min
Flow (Peak Interpolated Output)	0.02 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	0.596 acres
Maximum Retention (Pervious)	4.49 in
Maximum Retention (Pervious, 20 percent)	0.90 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.03 in
Runoff Volume (Pervious)	55.164 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	55.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.10 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Elevation-Volume-Flow Table (Pond)
Label: East Pervious Pavement
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	0.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
0.00	0.00	0.000	0.992	0.00	0.00	0.00
0.25	0.00	10,802.880	0.992	0.00	0.00	360.10

WATER QUALITY CALCULATION LISTED ABOVE ASSUMED A BASE ELEVATION OF 0.00 AND TOP ELEVATION OF 0.25 FOR A TOTAL DEPTH OF THREE (3) INCHES OF STONE USED FOR WATER QUALITY.

STORAGE VOLUME ABOVE ELEVATION 74.07 WAS NOT INCLUDED IN THESE CALCULATIONS. SEE APPENDIX D FOR WATER QUANTITY CALCULATIONS.

Subsection: Level Pool Pond Routing Summary
Label: East Pervious Pavement (IN)
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	0.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	7.52 ft³/s	Time to Peak (Flow, In)	65.000 min
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 min

Elevation (Water Surface, Peak)	0.22 ft
Volume (Peak)	9,468.684 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	9,469.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	9,469.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.000 %

Subsection: Elevation-Volume-Flow Table (Pond)
Label: West Pervious Pavement
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	0.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
0.00	0.00	0.000	0.843	0.00	0.00	0.00
0.25	0.00	9,180.270	0.843	0.00	0.00	306.01

WATER QUALITY CALCULATION LISTED ABOVE ASSUMED A BASE ELEVATION OF 0.00 AND TOP ELEVATION OF 0.25 FOR A TOTAL DEPTH OF THREE (3) INCHES OF STONE USED FOR WATER QUALITY.

STORAGE VOLUME ABOVE ELEVATION 77.75 WAS NOT INCLUDED IN THESE CALCULATIONS. SEE APPENDIX D FOR WATER QUANTITY CALCULATIONS.

Subsection: Level Pool Pond Routing Summary
Label: West Pervious Pavement (IN)
Scenario: Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	0.00 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	6.36 ft³/s	Time to Peak (Flow, In)	65.000 min
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 min

Elevation (Water Surface, Peak)	0.22 ft
Volume (Peak)	8,069.394 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	8,069.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	8,069.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.000 %

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East Pervious (Unit Hydrograph Summary, 1 years (Water Quality Storm))...4

East Pervious Pavement (Elevation-Volume-Flow Table (Pond), 1 years (Water Quality Storm))...7

East Pervious Pavement (IN) (Level Pool Pond Routing Summary, 1 years (Water Quality Storm))...8

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West Pervious Pavement (Elevation-Volume-Flow Table (Pond), 1 years (Water Quality Storm))...9

West Pervious Pavement (IN) (Level Pool Pond Routing Summary, 1 years (Water Quality Storm))...10

Appendix D
Proposed Conditions Calculations

P23-03 DRC 05/18/23

CULTEC

CULTEC Recharger 360HD Stormwater System Calculations

Consulting Engineer:

Gabrielle Cioffi-Henry
Cultec, Inc.
878 Federal Rd.
Brookfield, CT 06804
PH: 203-775-4416
FX: 203-775-5887

Project Information:

Penn Medicine Princeton Health Punia Blvd
Plainsboro, NJ
East UDS-1

Date: 3/29/23

Project Number: 23-0371.01

System Information

Rectangular Bed Inputs — **No. of Rows:** 14 — **No. of Chambers/Row:** 52

Given:

Storage required	48167	CF	1364.09	m^3
No. 4800 Fabric For Internal/External Manifolds	144	feet		
Number of Inlet/Outlet Pipes (Do Not Include Separator Rows)	4			
Stone **Base**	6	inches	152	mm
Stone **Above**	18	inches	457	mm
Spacing **Between** Rows	9	inches	229	mm
No. of HVLV FC-48 Feed Connectors	26	units		
24"x10" CULTEC Inspection Port Kit w/ Round Frame/Grate	2	units		
Stone Porosity	40	%		
Stone Border Width	15	inches	381	mm

☐ Discount stone base from Total storage provided (If Applicable)
☐ Discount stone above from Total storage provided (If Applicable)

Other Parameters:

Length of Separator Row	0	feet	0.000	m
Type of Lining	None			
☐ Sand Filter Depth (If Applicable)		feet	0.000	m
☐ Slopped Sides (1:1) (If Applicable)				

Maximum Finished Grade Elevation:	89.32
Minimum Finished Grade Elevation (Unpaved):	80.32
Minimum Finished Grade Elevation (Base of Flexible Pavement):	79.82
Minimum Finished Grade Elevation (Top of Rigid Pavement):	79.82
Top of Stone Elevation:	78.82
Top of Chamber Elevation:	77.32
Bottom of Chamber Elevation:	74.32
Bottom of Stone Elevation:	73.82

Assumptions

Model Name		Chamber Height (inches / mm)	Design Unit Height (feet / m)	Chamber Width (inches / mm)	Chamber Spacing (inches / mm)	Design Unit Width (feet / m)	Chamber Volume per Linear Foot (cu. ft/ft / cu. m/m)	Design Unit Volume (cu. ft/ft / cu. m/m)	Installed Chamber Length (feet / m)
Recharger® 360HD Chamber	English	36	5.000	60	9	5.75	10.00	17.499	3.670
	Metric	914	1.524	1524	229	1.75	0.929	1.626	1.119
Recharger® 360HD End Cap	English	36.5	5.000	60	9	5.75	5.168	14.601	1.250
	Metric	927	1.524	1524	229	1.75	0.480	1.356	0.381
HVLV™ FC-48 Feed Connectors	English	12	n/a	16	n/a	n/a	0.913	n/a	0.750
	Metric	305	n/a	406	n/a	n/a	0.085	n/a	0.229

Storage Provided within CULTEC Recharger 360HD Stormwater Chamber, End Caps and HVLV FC-48 Feed Connector Internal Manifold System - *not including stone*

Number of Recharger 360HD chambers by design			=	728	pcs		
728	pcs x	3.670	=	2671.76	feet	814.35	m
Number of Recharger 360HD end caps			=	28	pcs		
28	pcs x	1.250	=	35.00	feet	10.67	m
Number of HVLV FC-48 Feed Connectors			=	26	pcs		
26	pcs x	0.750	=	19.50	feet	5.94	m
Total footage of Recharger 360HD chambers			=	2671.76	feet	814.35	m
Total footage of Recharger 360HD end caps			=	35.00	feet		
Total footage of HVLV FC-48 Feed Connectors			=	19.50	feet	5.94	m
Storage provided within Recharger 360HD chambers			=	26710.92	CF	756.45	m^3
Storage provided within Recharger 360HD end caps				180.88	CF	5.12	m^3
Storage provided within HVLV FC-48 Feed Connectors			=	17.80	CF	0.50	m^3
Total Storage within chambers and feed connectors			=	**26909.60**	**CF**	**762.08**	**m^3**

Storage Provided within Entire CULTEC Stormwater System - *including stone*

Bed width		82.25	feet	25.07 m
Bed length		195.84	feet	59.69 m
Bed Depth		5.00	feet	1.52 m
Total Area		16107.84	sq. ft.	1496.42 m^2
Volume of Effective Excavation *(not including additional cover)*		80539.20	CF	2280.87 m^3
Perimeter of Bed		556.18	feet	169.52 m
Total Storage within CULTEC Recharger 360HD chambers, end caps and feed connectors		26909.60	CF	762.08 m^3
Total Stone Required		53629.60	CF	1518.79 m^3
		1986	CY	
		2781	tons	
Storage provided within stone		21451.84	CF	607.52 m^3
Total Storage within CULTEC Stormwater System	=	**48362**	**CF**	**1369.46 m^3**

Req. storage attained.

CULTEC MATERIALS LIST

Model	Model #	Quantity	Unit of Measure	Quantity	Unit of Measure
Recharger 360HD Heavy Duty Chamber	360HD	728	pcs		
Recharger 360HD End Cap	360HD EC	28	pcs		
HVLV FC-48 Feed Connectors	FC-48	26	pcs		
CULTEC No. 410 Non-Woven Geotextile	NWG410	5444	Sq. Yards	4552	m2
CULTEC No. 4800 Woven Geotextile 7.5' x 100' (2.29 m x 30.48 m)	75WG4800	211	feet	64	m
24"x10" CULTEC Inspection Port Kit w/ Round Frame/Grate	INSP KIT 2410C	2	pcs		
Total Stone		1986	cubic yards	1519	m^3

☐ DISCLAIMER: If this is a value-engineered project based on a competitor's design.
The following inputs and calculations are based upon limited design information provided to CULTEC by a third-party. An engineer should review the inputs to confirm accuracy of the assumptions.

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P23-03 DRC 05/18/23

CULTEC Recharger 360HD Stormwater Incremental Storage

Date: March 29, 2023

Project Information
Penn Medicine Princeton Health Punia Blvd
Plainsboro, NJ
East UDS-1

Project Number
23-0371.01

Base of Stone Elevation- 73.82

Recharger 360HD Incremental Storage Volumes

Height of System		End Cap Volume		Chamber Volume		HVLV FC-48 Feed Connector Volume		Stone Volume		Cumulative Storage Volume		Total Cumulative Storage Volume		Stage/Area		Elevation		
in	mm	ft³	m³	ft³	m³	ft³	m³	ft³	m³	ft³	m³	ft³	m³	ft²	m²	ft	m	
60.00	1524	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	48361.49	1369.44	6443.14	598.57	78.82	75.34	Top of Stone Elevation
59.00	1499	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	47824.56	1354.24	6443.14	598.57	78.74	75.32	
58.00	1473	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	47287.63	1339.03	6443.14	598.57	78.65	75.29	
57.00	1448	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	46750.70	1323.83	6443.14	598.57	78.57	75.27	
56.00	1422	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	46213.77	1308.63	6443.14	598.57	78.49	75.24	
55.00	1397	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	45676.85	1293.42	6443.14	598.57	78.40	75.22	
54.00	1372	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	45139.92	1278.22	6443.14	598.57	78.32	75.19	
53.00	1346	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	44602.99	1263.01	6443.14	598.57	78.24	75.17	
52.00	1321	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	44066.06	1247.81	6443.14	598.57	78.15	75.14	
51.00	1295	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	43529.13	1232.61	6443.14	598.57	78.07	75.12	
50.00	1270	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	42992.21	1217.40	6443.14	598.57	77.99	75.09	
49.00	1245	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	42455.28	1202.20	6443.14	598.57	77.90	75.06	
48.00	1219	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	41918.35	1186.99	6443.14	598.57	77.82	75.04	
47.00	1194	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	41381.42	1171.79	6443.14	598.57	77.74	75.01	
46.00	1168	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	40844.49	1156.59	6443.14	598.57	77.65	74.99	
45.00	1143	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	40307.57	1141.38	6443.14	598.57	77.57	74.96	
44.00	1118	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	39770.64	1126.18	6443.14	598.57	77.49	74.94	
43.00	1092	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	39233.71	1110.97	6443.14	598.57	77.40	74.91	
42.00	1067	0.28	0.01	58.44	1.65	0.00	0.00	513.44	14.54	572.16	16.20	38696.78	1095.77	6865.91	637.84	77.32	74.89	Top of Chamber Elevation
41.00	1041	0.56	0.02	123.95	3.51	0.00	0.00	487.13	13.79	611.63	17.32	38124.62	1079.57	7339.57	681.85	77.24	74.86	
40.00	1016	0.84	0.02	184.28	5.22	0.00	0.00	462.88	13.11	648.00	18.35	37512.99	1062.25	7775.99	722.39	77.15	74.84	
39.00	991	1.12	0.03	312.16	8.84	0.00	0.00	411.62	11.66	724.90	20.53	36864.99	1043.90	8698.74	808.11	77.07	74.81	
38.00	965	1.40	0.04	394.21	11.16	0.00	0.00	378.69	10.72	774.29	21.93	36140.10	1023.37	9291.50	863.18	76.99	74.79	
37.00	940	1.68	0.05	455.71	12.90	0.00	0.00	353.97	10.02	811.36	22.98	35365.81	1001.45	9736.31	904.50	76.90	74.76	
36.00	914	1.96	0.06	506.78	14.35	0.00	0.00	333.43	9.44	842.17	23.85	34554.45	978.47	10106.09	938.86	76.82	74.73	
35.00	889	2.24	0.06	550.94	15.60	0.00	0.00	315.66	8.94	868.84	24.60	33712.27	954.62	10426.04	968.58	76.74	74.71	
34.00	864	2.52	0.07	590.00	16.71	0.00	0.00	299.92	8.49	892.44	25.27	32843.44	930.02	10709.26	994.89	76.65	74.68	
33.00	838	2.80	0.08	625.05	17.70	0.00	0.00	285.79	8.09	913.64	25.87	31951.00	904.75	10963.63	1018.52	76.57	74.66	
32.00	813	3.08	0.09	656.89	18.60	0.00	0.00	272.94	7.73	932.91	26.42	31037.36	878.88	11194.91	1040.01	76.49	74.63	
31.00	787	3.36	0.10	685.89	19.42	0.00	0.00	261.23	7.40	950.48	26.91	30104.45	852.46	11405.73	1059.59	76.40	74.61	
30.00	762	3.92	0.11	712.56	20.18	0.00	0.00	250.34	7.09	966.82	27.38	29153.97	825.55	11601.78	1077.81	76.32	74.58	
29.00	737	4.20	0.12	737.19	20.87	0.00	0.00	240.37	6.81	981.76	27.80	28187.16	798.17	11781.12	1094.47	76.24	74.56	
28.00	711	4.48	0.13	759.92	21.52	0.00	0.00	231.17	6.55	995.57	28.19	27205.40	770.37	11946.83	1109.86	76.15	74.53	
27.00	686	4.76	0.13	781.13	22.12	0.00	0.00	222.57	6.30	1008.46	28.56	26209.83	742.18	12101.51	1124.23	76.07	74.51	
26.00	660	5.04	0.14	800.95	22.68	0.00	0.00	214.53	6.07	1020.52	28.90	25201.37	713.62	12246.23	1137.67	75.99	74.48	
25.00	635	5.32	0.15	819.53	23.21	0.00	0.00	206.99	5.86	1031.84	29.22	24180.85	684.72	12382.03	1150.29	75.90	74.46	
24.00	610	5.60	0.16	836.94	23.70	0.00	0.00	199.91	5.66	1042.45	29.52	23149.02	655.51	12509.43	1162.13	75.82	74.43	
23.00	584	5.60	0.16	853.41	24.17	0.00	0.00	193.32	5.47	1052.33	29.80	22106.56	625.99	12628.00	1173.14	75.74	74.40	
22.00	559	5.88	0.17	868.86	24.60	0.00	0.00	187.03	5.30	1061.77	30.07	21054.23	596.19	12741.24	1183.66	75.65	74.38	
21.00	533	6.16	0.17	883.50	25.02	0.00	0.00	181.06	5.13	1070.73	30.32	19992.46	566.12	12848.71	1193.64	75.57	74.35	
20.00	508	6.44	0.18	897.27	25.41	0.00	0.00	175.44	4.97	1079.16	30.56	18921.74	535.80	12949.88	1203.04	75.49	74.33	
19.00	483	6.72	0.19	910.24	25.78	0.00	0.00	170.14	4.82	1087.11	30.78	17842.58	505.24	13045.28	1211.91	75.40	74.30	
18.00	457	6.72	0.19	922.49	26.12	0.08	0.00	165.21	4.68	1094.50	30.99	16755.47	474.46	13133.98	1220.15	75.32	74.28	
17.00	432	7.00	0.20	934.07	26.45	0.60	0.02	160.26	4.54	1101.93	31.20	15660.97	443.47	13223.20	1228.44	75.24	74.25	
16.00	406	7.28	0.21	945.00	26.76	1.17	0.03	155.55	4.40	1109.00	31.40	14559.04	412.27	13307.99	1236.31	75.15	74.23	
15.00	381	7.28	0.21	955.35	27.05	1.42	0.04	151.31	4.28	1115.36	31.58	13450.04	380.86	13384.31	1243.40	75.07	74.20	
14.00	356	7.56	0.21	965.04	27.33	1.58	0.04	147.26	4.17	1121.44	31.76	12334.68	349.28	13457.23	1250.18	74.99	74.18	
13.00	330	7.84	0.22	974.22	27.59	1.66	0.05	143.44	4.06	1127.16	31.92	11213.25	317.52	13525.91	1256.56	74.90	74.15	
12.00	305	8.12	0.23	982.82	27.83	1.74	0.05	139.86	3.96	1132.53	32.07	10086.09	285.61	13590.39	1262.55	74.82	74.12	
11.00	279	8.12	0.23	990.98	28.06	1.81	0.05	136.56	3.87	1137.48	32.21	8953.55	253.54	13649.71	1268.06	74.74	74.10	
10.00	254	8.40	0.24	998.56	28.28	1.85	0.05	133.40	3.78	1142.21	32.34	7816.08	221.33	13706.57	1273.34	74.65	74.07	
9.00	229	8.40	0.24	1005.70	28.48	1.89	0.05	130.53	3.70	1146.52	32.47	6673.86	188.98	13758.27	1278.14	74.57	74.05	
8.00	203	8.68	0.25	1012.48	28.67	1.93	0.05	127.69	3.62	1150.78	32.59	5527.34	156.52	13809.36	1282.89	74.49	74.02	
7.00	178	9.52	0.27	1018.52	28.84	2.07	0.06	124.88	3.54	1154.99	32.71	4376.56	123.93	13859.93	1287.59	74.40	74.00	
6.00	152	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	3221.57	91.22	6443.14	598.57	74.32	73.97	Bottom of Chamber Elevation
5.00	127	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	2684.64	76.02	6443.14	598.57	74.24	73.95	
4.00	102	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	2147.71	60.82	6443.14	598.57	74.15	73.92	
3.00	76	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	1610.78	45.61	6443.14	598.57	74.07	73.90	
2.00	51	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	1073.86	30.41	6443.14	598.57	73.99	73.87	
1.00	25	0.00	0.00	0.00	0.00	0.00	0.00	536.93	15.20	536.93	15.20	536.93	15.20	6443.14	598.57	73.90	73.85	
0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.82	73.82	Bottom of Stone Elevation
-1.00																		
-2.00																		
-3.00																		
-4.00																		
-5.00																		
-6.00																		
-7.00																		
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P23-03 DRC 05/18/23

CULTEC

CULTEC Recharger 360HD Stormwater System Calculations

Consulting Engineer:

French & Parrello Associates

Calculations Performed By:

Gabrielle Cioffi-Henry
Cultec, Inc.
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Brookfield, CT 06804
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Project Information:

Penn Medicine Princeton Health Punia Blvd
Plainsboro, NJ
West UDS-1

Date: 3/29/23

Project Number: 23-0371.01

System Information

Rectangular Bed Inputs — **No. of Rows:** 9 — **No. of Chambers/Row:** 64

Given:

Storage required	38179	CF	1081.23	m^3
No. 4800 Fabric For Internal/External Manifolds	80	feet		
Number of Inlet/Outlet Pipes (Do Not Include Separator Rows)	5			
Stone **Base**	6	inches	152	mm
Stone **Above**	18	inches	457	mm
Spacing **Between** Rows	9	inches	229	mm
No. of HVLV FC-48 Feed Connectors	16	units		
24"x10" CULTEC Inspection Port Kit w/ Round Frame/Grate	1	units		
Stone Porosity	40	%		
Stone Border Width	15	inches	381	mm

☐ Discount stone base from Total storage provided (If Applicable)
☐ Discount stone above from Total storage provided (If Applicable)

Other Parameters:

Length of Separator Row	0	feet	0.000	m
Type of Lining	None			
☐ Sand Filter Depth (If Applicable)		feet	0.000	m
☐ Slopped Sides (1:1) (If Applicable)				

Maximum Finished Grade Elevation:	93.00
Minimum Finished Grade Elevation (Unpaved):	84.00
Minimum Finished Grade Elevation (Base of Flexible Pavement):	83.50
Minimum Finished Grade Elevation (Top of Rigid Pavement):	83.50
Top of Stone Elevation:	82.50
Top of Chamber Elevation:	81.00
Bottom of Chamber Elevation:	78.00
Bottom of Stone Elevation:	77.50

Assumptions

Model Name		Chamber Height (inches / mm)	Design Unit Height (feet / m)	Chamber Width (inches / mm)	Chamber Spacing (inches / mm)	Design Unit Width (feet / m)	Chamber Volume per Linear Foot (cu. ft/ft / cu. m/m)	Design Unit Volume (cu. ft/ft / cu. m/m)	Installed Chamber Length (feet / m)
Recharger® 360HD Chamber	English	36	5.000	60	9	5.75	10.00	17.499	3.670
	Metric	914	1.524	1524	229	1.75	0.929	1.626	1.119
Recharger® 360HD End Cap	English	36.5	5.000	60	9	5.75	5.168	14.601	1.250
	Metric	927	1.524	1524	229	1.75	0.480	1.356	0.381
HVLV™ FC-48 Feed Connectors	English	12	n/a	16	n/a	n/a	0.913	n/a	0.750
	Metric	305	n/a	406	n/a	n/a	0.085	n/a	0.229

Storage Provided within CULTEC Recharger 360HD Stormwater Chamber, End Caps and HVLV FC-48 Feed Connector Internal Manifold System - *not including stone*

Number of Recharger 360HD chambers by design			=	576	pcs		
576	pcs x	3.670	=	2113.92	feet	644.32	m
Number of Recharger 360HD end caps			=	18	pcs		
18	pcs x	1.250	=	22.50	feet	6.86	m
Number of HVLV FC-48 Feed Connectors			=	16	pcs		
16	pcs x	0.750	=	12.00	feet	3.66	m
Total footage of Recharger 360HD chambers			=	2113.92	feet	644.32	m
Total footage of Recharger 360HD end caps			=	22.50	feet		
Total footage of HVLV FC-48 Feed Connectors			=	12.00	feet	3.66	m
Storage provided within Recharger 360HD chambers			=	21133.92	CF	598.51	m^3
Storage provided within Recharger 360HD end caps				116.28	CF	3.29	m^3
Storage provided within HVLV FC-48 Feed Connectors			=	10.96	CF	0.31	m^3
Total Storage within chambers and feed connectors			=	**21261.15**	**CF**	**602.12**	**m^3**

Storage Provided within Entire CULTEC Stormwater System - *including stone*

Bed width	53.50	feet	16.31	m
Bed length	239.88	feet	73.12	m
Bed Depth	5.00	feet	1.52	m
Total Area	12833.58	sq. ft.	1192.24	m^2
Volume of Effective Excavation *(not including additional cover)*	64167.90	CF	1817.23	m^3
Perimeter of Bed	586.76	feet	178.84	m
Total Storage within CULTEC Recharger 360HD chambers, end caps and feed connectors	21261.15	CF	602.12	m^3
Total Stone Required	42906.75	CF	1215.12	m^3
	1589	CY		
	2225	tons		
Storage provided within stone	17162.70	CF	486.05	m^3
Total Storage within CULTEC Stormwater System =	**38424**	**CF**	**1088.04**	**m^3**

Req. storage attained.

CULTEC MATERIALS LIST

Model	Model #	Quantity	Unit of Measure	Quantity	Unit of Measure
Recharger 360HD Heavy Duty Chamber	360HD	576	pcs		
Recharger 360HD End Cap	360HD EC	18	pcs		
HVLV FC-48 Feed Connectors	FC-48	16	pcs		
CULTEC No. 410 Non-Woven Geotextile	NWG410	4449	Sq. Yards	3720	m2
CULTEC No. 4800 Woven Geotextile 7.5' x 100' (2.29 m x 30.48 m)	75WG4800	154	feet	47	m
24"x10" CULTEC Inspection Port Kit w/ Round Frame/Grate	INSP KIT 2410C	1	pcs		
Total Stone		1589	cubic yards	1215	m^3

☐ DISCLAIMER: If this is a value-engineered project based on a competitor's design.
The following inputs and calculations are based upon limited design information provided to CULTEC by a third-party. An engineer should review the inputs to confirm accuracy of the assumptions.

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P23-03 DRC 05/18/23

CULTEC

CULTEC Recharger 360HD Stormwater Incremental Storage

Date: March 29, 2023

Project Information
Penn Medicine Princeton Health Punia Blvd
Plainsboro, NJ
West UDS-1

Project Number
23-0371.01

Base of Stone Elevation- 77.50

Recharger 360HD Incremental Storage Volumes

Height of System		End Cap Volume		Chamber Volume		HVLV FC-48 Feed Connector Volume		Stone Volume		Cumulative Storage Volume		Total Cumulative Storage Volume		Stage/Area		Elevation		
in	mm	ft³	m³	ft³	m³	ft³	m³	ft³	m³	ft³	m³	ft³	m³	ft²	m²	ft	m	
60.00	1524	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	38423.89	1088.04	5133.43	476.90	82.50	79.02	Top of Stone Elevation
59.00	1499	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	37996.10	1075.93	5133.43	476.90	82.42	79.00	
58.00	1473	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	37568.31	1063.81	5133.43	476.90	82.33	78.97	
57.00	1448	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	37140.53	1051.70	5133.43	476.90	82.25	78.95	
56.00	1422	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	36712.74	1039.59	5133.43	476.90	82.17	78.92	
55.00	1397	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	36284.96	1027.47	5133.43	476.90	82.08	78.90	
54.00	1372	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	35857.17	1015.36	5133.43	476.90	82.00	78.87	
53.00	1346	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	35429.38	1003.25	5133.43	476.90	81.92	78.85	
52.00	1321	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	35001.60	991.13	5133.43	476.90	81.83	78.82	
51.00	1295	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	34573.81	979.02	5133.43	476.90	81.75	78.80	
50.00	1270	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	34146.03	966.91	5133.43	476.90	81.67	78.77	
49.00	1245	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	33718.24	954.79	5133.43	476.90	81.58	78.74	
48.00	1219	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	33290.45	942.68	5133.43	476.90	81.50	78.72	
47.00	1194	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	32862.67	930.57	5133.43	476.90	81.42	78.69	
46.00	1168	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	32434.88	918.45	5133.43	476.90	81.33	78.67	
45.00	1143	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	32007.10	906.34	5133.43	476.90	81.25	78.64	
44.00	1118	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	31579.31	894.22	5133.43	476.90	81.17	78.62	
43.00	1092	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	31151.52	882.11	5133.43	476.90	81.08	78.59	
42.00	1067	0.18	0.01	46.24	1.31	0.00	0.00	409.22	11.59	455.64	12.90	30723.74	870.00	5467.64	507.94	81.00	78.57	Top of Chamber Elevation
41.00	1041	0.36	0.01	98.07	2.78	0.00	0.00	388.42	11.00	486.84	13.79	30268.10	857.10	5842.10	542.73	80.92	78.54	
40.00	1016	0.54	0.02	145.80	4.13	0.00	0.00	369.25	10.46	515.59	14.60	29781.26	843.31	6187.10	574.78	80.83	78.52	
39.00	991	0.72	0.02	246.98	6.99	0.00	0.00	328.70	9.31	576.41	16.32	29265.67	828.71	6916.89	642.58	80.75	78.49	
38.00	965	0.90	0.03	311.90	8.83	0.00	0.00	302.67	8.57	615.47	17.43	28689.26	812.39	7385.59	686.12	80.67	78.47	
37.00	940	1.08	0.03	360.56	10.21	0.00	0.00	283.13	8.02	644.77	18.26	28073.79	794.96	7737.22	718.79	80.58	78.44	
36.00	914	1.26	0.04	400.97	11.35	0.00	0.00	266.89	7.56	669.13	18.95	27429.03	776.70	8029.50	745.94	80.50	78.41	
35.00	889	1.44	0.04	435.91	12.34	0.00	0.00	252.85	7.16	690.20	19.54	26759.90	757.75	8282.35	769.43	80.42	78.39	
34.00	864	1.62	0.05	466.81	13.22	0.00	0.00	240.41	6.81	708.84	20.07	26069.70	738.21	8506.14	790.22	80.33	78.36	
33.00	838	1.80	0.05	494.54	14.00	0.00	0.00	229.25	6.49	725.59	20.55	25360.86	718.14	8707.09	808.89	80.25	78.34	
32.00	813	1.98	0.06	519.74	14.72	0.00	0.00	219.10	6.20	740.82	20.98	24635.27	697.59	8889.79	825.86	80.17	78.31	
31.00	787	2.16	0.06	542.68	15.37	0.00	0.00	209.85	5.94	754.69	21.37	23894.45	676.61	9056.29	841.33	80.08	78.29	
30.00	762	2.52	0.07	563.78	15.96	0.00	0.00	201.27	5.70	767.57	21.74	23139.76	655.24	9210.81	855.68	80.00	78.26	
29.00	737	2.70	0.08	583.27	16.52	0.00	0.00	193.40	5.48	779.37	22.07	22372.19	633.51	9352.41	868.84	79.92	78.24	
28.00	711	2.88	0.08	601.26	17.03	0.00	0.00	186.13	5.27	790.27	22.38	21592.83	611.44	9483.21	880.99	79.83	78.21	
27.00	686	3.06	0.09	618.03	17.50	0.00	0.00	179.35	5.08	800.44	22.67	20802.56	589.06	9605.30	892.33	79.75	78.19	
26.00	660	3.24	0.09	633.71	17.94	0.00	0.00	173.00	4.90	809.96	22.94	20002.12	566.40	9719.51	902.94	79.67	78.16	
25.00	635	3.42	0.10	648.42	18.36	0.00	0.00	167.05	4.73	818.89	23.19	19192.16	543.46	9826.65	912.90	79.58	78.14	
24.00	610	3.60	0.10	662.20	18.75	0.00	0.00	161.47	4.57	827.26	23.43	18373.27	520.27	9927.16	922.23	79.50	78.11	
23.00	584	3.60	0.10	675.22	19.12	0.00	0.00	156.26	4.42	835.08	23.65	17546.01	496.85	10020.97	930.95	79.42	78.08	
22.00	559	3.78	0.11	687.45	19.47	0.00	0.00	151.30	4.28	842.52	23.86	16710.93	473.20	10110.26	939.24	79.33	78.06	
21.00	533	3.96	0.11	699.03	19.79	0.00	0.00	146.59	4.15	849.58	24.06	15868.40	449.34	10195.00	947.12	79.25	78.03	
20.00	508	4.14	0.12	709.93	20.10	0.00	0.00	142.16	4.03	856.23	24.25	15018.82	425.28	10274.74	954.52	79.17	78.01	
19.00	483	4.32	0.12	720.19	20.39	0.00	0.00	137.98	3.91	862.49	24.42	14162.59	401.04	10349.93	961.51	79.08	77.98	
18.00	457	4.32	0.12	729.88	20.67	0.05	0.00	134.09	3.80	868.33	24.59	13300.10	376.62	10420.01	968.02	79.00	77.96	
17.00	432	4.50	0.13	739.05	20.93	0.37	0.01	130.22	3.69	874.14	24.75	12431.76	352.03	10489.64	974.49	78.92	77.93	
16.00	406	4.68	0.13	747.69	21.17	0.72	0.02	126.55	3.58	879.64	24.91	11557.63	327.28	10555.71	980.63	78.83	77.91	
15.00	381	4.68	0.13	755.88	21.40	0.88	0.02	123.21	3.49	884.65	25.05	10677.99	302.37	10615.77	986.21	78.75	77.88	
14.00	356	4.86	0.14	763.55	21.62	0.97	0.03	120.03	3.40	889.41	25.19	9793.34	277.32	10672.97	991.52	78.67	77.86	
13.00	330	5.04	0.14	770.81	21.83	1.02	0.03	117.04	3.31	893.91	25.31	8903.92	252.13	10726.91	996.53	78.58	77.83	
12.00	305	5.22	0.15	777.62	22.02	1.07	0.03	114.22	3.23	898.13	25.43	8010.02	226.82	10777.53	1001.23	78.50	77.80	
11.00	279	5.22	0.15	784.07	22.20	1.12	0.03	111.62	3.16	902.03	25.54	7111.89	201.39	10824.37	1005.58	78.42	77.78	
10.00	254	5.40	0.15	790.07	22.37	1.14	0.03	109.14	3.09	905.75	25.65	6209.86	175.84	10869.01	1009.73	78.33	77.75	
9.00	229	5.40	0.15	795.72	22.53	1.16	0.03	106.87	3.03	909.16	25.74	5304.11	150.20	10909.86	1013.53	78.25	77.73	
8.00	203	5.58	0.16	801.08	22.68	1.19	0.03	104.65	2.96	912.49	25.84	4394.95	124.45	10949.93	1017.25	78.17	77.70	
7.00	178	6.12	0.17	805.86	22.82	1.27	0.04	102.48	2.90	915.74	25.93	3482.46	98.61	10988.88	1020.87	78.08	77.68	
6.00	152	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	2566.72	72.68	5133.43	476.90	78.00	77.65	Bottom of Chamber Elevation
5.00	127	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	2138.93	60.57	5133.43	476.90	77.92	77.63	
4.00	102	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	1711.14	48.45	5133.43	476.90	77.83	77.60	
3.00	76	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	1283.36	36.34	5133.43	476.90	77.75	77.58	
2.00	51	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	855.57	24.23	5133.43	476.90	77.67	77.55	
1.00	25	0.00	0.00	0.00	0.00	0.00	0.00	427.79	12.11	427.79	12.11	427.79	12.11	5133.43	476.90	77.58	77.53	
0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.50	77.50	Bottom of Stone Elevation
-1.00																		
-2.00																		
-3.00																		
-4.00																		
-5.00																		
-6.00																		
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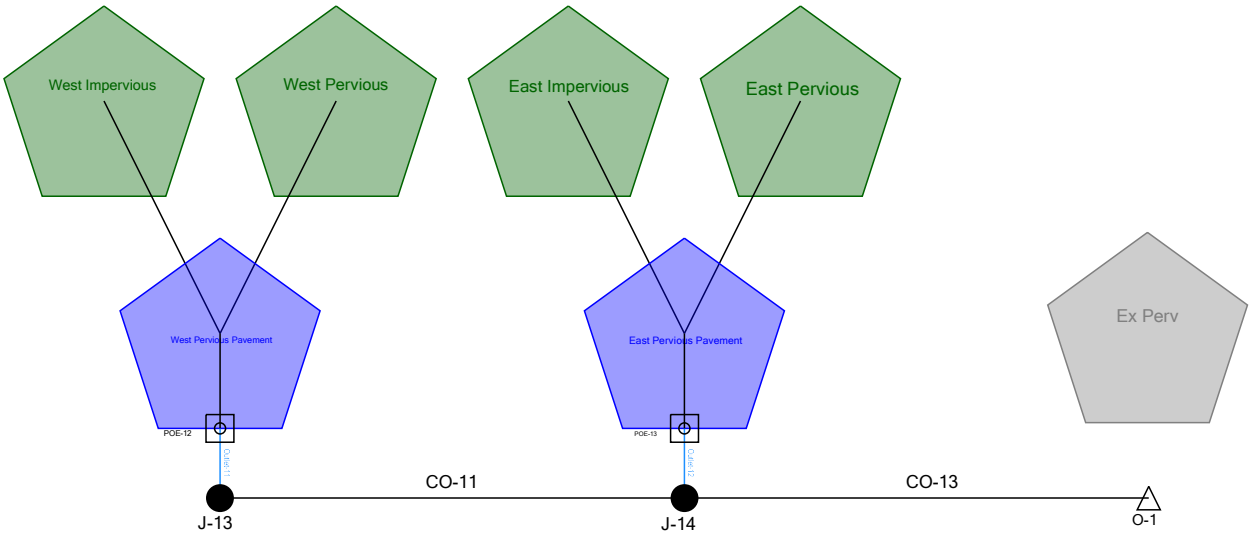
Project Summary	
Title	Punia Boulevard Parking
Engineer	Stefanie Pacifico
Company	French and Parrello Associates
Date	10/7/2022

Notes

POST-DEVELOPMENT CALCULATIONS



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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
East Pervious	Post-Development 2 year	2	2,967.000	727.350	0.84
East Pervious	Post-Development 10 year	10	8,005.000	727.300	2.64
East Pervious	Post-Development 25 year	25	12,278.000	726.700	4.14
East Pervious	Post-Development 100 year	100	21,062.000	726.700	7.15
West Pervious	Post-Development 2 year	2	1,869.000	727.300	0.60
West Pervious	Post-Development 10 year	10	4,418.000	726.700	1.49
West Pervious	Post-Development 25 year	25	6,475.000	726.700	2.20
West Pervious	Post-Development 100 year	100	10,567.000	726.650	3.56
West Impervious	Post-Development 2 year	2	24,126.000	726.650	7.03
West Impervious	Post-Development 10 year	10	37,797.000	726.650	10.81
West Impervious	Post-Development 25 year	25	47,384.000	726.650	13.45
West Impervious	Post-Development 100 year	100	64,943.000	726.650	18.28
East Impervious	Post-Development 2 year	2	28,490.000	726.650	8.30
East Impervious	Post-Development 10 year	10	44,634.000	726.650	12.77
East Impervious	Post-Development 25 year	25	55,955.000	726.650	15.89
East Impervious	Post-Development 100 year	100	76,689.000	726.650	21.59

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
O-1	Post-Development 2 year	2	40,649.000	807.400	1.13
O-1	Post-Development 10 year	10	79,167.000	754.400	4.35
O-1	Post-Development 25 year	25	108,360.000	743.850	7.55
O-1	Post-Development 100 year	100	161,593.000	737.500	14.89
J-13	Post-Development 2 year	2	20,099.000	798.050	0.59
J-13	Post-Development 10 year	10	35,125.000	752.500	2.17
J-13	Post-Development 25 year	25	47,879.000	741.500	3.72

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
J-13	Post-Development 100 year	100	71,164.000	735.900	7.16
J-14	Post-Development 2 year	2	40,651.000	807.350	1.13
J-14	Post-Development 10 year	10	79,164.000	754.350	4.35
J-14	Post-Development 25 year	25	108,357.000	743.800	7.55
J-14	Post-Development 100 year	100	161,590.000	737.450	14.89

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
East Pervious Pavement (IN)	Post-Development 2 year	2	33,727.000	726.650	9.12	(N/A)	(N/A)
East Pervious Pavement (OUT)	Post-Development 2 year	2	19,583.000	820.350	0.54	75.65	19,333.000
East Pervious Pavement (IN)	Post-Development 10 year	10	56,419.000	726.650	15.40	(N/A)	(N/A)
East Pervious Pavement (OUT)	Post-Development 10 year	10	38,073.000	758.800	2.19	76.33	27,499.000
East Pervious Pavement (IN)	Post-Development 25 year	25	73,105.000	726.650	20.02	(N/A)	(N/A)
East Pervious Pavement (OUT)	Post-Development 25 year	25	53,800.000	750.750	3.85	76.86	33,134.000
East Pervious Pavement (IN)	Post-Development 100 year	100	104,650.000	726.650	28.74	(N/A)	(N/A)
East Pervious Pavement (OUT)	Post-Development 100 year	100	83,718.000	739.750	7.81	78.32	43,394.000

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
West Pervious Pavement (IN)	Post-Development 2 year	2	27,813.000	726.650	7.62	(N/A)	(N/A)
West Pervious Pavement (OUT)	Post-Development 2 year	2	18,705.000	798.050	0.59	79.32	15,314.000
West Pervious Pavement (IN)	Post-Development 10 year	10	45,119.000	726.650	12.30	(N/A)	(N/A)
West Pervious Pavement (OUT)	Post-Development 10 year	10	32,883.000	752.500	2.17	79.93	21,245.000
West Pervious Pavement (IN)	Post-Development 25 year	25	57,531.000	726.650	15.65	(N/A)	(N/A)
West Pervious Pavement (OUT)	Post-Development 25 year	25	43,608.000	741.500	3.72	80.39	25,211.000
West Pervious Pavement (IN)	Post-Development 100 year	100	80,595.000	726.650	21.84	(N/A)	(N/A)
West Pervious Pavement (OUT)	Post-Development 100 year	100	65,490.000	735.900	7.16	81.52	32,108.000

Subsection: Unit Hydrograph Summary
Label: East Impervious
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.520 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	8.30 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	8.30 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.520 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	28,512.673 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	28,490.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	34.26 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Impervious
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.520 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	12.77 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	12.77 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.520 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	44,667.592 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	44,634.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	34.26 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Impervious
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.520 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	15.89 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	15.89 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.520 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	55,996.904 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	55,955.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	34.26 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Impervious
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.520 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	21.59 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	21.59 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.520 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	76,746.887 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	76,689.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	34.26 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Pervious
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	1.393 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	727.333 min
Flow (Peak, Computed)	0.84 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	727.350 min
Flow (Peak Interpolated Output)	0.84 ft³/s

Drainage Area	
SCS CN (Composite)	63.000
Area (User Defined)	1.393 acres
Maximum Retention (Pervious)	5.87 in
Maximum Retention (Pervious, 20 percent)	1.17 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.59 in
Runoff Volume (Pervious)	2,973.202 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,967.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.94 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Pervious
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	1.393 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	727.333 min
Flow (Peak, Computed)	2.64 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	727.300 min
Flow (Peak Interpolated Output)	2.64 ft³/s

Drainage Area	
SCS CN (Composite)	63.000
Area (User Defined)	1.393 acres
Maximum Retention (Pervious)	5.87 in
Maximum Retention (Pervious, 20 percent)	1.17 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.59 in
Runoff Volume (Pervious)	8,016.741 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	8,005.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.94 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Pervious
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	1.393 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	4.14 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.700 min
Flow (Peak Interpolated Output)	4.14 ft³/s

Drainage Area	
SCS CN (Composite)	63.000
Area (User Defined)	1.393 acres
Maximum Retention (Pervious)	5.87 in
Maximum Retention (Pervious, 20 percent)	1.17 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.43 in
Runoff Volume (Pervious)	12,295.012 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	12,278.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.94 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: East Pervious
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	1.393 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	7.15 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.700 min
Flow (Peak Interpolated Output)	7.15 ft³/s

Drainage Area	
SCS CN (Composite)	63.000
Area (User Defined)	1.393 acres
Maximum Retention (Pervious)	5.87 in
Maximum Retention (Pervious, 20 percent)	1.17 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.17 in
Runoff Volume (Pervious)	21,087.293 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	21,062.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.94 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Impervious
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.134 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	7.03 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	7.03 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.134 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	24,145.256 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	24,126.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.01 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Impervious
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.134 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	10.81 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	10.81 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.134 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	37,825.652 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	37,797.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.01 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Impervious
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.134 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	13.46 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	13.45 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.134 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	47,419.601 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	47,384.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.01 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Impervious
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.134 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	18.29 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	18.28 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.134 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	64,991.213 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	64,943.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	29.01 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Pervious
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.596 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	727.333 min
Flow (Peak, Computed)	0.60 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	727.300 min
Flow (Peak Interpolated Output)	0.60 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	0.596 acres
Maximum Retention (Pervious)	4.49 in
Maximum Retention (Pervious, 20 percent)	0.90 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.87 in
Runoff Volume (Pervious)	1,872.304 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,869.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.10 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Pervious
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.596 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	1.49 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.700 min
Flow (Peak Interpolated Output)	1.49 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	0.596 acres
Maximum Retention (Pervious)	4.49 in
Maximum Retention (Pervious, 20 percent)	0.90 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.05 in
Runoff Volume (Pervious)	4,424.339 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	4,418.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.10 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Pervious
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.596 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	2.20 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.700 min
Flow (Peak Interpolated Output)	2.20 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	0.596 acres
Maximum Retention (Pervious)	4.49 in
Maximum Retention (Pervious, 20 percent)	0.90 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.00 in
Runoff Volume (Pervious)	6,482.793 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6,475.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.10 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Unit Hydrograph Summary
Label: West Pervious
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.596 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	3.56 ft³/s
Output Increment	0.050 min
Time to Flow (Peak Interpolated Output)	726.650 min
Flow (Peak Interpolated Output)	3.56 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	0.596 acres
Maximum Retention (Pervious)	4.49 in
Maximum Retention (Pervious, 20 percent)	0.90 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.89 in
Runoff Volume (Pervious)	10,579.230 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	10,567.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.10 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Subsection: Outlet Input Data
Label: East Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	74.32 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	78.82 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	74.32	78.82
Orifice-Circular	Orifice - 2	Forward	TW	75.59	78.82
Rectangular Weir	Weir - 2	Forward	TW	77.79	78.82
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: East Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	74.32 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	75.59 ft
Orifice Diameter	12.0 in
Orifice Coefficient	0.600

Structure ID: Weir - 2 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	77.79 ft
Weir Length	1.00 ft
Weir Coefficient	3.20 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: East Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
74.07	0.00	(N/A)	0.00	HW & TW below invert
74.32	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
74.57	0.10	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .071ft Dcr= .178ft CRIT.DEPTH Hev= .00ft
75.07	0.32	(N/A)	0.00	H =.58
75.57	0.44	(N/A)	0.00	H =1.08
75.59	0.44	(N/A)	0.00	H =1.10
76.07	0.53	(N/A)	0.00	H =1.58
76.57	0.61	(N/A)	0.00	H =2.08
77.07	0.68	(N/A)	0.00	H =2.58
77.57	0.74	(N/A)	0.00	H =3.08
77.79	0.76	(N/A)	0.00	H =3.30
78.07	0.80	(N/A)	0.00	H =3.58
78.57	0.85	(N/A)	0.00	H =4.08
78.82	0.87	(N/A)	0.00	H =4.33

Subsection: Individual Outlet Curves
Label: East Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
74.07	0.00	(N/A)	0.00	HW & TW below invert
74.32	0.00	(N/A)	0.00	HW & TW below invert
74.57	0.00	(N/A)	0.00	HW & TW below invert
75.07	0.00	(N/A)	0.00	HW & TW below invert
75.57	0.00	(N/A)	0.00	HW & TW below invert
75.59	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
76.07	0.71	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .129ft Dcr= .351ft CRIT.DEPTH Hev= .00ft
76.57	2.50	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .302ft Dcr= .677ft CRIT.DEPTH Hev= .00ft
77.07	3.74	(N/A)	0.00	H =.98
77.57	4.60	(N/A)	0.00	H =1.48
77.79	4.93	(N/A)	0.00	H =1.70
78.07	5.32	(N/A)	0.00	H =1.98
78.57	5.95	(N/A)	0.00	H =2.48
78.82	6.25	(N/A)	0.00	H =2.73

Subsection: Individual Outlet Curves
Label: East Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 2 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
74.07	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
74.32	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
74.57	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
75.07	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
75.57	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
75.59	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
76.07	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
76.57	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
77.07	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
77.57	0.00	(N/A)	0.00	HW & TW below Inv.El.=77.790
77.79	0.00	(N/A)	0.00	H=.00; Htw=.00; Qfree=.00;
78.07	0.47	(N/A)	0.00	H=.28; Htw=.00; Qfree=.47;
78.57	2.20	(N/A)	0.00	H=.78; Htw=.00; Qfree=2.20;
78.82	3.35	(N/A)	0.00	H=1.03; Htw=.00; Qfree=3.35;

Subsection: Composite Rating Curve
Label: East Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
74.07	0.00	(N/A)	0.00	None Contributing
74.32	0.00	(N/A)	0.00	None Contributing
74.57	0.10	(N/A)	0.00	Orifice - 1
75.07	0.32	(N/A)	0.00	Orifice - 1
75.57	0.44	(N/A)	0.00	Orifice - 1
75.59	0.44	(N/A)	0.00	Orifice - 1
76.07	1.24	(N/A)	0.00	Orifice - 1 + Orifice - 2
76.57	3.10	(N/A)	0.00	Orifice - 1 + Orifice - 2
77.07	4.42	(N/A)	0.00	Orifice - 1 + Orifice - 2
77.57	5.34	(N/A)	0.00	Orifice - 1 + Orifice - 2
77.79	5.69	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
78.07	6.59	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
78.57	9.01	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
78.82	10.47	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2

Subsection: Outlet Input Data
Label: West Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	77.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	81.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	78.00	82.50
Orifice-Circular	Orifice - 2	Forward	TW	79.20	82.50
Rectangular Weir	Weir - 2	Forward	TW	81.00	82.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: West Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	78.00 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	79.20 ft
Orifice Diameter	12.0 in
Orifice Coefficient	0.600

Structure ID: Weir - 2 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	81.00 ft
Weir Length	1.00 ft
Weir Coefficient	3.20 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Individual Outlet Curves
Label: West Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
77.75	0.00	(N/A)	0.00	HW & TW below invert
78.00	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
78.25	0.10	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .071ft Dcr= .178ft CRIT.DEPTH Hev= .00ft
78.75	0.32	(N/A)	0.00	H =.58
79.20	0.43	(N/A)	0.00	H =1.03
79.25	0.44	(N/A)	0.00	H =1.08
79.75	0.53	(N/A)	0.00	H =1.58
80.25	0.61	(N/A)	0.00	H =2.08
80.75	0.68	(N/A)	0.00	H =2.58
81.00	0.71	(N/A)	0.00	H =2.83
81.25	0.74	(N/A)	0.00	H =3.08
81.75	0.80	(N/A)	0.00	H =3.58
82.25	0.85	(N/A)	0.00	H =4.08
82.50	0.87	(N/A)	0.00	H =4.33

Subsection: Individual Outlet Curves
Label: West Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
77.75	0.00	(N/A)	0.00	HW & TW below invert
78.00	0.00	(N/A)	0.00	HW & TW below invert
78.25	0.00	(N/A)	0.00	HW & TW below invert
78.75	0.00	(N/A)	0.00	HW & TW below invert
79.20	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
79.25	0.01	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .011ft Dcr= .039ft CRIT.DEPTH Hev= .00ft
79.75	0.91	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .150ft Dcr= .401ft CRIT.DEPTH Hev= .00ft
80.25	2.80	(N/A)	0.00	H =.55
80.75	3.87	(N/A)	0.00	H =1.05
81.00	4.31	(N/A)	0.00	H =1.30
81.25	4.71	(N/A)	0.00	H =1.55
81.75	5.41	(N/A)	0.00	H =2.05
82.25	6.04	(N/A)	0.00	H =2.55
82.50	6.33	(N/A)	0.00	H =2.80

Subsection: Individual Outlet Curves
Label: West Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 2 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
77.75	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
78.00	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
78.25	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
78.75	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
79.20	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
79.25	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
79.75	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
80.25	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
80.75	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.000
81.00	0.00	(N/A)	0.00	H=.00; Htw=.00; Qfree=.00;
81.25	0.40	(N/A)	0.00	H=.25; Htw=.00; Qfree=.40;
81.75	2.08	(N/A)	0.00	H=.75; Htw=.00; Qfree=2.08;
82.25	4.47	(N/A)	0.00	H=1.25; Htw=.00; Qfree=4.47;
82.50	5.88	(N/A)	0.00	H=1.50; Htw=.00; Qfree=5.88;

Subsection: Composite Rating Curve
Label: West Outlet
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
77.75	0.00	(N/A)	0.00	None Contributing
78.00	0.00	(N/A)	0.00	None Contributing
78.25	0.10	(N/A)	0.00	Orifice - 1
78.75	0.32	(N/A)	0.00	Orifice - 1
79.20	0.43	(N/A)	0.00	Orifice - 1
79.25	0.45	(N/A)	0.00	Orifice - 1 + Orifice - 2
79.75	1.44	(N/A)	0.00	Orifice - 1 + Orifice - 2
80.25	3.41	(N/A)	0.00	Orifice - 1 + Orifice - 2
80.75	4.55	(N/A)	0.00	Orifice - 1 + Orifice - 2
81.00	5.02	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
81.25	5.84	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
81.75	8.29	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
82.25	11.36	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2
82.50	13.08	(N/A)	0.00	Orifice - 1 + Orifice - 2 + Weir - 2

Subsection: Elevation-Volume-Flow Table (Pond)
Label: East Pervious Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	74.07 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

STORAGE VOLUME FROM ELEVATION 73.82 TO 74.07 WAS NOT INCLUDED IN THESE CALCULATIONS TO ALLOW FOR 80% TSS FOR WATER QUALITY STORM. SEE APPENDIX C FOR WATER QUALITY CALCULATIONS.

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
74.07	0.00	0.000	0.000	0.00	0.00	0.00
74.32	0.00	1,610.790	0.000	0.00	0.00	1,073.86
74.57	0.10	5,046.410	0.000	0.00	0.10	3,364.38
75.07	0.32	11,790.380	0.000	0.00	0.32	7,860.57
75.57	0.44	18,302.650	0.000	0.00	0.44	12,202.20
75.59	0.44	18,554.060	0.000	0.00	0.44	12,369.81
76.07	1.24	24,492.790	0.000	0.00	1.24	16,329.77
76.57	3.10	30,211.030	0.000	0.00	3.10	20,143.79
77.07	4.42	35,109.590	0.000	0.00	4.42	23,410.81
77.57	5.34	38,550.160	0.000	0.00	5.34	25,705.44
77.79	5.69	39,967.646	0.000	0.00	5.69	26,650.79
78.07	6.59	41,771.720	0.000	0.00	6.59	27,854.40
78.57	9.01	44,993.290	0.000	0.00	9.01	30,004.53
78.82	10.47	46,604.080	0.000	0.00	10.47	31,079.85

Subsection: Level Pool Pond Routing Summary
Label: East Pervious Pavement (IN)
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	74.07 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	9.12 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	0.54 ft³/s	Time to Peak (Flow, Outlet)	820.350 min

Elevation (Water Surface, Peak)	75.65 ft
Volume (Peak)	19,332.771 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	33,727.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	19,583.000 ft³
Volume (Retained)	14,168.000 ft³
Volume (Unrouted)	23.000 ft³
Error (Mass Balance)	0.069 %

Subsection: Level Pool Pond Routing Summary
Label: East Pervious Pavement (IN)
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	74.07 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	15.40 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	2.19 ft³/s	Time to Peak (Flow, Outlet)	758.800 min

Elevation (Water Surface, Peak)	76.33 ft
Volume (Peak)	27,499.141 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	56,419.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	38,073.000 ft³
Volume (Retained)	18,345.000 ft³
Volume (Unrouted)	-1.000 ft³
Error (Mass Balance)	0.002 %

Subsection: Level Pool Pond Routing Summary
Label: East Pervious Pavement (IN)
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	74.07 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	20.02 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	3.85 ft³/s	Time to Peak (Flow, Outlet)	750.750 min

Elevation (Water Surface, Peak)	76.86 ft
Volume (Peak)	33,133.934 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	73,105.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	53,800.000 ft³
Volume (Retained)	19,315.000 ft³
Volume (Unrouted)	10.000 ft³
Error (Mass Balance)	0.014 %

Subsection: Level Pool Pond Routing Summary
Label: East Pervious Pavement (IN)
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	74.07 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	28.74 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	7.81 ft³/s	Time to Peak (Flow, Outlet)	739.750 min

Elevation (Water Surface, Peak)	78.32 ft
Volume (Peak)	43,394.121 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	104,650.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	83,718.000 ft³
Volume (Retained)	20,967.000 ft³
Volume (Unrouted)	36.000 ft³
Error (Mass Balance)	0.034 %

Subsection: Elevation-Volume-Flow Table (Pond)
Label: West Pervious Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	77.75 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

STORAGE VOLUME FROM ELEVATION 77.50 TO 77.75 WAS NOT INCLUDED IN THESE CALCULATIONS TO ALLOW FOR 80% TSS FOR WATER QUALITY STORM. SEE APPENDIX C FOR WATER QUALITY CALCULATIONS.

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
77.75	0.00	0.000	0.000	0.00	0.00	0.00
78.00	0.00	1,283.360	0.000	0.00	0.00	855.57
78.25	0.10	4,020.750	0.000	0.00	0.10	2,680.60
78.75	0.32	9,394.630	0.000	0.00	0.32	6,263.41
79.20	0.43	14,071.380	0.000	0.00	0.43	9,381.35
79.25	0.45	14,585.040	0.000	0.00	0.45	9,723.81
79.75	1.44	19,519.200	0.000	0.00	1.44	13,014.24
80.25	3.41	24,077.500	0.000	0.00	3.41	16,055.08
80.75	4.55	27,982.310	0.000	0.00	4.55	18,659.42
81.00	5.02	29,440.380	0.000	0.00	5.02	19,631.94
81.25	5.84	30,723.740	0.000	0.00	5.84	20,488.34
81.75	8.29	33,290.450	0.000	0.00	8.29	22,201.92
82.25	11.36	36,127.170	0.000	0.00	11.36	24,096.14
82.50	13.08	37,140.530	0.000	0.00	13.08	24,773.43

Subsection: Level Pool Pond Routing Summary
Label: West Pervious Pavement (IN)
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	77.75 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	7.62 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	0.59 ft³/s	Time to Peak (Flow, Outlet)	798.050 min

Elevation (Water Surface, Peak)	79.32 ft
Volume (Peak)	15,313.629 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	27,813.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	18,705.000 ft³
Volume (Retained)	9,109.000 ft³
Volume (Unrouted)	1.000 ft³
Error (Mass Balance)	0.004 %

Subsection: Level Pool Pond Routing Summary
Label: West Pervious Pavement (IN)
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	77.75 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	12.30 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	2.17 ft³/s	Time to Peak (Flow, Outlet)	752.500 min

Elevation (Water Surface, Peak)	79.93 ft
Volume (Peak)	21,245.025 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	45,119.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	32,883.000 ft³
Volume (Retained)	12,256.000 ft³
Volume (Unrouted)	20.000 ft³
Error (Mass Balance)	0.044 %

Subsection: Level Pool Pond Routing Summary
Label: West Pervious Pavement (IN)
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	77.75 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	15.65 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	3.72 ft³/s	Time to Peak (Flow, Outlet)	741.500 min

Elevation (Water Surface, Peak)	80.39 ft
Volume (Peak)	25,210.755 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	57,531.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	43,608.000 ft³
Volume (Retained)	13,924.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.001 %

Subsection: Level Pool Pond Routing Summary
Label: West Pervious Pavement (IN)
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	77.75 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	21.84 ft³/s	Time to Peak (Flow, In)	726.650 min
Flow (Peak Outlet)	7.16 ft³/s	Time to Peak (Flow, Outlet)	735.900 min

Elevation (Water Surface, Peak)	81.52 ft
Volume (Peak)	32,107.886 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	80,595.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	65,490.000 ft³
Volume (Retained)	15,111.000 ft³
Volume (Unrouted)	6.000 ft³
Error (Mass Balance)	0.008 %

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STORM SEWER DESIGN WORK SHEET

LOCATION		RUNOFF DATA									SEWER DESIGN DATA						
STRUCTURE NUMBER		INCREMENTAL AREA				TIME OF CONCENTRATION					PIPE MATERIAL : HDPE MANNINGS `n' = 0.012						
UPSTREAM	DOWNSTREAM	AREA	WEIGHTED RUNOFF COEFFICIENT	SUBAREA Ac x C	TOTAL AREA	OVERLAND THROUGH AREA, Ta	THROUGH PIPE, Tp	TOTAL Tc OR LONGEST ACCUMULATED Tc	RAINFALL INTENSITY,	RUNOFF PEAK, Q	DIAMETER	LENGTH	SLOPE	CAPACITY AT FULL FLOW, Qf	VELOCITY AT FULL FLOW, Vf	VELOCITY ACTUAL, Va	FLOW TIME THROUGH PIPE
		Ac	C		Ac X C	MIN.	MIN.	MIN.	IN/HR	CFS	INCHES	FEET	%	CFS	FPS	FPS	MIN.
W 1	W 4	0.49	0.74	0.36	0.36	5.0		5.0	3.30	1.2	15	95	1.00	6.5	5.3	4.2	0.4
W 4	W. BASIN	0.30	0.87	0.26	0.62		0.4	5.4	3.30	2.1	15	4	1.16	7.0	5.7	4.9	0.0
W 3	W 6	0.30	0.77	0.23	0.23	5.0		5.0	3.30	0.8	15	89	1.00	6.5	5.3	3.7	0.4
W 6	W. BASIN	0.22	0.91	0.20	0.43		0.4	5.4	3.30	1.4	15	4	1.01	6.5	5.3	4.4	0.0
W 9	W 8	0.44	0.91	0.40	0.40	5.0		5.0	3.30	1.3	15	200	1.00	6.5	5.3	4.2	0.8
W 8	W 7	0.44	0.91	0.40	0.80		0.8	5.8	3.30	2.6	15	32	1.00	6.5	5.3	5.2	0.1
W 7	W. BASIN	0.30	0.92	0.28	1.08		0.1	5.9	3.30	3.6	15	24	1.00	6.5	5.3	5.7	0.1
W 10	W. BASIN	0.31	0.88	0.27	0.27	5.0		5.0	3.30	0.9	15	24	1.00	6.5	5.3	3.8	0.1
W. BASIN	W 12	---	---	---	---	---	---	---	---	3.7	15	112	0.50	4.6	3.7	4.4	0.4
W 12	W 13	---	---	---	---	---	---	---	---	3.7	15	280	0.50	4.6	3.7	4.4	1.1
E 2	E 5	0.41	0.91	0.37	0.37	5.0		5.0	3.30	1.2	15	89	1.00	6.5	5.3	4.2	0.4
E 1	E 4	0.16	0.90	0.14	0.14	5.0		5.0	3.30	0.5	15	89	1.00	6.5	5.3	3.2	0.5
E 4	E 5	0.25	0.87	0.22	0.36		0.5	5.5	3.30	1.2	15	60	1.00	6.5	5.3	4.2	0.2
E 5	E. BASIN	0.13	0.99	0.13	0.86		0.2	5.7	3.30	2.8	15	6	1.00	6.5	5.3	5.4	0.0
E 3	E 6	1.48	0.74	1.10	1.10	5.0		5.0	3.30	3.6	15	89	1.00	6.5	5.3	5.7	0.3
E 6	E. BASIN	0.18	0.99	0.18	1.27		0.3	5.3	3.30	4.2	15	4	1.00	6.5	5.3	5.9	0.0
E 7	E. BASIN	0.77	0.77	0.59	0.59	5.0		5.0	3.30	2.0	15	4	1.00	6.5	5.3	2.0	0.0

1. SEE CONSTRUCTION PLANS FOR PROFILE INFORMATION
2. ACTUAL DIMENSION FOR PEAK RUNOFF,Q IS Ac-IN/HR, HOWEVER Ac-fT/Hr, HOWEVER 1.008 Ac-ft/hr IS APPROXIMATELY EQUAL TO 1.0 CFS
3. SEE PLANS FOR PIPE PROFILE AND INLET INFORMATION

PROJECT NAME : PUNIA PARKING LOT

PROJECT NO. : 06C028T.003

STORM FREQUENCY 25 YEAR

COMPUTED BY : S.P. DATE : 04-13-2023

CHECKED BY : DATE :

REVISED BY : DATE :

FRENCH & PARRELLO ASSOCIATES

Appendix E
Delaware and Raritan Canal Commission

NJDEP Nonstructural Strategies Points System (NSPS)

Version: January 31, 2006

Note: Input Values in Yellow Cells Only

Project:	Temporary Parking Lot
Date:	November 1, 2022
User:	FPA
Notes:	

Step 1 - Provide Basic Major Development Site Information

A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 = 6.6 **Acres**

B. Specify by Percent the Various Planning Areas Located within the Development Site:

State Plan Planning Area:	PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5	Total % Area
Percent of Each Planning Area within Site:		100.0%					100.0%

Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts

Step 2 - Describe Existing or Pre-Developed Site Conditions

A. Specify Existing Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals	Points
		HSG A	HSG B	HSG C	HSG D		
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space		0.8	1.1		1.9	79
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes		1.8	0.8		2.6	106
7	Woods - Indigenous					0.0	0
8	Woods - Planted		0.4			0.4	26
9	Woods and Grass Combination		1.1	0.6		1.7	91
10	Ponds, Lakes, and Other Open Water					0.0	0
11	Gravel and Dirt					0.0	0
12	Porous and Permeable Paving					0.0	0
13	Directly Connected Impervious					0.0	0
14	Unconnected Impervious with Small D/S Pervious					0.0	0
15	Unconnected Impervious with Large D/S Pervious					0.0	0
	HSG Subtotals (Acres):	0.0	4.1	2.5	0.0	**Total Area:**	6.6
	HSG Subtotals (%):	0.0%	62.1%	37.9%	0.0%	**Total % Area:**	100.0%

Points Subtotal: **302**

Total Existing Site Points: **302**

Step 3 - Describe Proposed or Post-Developed Site Conditions

A. Specify Proposed Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals		Points
		HSG A	HSG B	HSG C	HSG D			
1	Wetlands and Undisturbed Stream Buffers					0.0		0
2	Lawn and Open Space		1.2	0.7		1.9		85
3	Brush and Shrub					0.0		0
4	Meadow, Pasture, Grassland, or Range					0.0		0
5	Row Crop					0.0		0
6	Small Grain and Legumes					0.0		0
7	Woods - Indigenous					0.0		0
8	Woods - Planted		0.1			0.1		7
9	Woods and Grass Combination					0.0		0
10	Ponds, Lakes, and Other Open Water					0.0		0
11	Gravel and Dirt					0.0		0
12	Porous and Permeable Paving		2.8	1.8		4.6		203
13	Directly Connected Impervious					0.0		0
14	Unconnected Impervious with Small D/S Pervious					0.0		0
15	Unconnected Impervious with Large D/S Pervious					0.0		0
	HSG Subtotals (Acres):	0.0	4.1	2.5	0.0	**Total Area:**		6.6
	HSG Subtotals (%):	0.0%	62.1%	37.9%	0.0%	**Total % Area:**		100.0%
						Points Subtotal:		**294**

B. Compare Proposed Impervious Coverage with Maximum Allowable Impervious Coverage:

Total Directly Connected Impervious Coverage =	0%	% of Site
Total Unconnected Impervious Coverage with Small D/S Pervious =	0%	% of Site
Total Unconnected Impervious Coverage with Large D/S Pervious =	0%	% of Site
Total Site Impervious Coverage =	0%	% of Site
Effective Site Impervious Coverage =	0%	% of Site
Specify Source of Maximum Allowable Impervious Coverage:	None	(None or Table)

Points Subtotal: 0

C. Compare Proposed Site Disturbance with Maximum Allowable Site Disturbance:

Total Proposed Site Disturbance =		% of Site
Maximum Allowable Site Disturbance by Municipal Ordinance =		% of Site

Points Subtotal: 0

D. Describe Proposed Runoff Conveyance System:

Total Length of Runoff Conveyance System =		Feet
Length of Vegetated Runoff Conveyance System =		Feet
% of Total Runoff Conveyance System That is Vegetated =	0%	

Points Subtotal: 0

E. Residential Lot Clustering:

Percent of Total Site Area that will be Clustered =		% of Site
Minimum Standard Lot Size as Per Zoning (Note: 1/2 Acre or Greater) =		Acres
Maximum Proposed Cluster Lot Size (Note:1/4 Acre or Less) =		Acres
Percent of Clustered Portion of Site to be Preserved as Vegetated Open Space =		% of Clustered Site Portion

Points Subtotal: 0

F. Will the Following be Utilized to Minimize Soil Compaction?

Proposed Lawn Areas will be Graded with Lightweight Construction Equipment:	No	(Yes or No)
Percent of Proposed Lawn Areas to be Graded with Such Equipment:	0%	% of Lawn Areas

Points Subtotal: 0

G. Are Any of the Following Stormwater Management Standards Met Using Only Nonstructural Strategies and Measures?

Groundwater Recharge Standards (NJAC 7:8-5.4-a-2):	No	(Yes or No)
Stormwater Runoff Quality Standards (NJAC 7:8-5.5):	No	(Yes or No)
Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3):	No	(Yes or No)

Points Subtotal: 0

Note: If the Answers to All Three Questions at G Above are "Yes", Adequate Nonstructural Measures have been Utilized.

Total Proposed Site Points: 294

Ratio of Proposed to Existing Site Points: 97%

Required Site Points Ratio: 90%

Nonstructural Point System Results: Proposed Nonstructural Measures are Adequate

Appendix F
Drainage Area Maps

BLOCK 1701
Lot 4.05

BLOCK 1701
Lot 3.01

BLOCK 1701
Lot 4.04

BLOCK 1701
Lot 6

BLOCK 1701
Lot 4.02

PUNIA BOULEVARD
(Private R.O.W.)

EXISTING PRIVATE R.O.W. EASEMENT

BOULEVARD & ACCESS EASEMENT

Boulevard & Access Easement Line per (DB5539-PG.172)

15.0' WIDE NEW JERSEY AMERICAN WATER EXCLUSIVE EASEMENT (MAP REF. #1)

15.0' WIDE NEW JERSEY AMERICAN WATER NON-EXCLUSIVE EASEMENT (MAP REF. #1)

STORM WATER BASIN EASEMENT LINE PER MAP REF. #4

STORM WATER BASIN EASEMENT LINE PER MAP REF. #4

25.0' WIDE SOUTH BRUNSWICK UTILITY EASEMENT (MAP REF. #4)

10.0' WIDE UTILITY EASEMENT (MAP REF. #4

15.0' WIDE UTILITY EASEMENT (MAP REF. #4

25' WIDE PSE&G UTILITY EASEMENT (EASEMENT #1 - DB6160-PG.522)

20' WIDE PSE&G UTILITY EASEMENT PER MAP REF. #4

S44° 28' 20"W 1,776.67'

TIME OF CONCENTRATION PATHWAY

NkrA

NkrA

NknB

24.40'

26.0'

28.17'

20.0'

25.0'

Rip Rap

SOLAR PANEL

EXISTING DRAINAGE AREA

OPEN SPACE, TYPE B = 0.841 AC.
OPEN SPACE, TYPE C = 1.085 AC.
WOODS-GRASS, TYPE B = 2.880 AC.
WOODS-GRASS, TYPE C = 1.394 AC.
WOODS, TYPE B = 0.443 AC.

TOTAL = 6.643 AC.

No.	Date	Revision	Revised By	Checked By

30 0 30 60
SCALE IN FEET

FPA
FRENCH & PARRELLO ASSOCIATES
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EXISTING DRAINAGE AREAS

FOR

PENN MEDICINE PRINCETON HEALTH

PUNIA BOULEVARD PARKING

BLOCK 1701, LOTS 3.01 & 4.04

TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
12-16-2022		1" = 30'	06028T.003
DRAWN BY:	CHECKED BY:	FIELD BOOK	SHEET:
SP	JBB		1 of 2

O:\CE\2006\06028t – Cancer Center\06028T.003 – Penn Medical Cancer Center\CADD\DWG\06028T – Temporary Parking Lot\06028T.003 – DA-TPL.dwg EXIST

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DUE TO INHERENT ERRORS IN REPRODUCTION METHODS, ERRORS MAY OCCUR WHEN SCALING THIS DRAWING

PROPOSED DRAINAGE AREA - WEST

MOTOR VEHICLE SURFACE = 2.107 AC.
IMPERVIOUS SURFACE (NON-MVS) = 0.027 AC.
OPEN SPACE, TYPE B = 0.223 AC.
OPEN SPACE, TYPE C = 0.373 AC.
TOTAL = 2.731 AC.

BLOCK 1701
Lot 4.05

BLOCK 1701
Lot 3.01

BLOCK 1701
Lot 4.02

BLOCK 1701
Lot 4.04
103,307.86 SF OR
2.371 AC.

BLOCK 1701
Lot 6

PUNIA BOULEVARD
(Private R.O.W.)

EXISTING PRIVATE R.O.W. EASEMENT

BOULEVARD & ACCESS EASEMENT

Boulevard & Access Easement Line per (DB6509-PG.172)

S45° 31' 39"E 805.20'

N44° 28' 20"E 480.62'

S44° 28' 20"W 1,776.67'

S46° 18' 00"W 480.86'

N45° 31' 39"W 789.87'

20' WIDE UTILITY EASEMENT (TYP.)

15' WIDE NEW JERSEY AMERICAN WATER EASEMENT (TYP.)

10' WIDE NEW JERSEY AMERICAN WATER NON-EXCLUSIVE EASEMENT (TYP.)

15.0' WIDE NEW JERSEY AMERICAN WATER EXCLUSIVE EASEMENT (MAP REF. #1)

ACCESS PORT, WHERE POSSIBLE, INSTALL PORT ON PARKING STRIP (TYP.)

POROUS PAVEMENT INSPECTION PORT (TYP.)

4" ADS PERFORATED UNDERDRAIN PIPE (TYP.)

6" ADS PERFORATED HEADER PIPE (TYP.)

10' WIDE PSE&G UTILITY EASEMENT (TYP.)

EAST PERVIOUS PAVEMENT; SEE CONSTRUCTION DETAILS FOR LAYOUT AND CROSS SECTIONS

WEST PERVIOUS PAVEMENT; SEE CONSTRUCTION DETAILS FOR LAYOUT AND CROSS SECTIONS

WEST CULTEC CHAMBER LAYOUT (SEE DETAIL)

EAST CULTEC CHAMBER LAYOUT (SEE DETAIL)

WEST UTILITY DRAINAGE STRUCTURE

MANHOLE #W-13
GR: 84.00
INV. IN: 75.39 (15")
INV. OUT: 75.39

194 LF 15" ADS @ 0.50%

200 LF 15" ADS @ 0.50%

10 LF 36" ADS @ 0.00%

INLET # W-1 (B) GR: 84.67

INLET # W-2 (E) GR: 85.20

INLET # W-3 (B) GR: 84.65

INLET # W-4 (B) GR: 83.55

INLET # W-5 (E) GR: 83.54

INLET # W-6 (B) GR: 83.53

INLET # W-8 (B) GR: 82.90 INV. OUT: 78.55

INLET # W-9 (B) GR: 82.65 INV. IN: 78.38 (15") INV. OUT: 78.38

INLET # W-7 (B) GR: 82.63

INLET # W-10 (B) GR: 82.63 INV. IN: 77.41 (15") INV. OUT: 77.41

INLET # W-11 (B) GR: 82.91 INV. IN: 77.25 (15") INV. OUT: 77.25

INLET # E-1 (E) GR: 82.36

INLET # E-2 (E) GR: 81.52

INLET # E-3 (B) GR: 80.81

INLET # E-7 (B) GR: 80.77

INLET # E-8 (B) GR: 80.00

INLET # E-9 (B) GR: 79.15 INV. OUT: 74.32

INLET # E-10 (B) GR: 78.87

SUMP INLET # E-5 (B) GR: 80.88

SUMP INLET # E-6 (B) GR: 80.41

EX MH #W-14 RIM: 79.16 INV IN: 74.00(15")

EX MH # E-11 RIM: 78.97 INV IN: 72.82(24")

MANHOLE #E-10 GR: 79.00 INV. IN: 74.32 (36") INV. OUT: 74.32

10 LF 36" ADS @ 0.00%

STORMWATER BASIN EASEMENT (TYP.)

STORM WATER BASIN EASEMENT LINE PER MAP REF. #4

25' WIDE SOUTH BRUNSWICK UTILITY EASEMENT (TYP.)

10' WIDE UTILITY EASEMENT (TYP.)

10.0' WIDE UTILITY EASEMENT (MAP REF. #4)

25' WIDE WATER EASEMENT (EASEMENT #1 - DB6160-PG.522)

EMERGENCY CALL BOX

SOLAR PANEL

NkrA

NkrB

PROPOSED DRAINAGE AREA - EAST

MOTOR VEHICLE SURFACE = 2.480 AC.
IMPERVIOUS SURFACE (NON-MVS) = 0.040 AC.
OPEN SPACE, TYPE B = 1.006 AC.
OPEN SPACE, TYPE C = 0.275 AC.
WOODS, TYPE B = 0.112 AC.
TOTAL = 3.913 AC.

No.	Date	Revision	Revised By	Checked By

SCALE IN FEET: 30 0 30 60

FPA FRENCH & PARRELLO ASSOCIATES
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

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PROPOSED DRAINAGE AREAS

FOR

PENN MEDICINE PRINCETON HEALTH

PUNIA BOULEVARD PARKING

BLOCK 1701, LOTS 3.01 & 4.04

TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
12-16-2022		1" = 30'	06C028T.003
DRAWN BY:	CHECKED BY:	FIELD BOOK	SHEET:
SP	JBB		2 of 2

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O:\CE\2006\06C028T – Cancer Center\06C028T.003 – Penn Medical Cancer Center\CADD\DWG\06C028T – Temporary Parking Lot\06C028T.003 – DA-TPL.dwg P–DA

P23-03 DRC 05/18/23

FRENCH & PARRELLO ASSOCIATES

ENGINEERING AND CONSULTING **SINCE 1974**

STORMWATER MANAGEMENT REPORT

For

Penn Medicine Princeton Health

Cancer Center Parking Garage

Block 1701, Lot 3.01
Township of Plainsboro
Middlesex County, New Jersey

Prepared For:

Princeton HealthCare System
A New Jersey Nonprofit Corporation
d/b/a Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536

_____

Andrew L. French
Professional Engineer, NJ License No # 42894

April 14, 2023| FPA No. 06C028T.003
1800 Route 34, Suite 101, Wall Township, NJ 07719

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1.0 INTRODUCTION

Penn Medicine Princeton HealthCare System is developing a plan for a new cancer center as part of the second phase of development of the HMOC site. It has been decided to separate the second phase into two site plan applications, one to address the new parking structure and one to address the new cancer center. The purpose of separating the overall project into two site plan applications is to allow the construction sequencing of the parking garage first and then the Cancer Center to minimize the impact on the existing operation of the HMOC.

As part of this site plan application, the applicant/owner Princeton Healthcare System, a New Jersey nonprofit corporation, d/b/a Penn Medicine Princeton Health, is proposing to construct a new Parking Garage on the hospital site known as Block 1701, Lot 3.01 in Plainsboro, New Jersey. The project proposes the construction of a new six (6) level Parking Garage with approximately 1,161 parking stalls and other site improvements, such as sidewalks, landscaping, lighting, and stormwater management facilities.

This report contains the stormwater management calculations demonstrating compliance with the requirements of the Stormwater Management Rules at N.J.A.C. 7:8 for the proposed Parking Garage Lot 3.01 in the Township of Plainsboro, Middlesex County, New Jersey.

2.0 BASIS OF ENGINEERING ANALYSIS

The stormwater management systems, including collection and conveyance structures, groundwater recharge, water quality, and detention measures (BMP'S) have been designed in accordance with the provisions outlined in N.J.A.C. 7:8 New Jersey Stormwater Management Rules and the Plainsboro Township Stormwater Management Ordinance. The New Jersey Best Management Practices Manual dated April 2004 and last updated March 2021 was used for technical guidance to comply with the above regulations.

The soils map located in Appendix A, published by Natural Resources Conservation Service Web Soil Survey, National Cooperative Soil Survey, was used to obtain the required soil information for the project, including soil types and hydrologic soil groups. A subsurface soil assessment was performed to obtain site specific information to determine the seasonal high water table and on-site soil permeability conditions; see Appendix A for supporting documentation.

The calculation of the stormwater runoff rates and volumes were performed utilizing the procedures outlined in the New Jersey Best Management Practices Manual. The PondPack Connect Edition Update 2 Computer Program developed by the Haested Methods was used to generate the runoff hydrographs and hydrologic model for project site. Peak discharges, run-off volumes, and hydrographs were computed for the 2, 10, 25, and 100-year storm events utilizing the USDA Natural Resources Conservation Service (NRCS) methodology, as found in the NRCS National Engineering Handbook, Part 630-Hydrology. The NOAA Type D, 24-hour rainfall distribution, and 24-hour rainfall frequency data for

Middlesex County, New Jersey published in August 2012 by NRCS were used in the computations. Runoff calculations and precipitation losses were calculated using the NRCS Curve Numbers (CNs), based upon the present and proposed watershed conditions. Times of Concentration (TC) were based upon estimates of overland, shallow concentrated, and open channel flow utilizing methods presented in Chapter 15 of the NEH, Part 630-Hydrology.

The rainfall distribution for the NJDEP Water Quality Design Storm (1.25 inches of rain falling nonuniformly in a 2-hour storm event), as shown on Table 5-2 of the New Jersey Stormwater Best Management Practices Manual was used to compute the peak runoff rate and runoff volume for this storm.

3.0 EXISTING CONDITIONS

The subject property consists of 49.4 acres and is located in the Township of Plainsboro, Middlesex County, New Jersey. The property is known as Block 1701, Lot 3.01. The site currently contains a hospital and parking lots. The property fronts on Plainsboro Rd to the south. Existing parking lots are adjacent to the property across Hospital Drive to the north. Stormwater currently drains to an existing wet pond to the south of the site. The wet pond was designed under the previous stormwater rules to manage the stormwater runoff quantity reductions for the maximum development of the hospital property. Stormwater drains from the proposed garage area to two locations, POA-A and POA-B before draining through a pipe network to the wet pond.

The existing conditions were previously approved for reductions in peak runoff rates in accordance with N.J.A.C. 7:8 New Jersey Stormwater Management Rules. The proposed development increases the impervious area in POA-A and decreases the area for POA-B. The required peak runoff reductions were applied to POA-A for the increase in impervious area. The total existing peak runoff is presented in Table 3.1 Column B. The portion of peak runoff to be reduced is the existing peak runoff from the proposed building footprint and presented in Table 3.1 Column C. The Reduction required (Column D) is only applied to the portion of peak runoff from the area of the proposed building (Column C).

The following table summarizes the existing conditions, peak runoff rates and establishes the allowable proposed conditions peak runoff rates in accordance with N.J.A.C. 7:8 New Jersey Stormwater Management Rules. The formula describes how the allowable peak runoff rates were calculated to incorporate areas with and without required reductions. Detailed calculations are presented in Appendix B of this report.

Allowable Proposed Conditions Runoff	=	Portion of Existing Peak Runoff with no Required Reduction	+	Portion of Existing Peak Runoff with Required Reduction	*	Required Reduction per Storm event
F	=	E	+	C	*	D

Table 3.1

Summary of Present Conditions Peak Runoff Rates POA-A					
A	**B**	**C**	**D**	**E**	**F**
Storm Frequency	**Total Existing Peak Runoff (cfs)**	**Portion of Peak Runoff to be Reduced**	**Required Reduction**	**Portion of Peak runoff with no required reduction**	**Allowable Proposed Conditions Runoff (cfs)**
2-Year	10.10	0.34	50%	10.10-0.34=9.76	9.76+(0.50*0.34) = **9.93**
10-Year	16.41	0.88	75%	16.41-0.88=15.53	15.53+(0.75*0.88) = **16.19**
25-Year	20.97	---	---	**---**	**20.97**
100-Year	29.47	2.14	80%	29.47-2.14=27.33	27.33+ (0.80*2.14) = **29.04**

Table 3.2

Summary of Present Conditions Peak Runoff Rates POA-B			
Storm Frequency	**Peak Runoff (cfs)**	**Existing Volume of Runoff (ft^3)**	**Allowable Proposed Conditions Runoff (cfs)**
2-Year	3.63	13,344	3.63
10-Year	6.15	22,609	6.15
25-Year	7.99	29,435	7.99
100-Year	11.45	42,346	11.45

4.0 PROPOSED CONDITIONS

The applicant is proposing to construct a new Cancer Center and Parking Garage. Both the new Cancer Center and Parking Garage are located on Block 1701, Lot 3.01 in Plainsboro, New Jersey. The garage project proposes the construction of a new six (6) level Parking Garage with approximately 1,161 parking stalls and other site improvements, such as sidewalks, landscaping, lighting, and stormwater management facilities. The garage is not needed without the Cancer Center; therefore, both the Cancer

Center and Parking Garage are considered as one project. Two reports have been provided as two site plan applications will be filed to allow for phasing of the project to commence the parking garage construction first.

The existing impervious cover on the Hospital (HMOC) site is 56.21% or 27.78 acres. The proposed Cancer Center and parking garage project will result in a total impervious cover of 57.90% or 28.612 acres. There is an increase of 0.842 acres in impervious cover. This increase consists of 0.468 acres of impervious for the garage and 0.365 acres of impervious for the cancer center.

However, there is a decrease in motor vehicle surfaces for the overall project of the Cancer Center and Parking Garage, which are generating total suspended solids, because much of the existing parking lot will be converted to the Cancer Center building. The decrease in motor vehicle surface is 0.473 ac (20,604 sf). The parking garage project results in an increase of impervious surface of 20,386 sf. The parking garage top deck will be open and therefore, there will be an increase of 19,820 sf of motor vehicle surfaces. The proposed Cancer Center and Parking Garage shall result in an increase of total impervious of 36,242 sf. However, there will be a decrease in motor vehicle surface of 20,604 sf for the overall project.

If for some unforeseen reason, the parking garage should be constructed and the Cancer Center project does not proceed, then then Hospital will remove 19,820 sf of existing parking area on Lot P4 so that there will not be any increase in motor vehicle surfaces. Therefore, water quality treatment will not be required, even if the Cancer Center project does not proceed.

The proposed stormwater management facilities for the Parking Garage consist of a pervious pavement system with underground storage areas to address the water quantity aspect of the rules. The pervious pavement system includes an underground storage area with 18-inch ADS perforated piping (and associated underdrains) to handle the control and reductions of the 2, 10, and 100-year storm events.

5.0 COMPLIANCE

5.1 Groundwater Recharge

N.J.A.C. 7:8 New Jersey Stormwater Management Rules requires that the proposed project maintain the present conditions average annual groundwater recharge volume for the project site. The project site for the parking garage is currently used as a parking lot.

Throughout the property we performed seventeen (17) soil logs to at least 15 feet below the surface to assess the subsurface soil conditions, estimate the seasonal high water table and perform soil percolation testing of the surface soils. The results of the soil logs were consistent with the subsurface soil conditions on the surrounding properties, which included mostly silty clay loam. Based on the soil logs, seasonal high-water table was not encountered in any of the soil excavations.

5.2 Water Quality

Since there is a decrease in motor vehicle surface area, water quality treatment is not required as per NJAC 7:8-5.5(a):

This section contains the minimum design and performance standards to control stormwater runoff quality impacts of major development. Stormwater runoff quality standards are applicable when the major development results in an increase of one quarter acre or more of regulated motor vehicle surface.

5.3 Water Quantity

The governing regulations require that the proposed peak runoff rates for the 2-year, 10-year, and 100-year storm events from the proposed development be reduced to 50, 75, and 80 percent, respectively, of the projects present conditions peak runoff rates for the same storms. This applies to the increased impervious cover for this portion of the parking garage project which is 0.52 acres. The proposed stormwater management facilities consist of pervious pavement system with underground storage areas for the parking areas. The pervious pavement system includes an underground storage area with 18-inch ADS perforated piping (and associated underdrains) to manage the control and reductions of the 2, 10, and 100-year storm events.

The proposed pervious pavement systems are approved Green Infrastructure BMPs that have been designed to meet the peak runoff reductions of N.J.A.C. 7:8 New Jersey Stormwater Management Rules. The basin routing summary and the overall peak runoff rate reductions for the site are shown in the following tables:

Table 5.1

Pervious Pavement Routing Summary			
Storm Frequency	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**	**Maximum Water Surface Elevation (ft)**
2-Year Storm	2.70	1.11	81.99
10-Year Storm	4.81	3.47	82.32
25-Year Storm	6.21	5.03	82.48
100-Year Storm	8.66	7.41	82.69

Table 5.2

Comparison of Present Conditions vs. Proposed Conditions Peak Runoff Rates POA-A			
Storm Frequency	**Maximum Allowable Proposed Conditions Peak Runoff Rate (From Table 3.1) (cfs)**	**Estimated Proposed Conditions Peak Runoff Rate* (cfs)**	
2-Year Storm	9.93	7.70	OK
10-Year Storm	16.19	14.13	OK
25-Year Storm	20.97	18.96	OK
100-Year Storm	29.04	27.13	OK

Table 5.3

Comparison of Present Conditions vs. Proposed Conditions Peak Runoff Rates POA-B					
Storm Frequency	**Maximum Allowable Proposed Conditions Peak Runoff Rate (From Table 3.1) (cfs)**	**Estimated Proposed Conditions Peak Runoff Rate* (cfs)**	**Existing Volume of Runoff (From Table 3.1) (ft^3)**	**Estimated Proposed Volume of Runoff (ft^3)**	
2-Year Storm	3.63	3.55	13,344	12,759	OK
10-Year Storm	6.15	6.01	22,609	21,532	OK
25-Year Storm	7.99	7.81	29,435	27,973	OK
100-Year Storm	11.45	11.19	42,346	40,123	OK

Detailed computations are presented in Appendix C of this report.

*Addition is with respect to time.

Because N.J.A.C. 7:8 New Jersey Stormwater Management Rules require that runoff from TSS generating surfaces be pretreated to 80% prior to discharging into an underground basin, a manufactured treatment device will be provided. An Up-Flo filter will treat the runoff from approximately half of the garage prior to being discharged to the underground pipes. Furthermore, a First Defense Optimum filter (a 50% treatment device) will be provided for the other half of the garage, prior to discharging to an existing drainage system.

Since pervious pavement with underground pipes is being utilized for water quantity compliance, it was designed in accordance with the BMP requirements to qualify as green infrastructure. Therefore, the pervious pavement systems are being provided to include 8-inch-thick stone below the pavement with

underdrains to handle and treat the entire water quality storm. Therefore, this BMP complies with the Green Infrastructure (GI) requirements of N.J.A.C. 7:8 New Jersey Stormwater Management Rules. The following provides a summary of the stone thickness required to contain the water quality storm volume below the pervious pavement:

Table 5.4

Water Quality Calculations Summary					
Pervious Pavement Area (SF)	**Stone Void Space**	**Void Area (SF)**	**Thickness Required***		**Thickness Provided (in)**
			ft	**in**	
28,763 *(0.66 ac.)*	40%	11,505 *(0.264 ac.)*	0.22	2.6	8

*Detailed computations are presented in Appendix D of this report.

5.4 Delaware and Raritan Canal Commission

This project is located within the Delaware and Raritan Canal Commission (DRCC) jurisdiction area. It is located in Review Zone B. The DRCC regulations, NJAC 7:45-8.5, have the same requirements as N.J.A.C. 7:8 for water quantity and recharge. For water quality, N.J.A.C. 7:45-8.5 requires that the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm be reduced by 80% of the anticipated load from the developed site, expressed as an annual average. This requirement differs from N.J.A.C. 7:8 in that the 80% TSS reduction is applicable to the impervious for the development, not just the increase in motor vehicle surfaces. The increase in total impervious area for the Parking Garage is 0.469 ac. However, the DRCC regulations allow the use of the wet pond for stormwater management for both the volume and water quality. The wet pond was designed to treat and reduce the runoff from the maximum site development of 60%. The proposed impervious with both the Cancer Center and Parking Garage is 57.927%. Therefore, water quantity reductions and water quality treatment requirements are met by the existing wet pond.

The DRCC requires that the nonstructural stormwater management strategies be incorporated into the site design. A Nonstructural Stormwater Strategies Point System (NSPS) worksheet can be provided to demonstrate compliance. The NSPS worksheet can be found in Appendix E.

5.5 Soil Erosion and Sediment Control

The project proposes to discharge into the existing wet pond to the south. The existing system discharges to the wet pond via two pipes that each outfall into separate riprap aprons. Therefore, per The Standards for Soil Erosion and Sediment Control in New Jersey, 7th Edition, January 2014, Revised July 2017; Chapter 21: Standard for Off-Site Stability, off-site stability conditions are stable due to the stormwater discharging into a stable conveyance pipe.

6.0 CONCLUSION

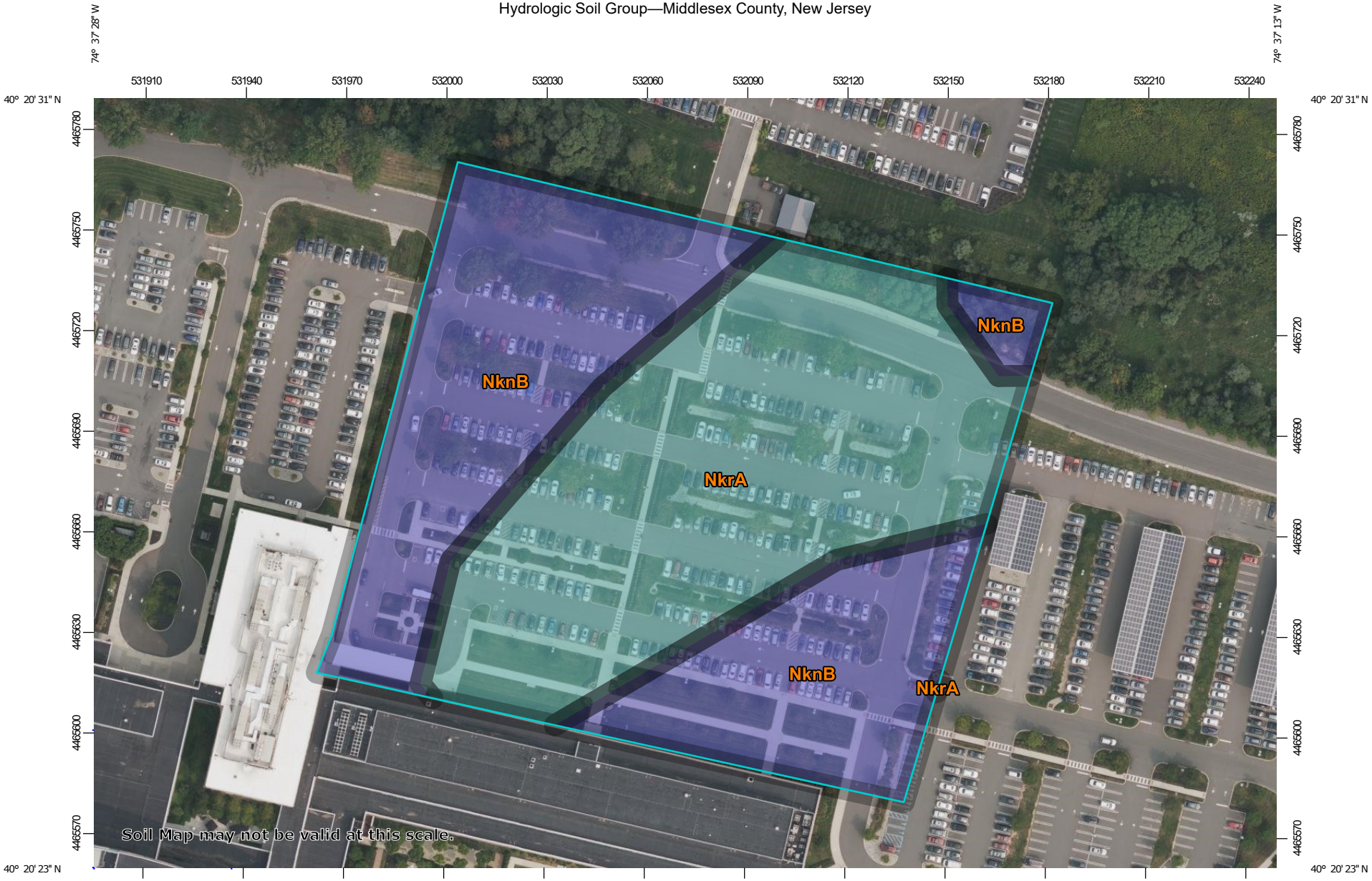
The proposed Parking Garage on Lot 3.01 has been designed with pervious pavement system include underground storage area to comply with the Township Stormwater Management requirements, which for this project include stormwater quantity reductions only using Green Infrastructure (GI) elements.

Based upon the calculations present in this report, the proposed stormwater management system meets the requirements of the N.J.A.C. 7:8 - New Jersey Stormwater Management Rules, the Plainsboro Township Stormwater Management Ordinance and the DRCC.

Appendix A
Supporting Documents

P23-03 DRC 05/18/23

Hydrologic Soil Group—Middlesex County, New Jersey



Map Scale: 1:1,620 if printed on A landscape (11" x 8.5") 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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Middlesex County, New Jersey
Survey Area Data: Version 18, Aug 30, 2022

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

Date(s) aerial images were photographed: Sep 6, 2020—Sep 21, 2020

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
NknB	Nixon loam, 2 to 5 percent slopes	B	3.5	49.8%
NkrA	Nixon moderately well drained variant loam, 0 to 2 percent slopes	C	3.5	50.2%
Totals for Area of Interest			**7.0**	**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

NEW JERSEY 24 HOUR RAINFALL FREQUENCY DATA

Rainfall amounts in Inches

County	1 year	2 year	5 year	10 year	25 year	50 year	100 year
Atlantic	2.72	3.31	4.30	5.16	6.46	7.61	8.90
Bergen	2.75	3.34	4.27	5.07	6.28	7.32	8.47
Burlington	2.77	3.36	4.34	5.18	6.45	7.56	8.81
Camden	2.73	3.31	4.25	5.06	6.28	7.34	8.52
Cape May	2.67	3.25	4.22	5.07	6.34	7.47	8.73
Cumberland	2.69	3.27	4.25	5.09	6.37	7.49	8.76
Essex	2.85	3.44	4.40	5.22	6.44	7.49	8.66
Gloucester	2.71	3.29	4.24	5.05	6.29	7.36	8.55
Hudson	2.73	3.31	4.23	5.02	6.19	7.20	8.31
Hunterdon	2.80	3.38	4.26	5.00	6.09	7.02	8.03
Mercer	2.74	3.31	4.23	5.01	6.19	7.20	8.33
Middlesex	2.76	3.35	4.30	5.12	6.36	7.43	8.63
Monmouth	2.79	3.38	4.38	5.23	6.53	7.66	8.94
Morris	2.94	3.54	4.47	5.24	6.37	7.32	8.35
Ocean	2.81	3.42	4.45	5.33	6.68	7.87	9.20
Passaic	2.87	3.47	4.42	5.23	6.43	7.47	8.62
Salem	2.69	3.26	4.20	5.00	6.22	7.28	8.45
Somerset	2.76	3.34	4.25	5.01	6.15	7.13	8.21
Sussex	2.68	3.22	4.02	4.70	5.72	6.60	7.58
Union	2.80	3.39	4.35	5.17	6.42	7.49	8.69
Warren	2.78	3.34	4.18	4.89	5.93	6.83	7.82

Notes: The average point rainfall amounts listed above were developed from data contained in NOAA Atlas 14 Volume 2.

Point rainfall estimates for specific locations may be obtained from the Precipitation Frequency Data Server located at http://www.nws.noaa.gov/ohd/hdsc/

For most hydrologic design procedures, the rainfall amounts listed above may be rounded to the nearest tenth of an inch.

Appendix A
Soils Testing Data

LEGEND:

- 2021 TEST BORING LOCATION
- 2022 TEST BORING LOCATION

No.	Date	Revision	Revised By	Checked By

60 0 60 120
SCALE IN FEET

FRENCH & PARRELLO ASSOCIATES
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1800 Route 34, Suite 101
Wall, New Jersey 07719
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FPAengineers.com
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

TEST BORING LOCATION PLAN

FOR

PENN MEDICINE

CANCER CENTER Parking Garage

BLOCK 1701, LOTS 1, 2 & 3

TAX MAP SHEET NO. 17

TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
8/19/22	MC	1" = 60'	06C028T.003
DRAWN BY:	CHECKED BY:	FIELD BOOK	DRAWING NO.
RDK	ALF		2

O:\CE\2006\06C028T - CANCER CENTER\06C028T.002 - PENN MED. CANCER - CONSULTANT\CADD\DWG\GEOTECHNICAL\06C028T.002 - TEST BORING LOCATION PLAN 2022.DWG (OVERALL)

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DUE TO INHERENT ERRORS IN REPRODUCTION METHODS, ERRORS MAY OCCUR WHEN SCALING THIS DRAWING

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY (FPA NO. 06C028T.002)

BORING NO.: B-1
SHEET 1 OF 1

DATE STARTED: 2/26/2021
DATE FINISHED: 2/26/2021
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +92'±
GROUND WATER ELEV.: NA

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL	
	S-1 0-2'	X – 4 – 5 – 5		S-1	TOP 5": Asphalt Pavement. BOT 19": Brown **Clayey SILT**, some mf Sand, little^{+} mf Gravel.
	S-2 2-4'	7 – 10 – 12 – 18		S-2	Red-Brown **Clayey SILT**, and cmf Sand, little mf Gravel.
--- 5'---	S-3 4-6'	13 – 11 – 14 – 16		S-3	Light Tan-Brown cm^{+}f **SAND**, little Silt.
	S-4 6-8'	4 – 5 – 9 – 12		S-4	Light Tan-Brown m^{+}f **SAND**, little Silt.
	S-5 8-10'	50 – 50/3" – X – X		S-5	Same as **S4**.
---10'---	S-6 10-12'	50/3" – X – X – X		S-6	Light Tan-Brown mf **SAND**, little Silt. (Completely decomposed Sandstone)
---15'---	S-7 15-17'	50/3" – X – X – X		S-7	Same as **S-6**.
---20'---	S-8 20-22'	50/3" – X – X – X		S-8	Same as **S-6**.
---25'---					END OF BORING @ 20.3'
---30'---					
---35'---					

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: A. LARUSSO

CONTRACTOR: CRAIG TEST BORING
DRILLER: M. KEIR

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY (FPA NO. 06C028T.002)

BORING NO.: B-2
SHEET 1 OF 1

DATE STARTED: 2/26/2021
DATE FINISHED: 2/26/2021
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +93'±
GROUND WATER ELEV.: NA

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL	
	S-1 0-2'	X – 7 – 3 – 5		S-1	TOP 5": Asphalt Pavement. BOT 19": Red-Brown **Clayey SILT**, little mf Sand.
	S-2 2-4'	5 – 7 – 8 – 10		S-2	Light Tan-Brown cm^{+}f **SAND**, little Silt.
--- 5'---	S-3 4-6'	10 – 10 – 16 – 21		S-3	Same as **S-2**.
	S-4 6-8'	6 – 6 – 7 – 12		S-4	Light Tan-Brown cmf **SAND**, little Silt.
	S-5	33 – 32 – 50/3" – X		S-5	Light Tan-Brown c^{+}mf **SAND**, some mf Gravel, little Sit.
---10'---	8-10'				
	S-6 10-12'	50/4" – X – X – X		S-6	Light Tan-Brown mf **SAND**, little Silt. (Completely decomposed SANDSTONE)
---15'---					
	S-7 15-17'	50/3" – X – X – X		S-7	Light Tan-Brown c^{+}mf **SAND**, little Silt. (Completely decomposed SANDSTONE)
---20'---					
	S-8 20-22'	50/3" – X – X – X		S-8	Same as **S-7**.
---25'---					END OF BORING @ 20.3'
---30'---					
---35'---					

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: A. LARUSSO

CONTRACTOR: CRAIG TEST BORING
DRILLER: M. KEIR

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY (FPA NO. 06C028T.002)

BORING NO.: B-3
SHEET 1 OF 1

DATE STARTED: 2/26/2021
DATE FINISHED: 2/26/2021
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +90'±
GROUND WATER ELEV.: NA

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL	
	S-1 0-2'	X – 5 – 5 – 5		S-1	TOP 5": Asphalt Pavement. BOT 19": Tan-Brown cmf **SAND**, little⁺ cmf Gravel, little Silt.
	S-2 2-4'	4 – 5 – 12 – 13		S-2	Red-Brown cm⁺f **SAND**, and cmf Gravel, little Clayey Silt.
--- 5'---	S-3 4-6'	8 – 13 – 15 – 14		S-3	Light Tan-Brown c⁺mf **SAND**, little Silt.
	S-4 6-8'	4 – 8 – 8 – 13		S-4	Brown **Clayey SILT**, some⁺ cmf Sand, trace f Gravel.
---10'---	S-5 8-10'	17 – 20 – 18 – 24		S-5	Light Tan-Brown c⁺mf **SAND**, little Silt, trace f Gravel.
---15'---	S-6 10-12'	12 – 10 – 13 – 20		S-6	Same as **S-5**.
---20'---	S-7 15-17'	50/3" – X – X – X		S-7	Red-Brown mf⁺ **SAND**, some Clayey Silt, little f Gravel. (Completely decomposed SANDSTONE)
---25'---	S-8 20-22'	50/2" – X – X – X		S-8	No recovery.
---30'---					END OF BORING @ 20.2'
---35'---					

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: A. LARUSSO

CONTRACTOR: CRAIG TEST BORING
DRILLER: M. KEIR

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY (FPA NO. 06C028T.002)

BORING NO.: B-4
SHEET 1 OF 1

DATE STARTED: 2/26/2021
DATE FINISHED: 2/26/2021
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +88'±
GROUND WATER ELEV.: NA

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL	
	S-1 0-2'	X – 11 – 7 – 8		S-1	TOP 5": Asphalt Pavement. BOT 19": Grey-Brown cmf **SAND**, some^{+} cmf Gravel, little Silt.
	S-2 2-4'	8 – 8 – 8 – 9		S-2	Red-Brown **Clayey SILT**, some^{+} cmf Sand, trace f Gravel.
--- 5'---	S-3 4-6'	7 – 12 – 12 – 11		S-3	Red-Brown cm^{+}f **SAND**, little Silt.
	S-4 6-8'	12 – 12 – 23 – 23		S-4	Brown-Light Brown cmf **SAND**, little Clayey Silt.
---10'---	S-5 8-10'	20 – 20 – 20 – 20		S-5	TOP 18": Light Tan-Brown cmf **SAND**, little Silt. BOT 6": Red-Brown **Clayey SILT**, and mf Sand, some mf Gravel.
---15'---	S-6 10-12'	12 – 19 – 17 – 50/3"		S-6	Red-Brown cmf **SAND**, and^{+} cmf Gravel, little^{+} Clayey Silt.
---20'---	S-7 15-17'	32 – 40 - 50/2" – X		S-7	Red-Brown mf **SAND**, and^{+} cmf Gravel, little^{+} Clayey Silt. (Completely decomposed SANDSTONE)
	S-8 20-22'	26 – 16 – 50/3" – X		S-8	Red-Brown mf **SAND**, little^{+} Silt. (Completely decomposed SANDSTONE)
---25'---					END OF BORING @ 21.3'
---30'---					
---35'---					

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: A. LARUSSO

CONTRACTOR: CRAIG TEST BORING
DRILLER: M. KEIR

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY (FPA NO. 06C028T.002)

BORING NO.: B-5
SHEET 1 OF 1

DATE STARTED: 2/26/2021
DATE FINISHED: 2/26/2021
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +90'±
GROUND WATER ELEV.: NA

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL	
	S-1 0-2'	X – 4 – 5 – 5		S-1	TOP 5": Asphalt Pavement. BOT 19": Brown c⁺mf **SAND**, little⁺ mf Gravel, little Silt.
	S-2 2-4'	5 – 6 – 6 – 6		S-2	Light Tan-Brown mf **SAND**, little Silt.
--- 5'---	S-3 4-6'	10 – 10 – 10 – 11		S-3	Light Tan-Brown mf **SAND**, little⁺ Silt.
	S-4 6-8'	13 – 13 – 16 – 20		S-4	Light Tan-Brown cm⁺f **SAND**, little⁺ Silt.
---10'---	S-5 8-10'	5 – 10 – 13 – 13		S-5	Same as **S-4**.
	S-6 10-12'	16 – 50/3" – X – X		S-6	Light Tan-Brown c⁺mf **SAND**, trace Silt. (Completely decomposed SANDSTONE)
---15'---	S-7 15-17'	41 – 37 – 35 – 50/1"		S-7	Light Tan-Brown mf **SAND**, little Silt. (Completely decomposed SANDSTONE)
---20'---	S-8 20-22'	35 – 60 – 50/2" – X		S-8	Light Tan-Brown c⁺mf **SAND**, trace Silt. (Completely decomposed SANDSTONE)
---25'---					END OF BORING @ 21.2'
---30'---					
---35'---					

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: A. LARUSSO

CONTRACTOR: CRAIG TEST BORING
DRILLER: M. KEIR

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-11
SHEET 1 OF 1

DATE STARTED: 8/10/2022
DATE FINISHED: 8/10/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +93'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	18 – 7 – 5 – 5		S-1 TOP 8": **Asphalt**. BOT 16": Tan & Orange-Brown mf **SAND**, little⁺ Silt.
	S-2 2-4'	5 – 3 – 5 – 6		S-2 Light Tan mf **SAND**, little⁺ Silt.
--- 5'---	S-3 4-6'	9 – 10 – 11 – 10		S-3 Same as **S-2**.
	S-4 6-8'	12 – 11 – 10 – 10		S-4 Light Tan & Orange-Brown mf **SAND**, little⁺ Silt.
---10'---	S-5 8-10'	10 – 15 – 15 – 11		S-5 Dark Red-Brown **SILT**, little cmf Gravel, little f Sand.
---15'---	S-6 10-12'	20 – 18 – 18 – 19		S-6 Same as **S-5**.
	S-7 15-17'	32 – 35 – 63 – 95		S-7 Dark Red-Brown cmf **GRAVEL**, some⁺ Silt, little f Sand.
---20'---	S-8 20-22'	50/0" – X – X – X		S-8 Same as **S-7**.
---25'---	S-9 25-27'	50/1" – X – X – X		S-9 Red-Brown highly weathered **SANDSTONE**. *Very Low Recovery*
---30'---				END OF BORING @ 25'1"
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: M. MILGROM

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

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P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-12
SHEET 1 OF 1

DATE STARTED: 8/10/2022
DATE FINISHED: 8/10/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +92'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL	
	S-1 0-2'	19 – 6 – 3 – 5		S-1	TOP 6": **Asphalt**. BOT 18": Brown mf **SAND**, little Silt.
	S-2 2-4'	7 – 6 – 5 – 5		S-2.	Dark Red-Brown **Clayey SILT**, little cmf Gravel, little f Sand.
--- 5'---	S-3 4-6'	7 – 9 – 19 – 19		S-3	Light Tan mf **SAND**, little Silt.
	S-4 6-8'	29 – 25 – 21 – 35		S-4	Same as **S-3**.
	S-5	38 – 57 – 100/5" – X		S-5	Orange-Brown mf **SAND**, little Silt.
---10'---	8-10'				
	S-6 10-12'	100 – 50/1" – X – X		S-6	Light Tan mf **SAN**D, little Silt.
---15'---					
	S-7 15-17'	50/1" – X – X – X		S-7	Tan highly weathered, fractured **SANDSTONE**.
---20'---					
	RUN-18 18-23'	REC.: 100% RQD: 73%		RUN-1	Tan moderately weathered, medium fractured **SANDSTONE**.
---25'---					END OF BORING @ 23'
---30'---					
---35'---					

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: M. MILGROM

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-13
SHEET 1 OF 1

DATE STARTED: 8/10/2022
DATE FINISHED: 8/10/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +92'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	23 – 5 – 3 – 3		S-1 TOP 6": **Asphalt**. BOT 18": Brown mf **SAND**, some Silt.
	S-2 2-4'	6 – 7 – 15 – 13		S-2 Red-Brown mf **SAND**, little⁺ Silt.
--- 5'---	S-3 4-6'	12 – 5 – 5 – 6		S-3 Tan-Brown mf **SAND**, little⁺ Silt.
	S-4 6-8'	7 – 7 – 6 – 10		S-4 Same as **S-3**.
	S-5 8-10'	13 – 18 – 19 – 18		S-5 Tan mf **SAND**, little⁺ Silt.
---10'---	S-6 10-12'	19 – 19 – 24 – 30		S-6 Tan & Orange-Brown mf **SAND**, some Silt.
---15'---	S-7 15-17'	21 – 26 – 25 – 22		S-7 Dark Red-Brown cmf **GRAVEL**, some Silt, little f Sand.
---20'---	S-8 20-22'	32 – 100 – X – X		S-8 Dark Red-Brown **SILT**, some cmf Gravel, little f Sand.
---25'---	S-9 25-27'	50/1" – X – X – X		S-9 Tan highly weathered **SANDSTONE**.
				END OF BORING @ 25.1'
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: M. MILGROM

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

~~P23-03 DRC 05/18/23~~

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-14
SHEET 1 OF 1

DATE STARTED: 8/9/2022
DATE FINISHED: 8/9/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +91'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 16 – 5 – 4		S-1 TOP 6": **Asphalt**. MID 6": Grey cmf **GRAVEL**, some cmf Sand, little Silt.
	S-2 2-4'	4 – 4 – 7 – 7		BOT 12": Brown **Clayey SILT**, little f Sand. S-2 Tan cmf **SAND**, little Silt.
--- 5'---	S-3 4-6'	11 – 8 – 8 – 4		S-3 Same as **S-2**.
	S-4 6-8'	6 – 4 – 5 – 4		S-4 Orange-Brown mf **SAND**, little Silt.
---10'---	S-5 8-10'	6 – 15 – 18 – 32		S-5 Tan cmf **SAND**, little Silt, trace f Gravel. (completely weathered Sandstone)
---15'---	S-6 10-12'	65/4" – X – X – X		S-6 Same as **S-5**.
	S-7 15-17'	75 – 32 – 57 – 50/1"		S-7 TOP 18": Tan cmf **GRAVEL**, little cmf Sand. (highly weathered Sandstone) BOT 6": Dark Red-Brown **CLAY & SILT**, some mf Gravel, trace mf Sand. (highly weathered Shale)
---20'---	S-8 20-22'	50/1" – X – X – X		S-8 Same as **S-7, BOT 6"**. END OF BORING @ 20'1"
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-15
SHEET 1 OF 1

DATE STARTED: 8/9/2022
DATE FINISHED: 8/9/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +90'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 15 – 6 – 6		S-1 TOP 6": **Asphalt**. MID 6": Grey cmf **GRAVEL**, little mf Sand, little Silt. BOT 12": Brown **CLAY & SILT**, trace f Sand.
	S-2 2-4'	5 – 7 – 7 – 5		S-2 Tan cmf **SAND**, little Silt.
--- 5'---	S-3 4-6'	6 – 4 – 5 – 5		S-3 Light Brown mf **SAND**, little Silt.
	S-4 6-8'	4 – 6 – 6 – 11		S-4 Same as **S-3**.
---10'---	S-5 8-10'	17 – 19 – 18 – 15		S-5 Dark Red-Brown mf **GRAVEL**, little cmf Sand, little Clayey Silt.
---15'---	S-6 10-12'	11 – 14 – 16 – 31		S-6 Dark Red-Brown **CLAY & SILT**, little f Gravel, little mf Sand. (completely weathered Shale)
	S-7 15-17'	31 – 29 – 50/1" – X		S-7 Brown mf **GRAVEL**, little cmf Sand, little Clayey Silt. (highly weathered Shale)
---20'---	S-8 20-22'	50/1" – X – X – X		S-8 No Recovery (Sandstone chips in tip of spoon)
				END OF BORING @ 20'1"
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-16
SHEET 1 OF 1

DATE STARTED: 8/8/2022
DATE FINISHED: 8/8/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +88'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 5 – 7 – 10		S-1 TOP 6": **Asphalt Pavement**. BOT 18": Red-Brown **Clayey SILT**, and f Sand.
	S-2 2-4'	10 – 9 – 20 – 21		S-2 Red-Brown cmf **SAND**, and mf Gravel, some Clayey Silt.
--- 5'---	S-3 4-6'	15 – 18 – 19 – 18		S-3 TOP 12": Same as **S-2**. BOT 12": Light Brown cmf **SAND**, some mf Gravel, little Silt.
	S-4 6-8'	16 – 3 – 18 – 23		S-4 Light Brown cmf **SAND**, little mf Gravel, little Silt, (decomposed Sandstone)
	S-5	47 – 65/3" – X – X		
---10'---	8-10'			S-5 Same as **S-4**.
	S-6 10-12'	63 – 50/2" – X – X		S-6 Orange-Brown & Light Brown cmf **SAND**, little Silt, trace f Gravel.
---15'---				
	S-7 15-17'	50/3" – X – X – X		S-7 Light Brown cmf **SAND**, little Silt.
---20'---				
	S-8 20-22'	50/2" – X – X – X		S-8 Brown cm **GRAVEL**, little cmf Sand. (completely weathered Sandstone)
				END OF BORING @ 20'2"
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-17
SHEET 1 OF 1

DATE STARTED: 8/8/2022
DATE FINISHED: 8/8/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +88'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 2 – 6 – 7		S-1 TOP 6": **Asphalt**. MID 12": Brown mf **GRAVEL**, little cmf Sand, little Silt.
	S-2 2-4'	4 – 4 – 6 – 7		BOT 6": Red-Brown mf **SAND**, some Clayey Silt. S-2 Red-Brown **Clayey SILT**, little mf Sand, trace f Gravel.
--- 5'---	S-3 4-6'	4 – 6 – 6 – 6		S-3 Orange-Brown & Brown mf **SAND**, trace^{+} Silt.
	S-4 6-8'	7 – 5 – 5 – 4		S-4 Orange-Brown cmf **SAND**, trace^{+} Silt.
	S-5 8-10'	6 – 7 – 13 – 19		S-5 Tan mf **SAND**, little Silt. (decomposed Sandstone)
---10'---	S-6 10-12'	21 – 41 – 37 – 43		S-6 Same as **S-5**.
---15'---	S-7 15-17'	24 – 40 – 45 – 44		S-7 Tan mf **SAND**, little cmf Gravel, little Silt. (decomposed Sandstone)
---20'---	S-8 20-22'	50 – 80/4" – X – X		S-8 Brown & Tan mf **SAND**, little Silt. (decomposed Sandstone)
				END OF BORING @ 21'10"
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

P23-03 DRC 05/18/23

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-18
SHEET 1 OF 1

DATE STARTED: 8/8/2022
DATE FINISHED: 8/8/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +88.5'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 6 – 4 – 5		S-1 TOP 6": **Asphalt Pavement**. MID 6": Brown cmf **GRAVEL**. BOT 12": Brown **CLAY & SILT**, little f Sand.
	S-2 2-4'	3 – 3 – 5 – 5		S-2 Dark Red-Brown **CLAY & SILT**, little f Sand.
--- 5'---	S-3 4-6'	5 – 5 – 7 – 12		S-3 Same as **S-2**.
	S-4 6-8'	12 – 10 – 12 – 13		S-4 Dark Red-Brown **Clayey SILT**, and mf Sand, some mf Gravel.
	S-5 8-10'	13 – 23 – 47 – 50/3"		S-5 Dark Red-Brown cmf **SAND**, and cmf Gravel, little Clayey Silt.
---10'---	S-6 10-12'	20 – 70 – 73 – 50/3"		S-6 Dark Red-Brown mf **SAND**, and cmf Gravel, little Silt. (decomposed Shale)
---15'---	S-7 15-17'	26 – 36 – 70 – 69		S-7 Dark Red-Brown cmf **SAND**, some mf Gravel, little Clayey Silt. (decomposed Shale)
---20'---	S-8 20-22'	30 – 58 – 50/3" – X		S-8 Same as **S-7**.
				END OF BORING @ 21'3"
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

~~P23-03 DRC 05/18/23~~

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-28
SHEET 1 OF 1

DATE STARTED: 8/10/2022
DATE FINISHED: 8/10/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +93'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	62 – 9 – 5 – 3		S-1 TOP 6": **Asphalt**. BOT 18": Brown **Clayey SILT**, and mf Sand.
	S-2 2-4'	4 – 5 – 4 – 7		S-2 Brown **CLAY & SILT**, little f Sand.
--- 5'---	S-3 4-6'	22 – 27 – 31 – 27		S-3 Red-Brown cmf **GRAVE**L, and Silt, little f Sand.
	S-4 6-8'	54 – 57 – 57 – 59		S-4 Same as **S-3**.
	S-5	49 – 41 – 38 – 39		S-5 Red-Brown cmf **GRAVEL**, some Silt, little f Sand.
---10'---	8-10'			
	S-6 10-12'	47 – 45 – 51 – 47		S-6 Tan & Orange-Brown mf+ **SAND**, some Silt.
---15'---				
	S-7 15-17'	100/4" – X – X – X		S-7 Tan mf **SAND**, little Silt. (completely weathered Sandstone)
				END OF BORING @ 15'4"
---20'---				
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: M. MILGROM

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

~~P23-03 DRC 05/18/23~~

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-29
SHEET 1 OF 1

DATE STARTED: 8/9/2022
DATE FINISHED: 8/9/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +91.5'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 43 – 15 – 13		S-1 TOP 6": **Asphalt**. MID 6": Grey cmf **GRAVEL**, little cmf Sand, little Silt. BOT 12": Orange-Brown cmf **SAND**, little Silt.
	S-2 2-4'	15 – 16 – 15 – 16		S-2 Same as **S-1, BOT 12"**.
--- 5'---	S-3 4-6'	11 – 12 – 10 – 8		S-3 Tan cmf **SAND**, trace^{+} Silt.
	S-4 6-8'	11 – 14 – 29 – 12		S-4 Tan & Brown cmf **SAND**, trace^{+} Silt.
---10'---	S-5 8-10'	11 – 14 – 18 – 35		S-5 TOP 6": Tan **Clayey SILT**, little mf Sand. BOT 18": Dark Red-Brown cmf **GRAVEL**, some Clayey Silt, some mf Sand. (decomposed Shale)
	S-6 10-12'	36 – 50/4" – X – X		S-6 Dark Red-Brown cmf **GRAVEL**, some cmf Sand, trace Silt. (decomposed Shale.
---15'---				
	S-7 15-17'	42 – 50/3" – X – X		S-7 Same as **S-6**.
				END OF BORING @ 15'9"
---20'---				
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

~~P23-03 DRC 05/18/23~~

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-30
SHEET 1 OF 1

DATE STARTED: 8/9/2022
DATE FINISHED: 8/9/2022

DEPTH OF WATER: Dry

GROUND ELEVATION: +90'±
GROUND WATER ELEV.: N/A

LOCATION: See Plan

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 14 – 6 – 5		S-1 TOP 6": **Asphalt**. MID 6": Grey cmf **GRAVEL**, little cmf Sand, little Silt. BOT 12": Brown **CLAY & SILT**, little mf Sand.
	S-2 2-4'	5 – 6 – 6 – 5		S-2 TOP 6": Same as **S-1, BOT 12"**. BOT 18": Orange-Brown cmf **SAND**, little Silt.
--- 5'---	S-3 4-6'	5 – 5 – 6 – 7		S-3 Orange-Brown & Tan cmf **SAND**, little Silt.
	S-4 6-8'	5 – 7 – 6 – 4		S-4 Same as **S-3**.
---10'---	S-5 8-10'	6 – 11 – 15 – 22		S-5 Tan cmf **SAND**, little Silt, trace f Gravel. (decomposed Sandstone)
---15'---	S-6 10-12'	20 – 16 – 19 – 14		S-6 Tan & Light Brown cmf **SAND**, trace Clayey Silt, trace f Gravel. (decomposed Sandstone)
	S-7 15-17'	33 – 41 – 59 – 71		S-7 Dark Red-Brown mf **GRAVEL**, some cmf Sand, little Silt. (decomposed Shale)
---20'---	S-8 20-22'	50/2" – X – X – X		S-8 Same as **S-7**.
				END OF BORING @ 20'2""
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

~~P23-03 DRC 05/18/23~~

TEST BORING LOG

PENN MEDICINE CANCER CENTER PROJECT
TOWNSHIP OF PLAINSBORO, MIDDLESEX COUNTY, NEW JERSEY
FPA NO. 06C028T.003

BORING NO.: B-31
SHEET 1 OF 1

DATE STARTED: 8/8/2022
DATE FINISHED: 8/8/2022
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +90.5'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	X – 22 – 11 – 14		S-1 TOP 6": **Asphalt**. MID 6": Grey cmf **GRAVEL**, little mf Sand, little Silt. BOT 12": Dark Red-Brown **Clayey SILT**, and cmf Gravel, little cmf Sand. (decomposed Shale)
	S-2 2-4'	19 – 18 – 19 – 25		
--- 5'---	S-3 4-6'	30 – 31 – 60– 65		S-2 Dark Red-Brown cmf **GRAVEL**, little cmf Sand, little Clayey Silt. (decomposed Shale)
	S-4 6-8'	43 – 65 – 79 – 81		S-3 Same as **S-2**.
---10'---	S-5 8-10'	76 – 85 – 85 – 90		S-5 Same as **S-2**.
	S-6 10-12'	81 – 86 – 87 – 93		S-6 Same as **S-2**.
---15'---				
	S-7 15-17'	50/4" – X – X – X		S-7 Same as **S-2**.
				END OF BORING @ 15'4"
---20'---				
---25'---				
---30'---				
---35'---				

SOILS ENGINEER: R. KNOTZ, PE
DRILLING INSPECTOR: C. KROSCHINSKI, PE

CONTRACTOR: CRAIG TEST BORING
DRILLER: J. MILLINGTON

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

FRENCH & PARRELLO ASSOCIATES

P23-03 DRC 05/18/23

SUMMARY OF LABORATORY TESTING

AASHTO ACCREDITED

PROJECT: Penn Medicine Cancer Center & Parking Garage **PROJECT #:** 06C028T.003 **DATE:** 12/22

Boring & Sample Number	Depth (ft)	Classification	Natural Water Content %	Atterberg Limits		AASHTO T-290 Sulfate (ppm)	AASHTO T-291 Chloride (ppm)	Unit Dry Weight Before Test PCF	Specific Gravity	Permeability inches / hour @ 20 deg C	Compaction	Grain Size	Consolidation	Triaxial	% Passing #200	pH	Organic Content %
				Liquid Limit	Plastic Limit												
B-24 S-2	**2 - 4**	**Brown mf+ SAND, some- Silt**	**14**					**113.9**		**4.3×10^{-5}**							
B-27 S-2	**2 - 4**	**Red Brown cmf SAND, little Silt, little Gravel**	**16**					**111.2**		**1.5×10^{-3}**							
B-28 S-2	**2 - 4**	**Brown CLAY & SILT, little f Sand**	**20**					**108.8**		**2.2×10^{-5}**							
B-31 S-2	**2 - 4**	**Dark Red Brown cmf Gravel, little cmf Sand, little Clayey Silt**	**12**					**128.0**		**1.6×10^{-3}**							

* SEE TEST CURVES

Supervising Professional Engineer: Michael W. Schappert, PE

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Appendix B

Present Conditions and Runoff Calculations

FRENCH & PARRELLO ASSOCIATES

TELEPHONE : (732) 312-9800
FAX : (732) 312-9801

1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	Existing Drainage Area A PER	DRAINAGE AREA NOTATION:	DA-Ex-A PER

Sheet Flow: Segment 1

Surface Type:	Grass: Short-grass prairie	
Slope of land surface, S:	0.021	ft/ft
n-value (from Table 15-1):	0.15	---
Limiting Length of flow, *l*:	96.6	ft
2-year, 24 hours rainfall, P_2:	3.300	in
Travel time, T_t:	9.2	minutes

calculations for sheet flow based upon Equation 15-8 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{0.007(n l)^{0.8}}{(P_2)^{0.5} S^{0.4}} \quad \text{(Eq 15-8)}$$

Shallow Concentrated Flow: Segment 2

Surface Type:	Short-grass pasture	
Flow length, l:	97.9	ft
Slope of land surface, S:	0.008	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	0.629	ft/s
Travel time, T_t:	2.6	minutes

calculations for shallow concentrated flow based upon Equation 15-1 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{l}{3{,}600V} \quad \text{(Eq 15-1)}$$

Shallow Concentrated Flow: Segment 3

Surface Type:	Short-grass pasture	
Flow length, l:	12.5	ft
Slope of land surface, S:	0.027	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	1.148	ft/s
Travel time, T_t:	0.2	minutes

Open Channel Flow:

	Segment 4		Segment 5	
Hydraulic Length:	21	ft	45	ft
Slope:	0.007	ft/ft	0.016	ft/ft
Manning's n:	0.012	---	0.013	---
Flow Area:	0.674	ft^2	1.053	ft^2
Wetted Perimeter:	2.22	ft	2.77	ft
Velocity:	4.74	fps	7.61	fps
Travel time, T_t:	0.1	minutes	0.1	minutes

Continued on next sheet

FRENCH & PARRELLO ASSOCIATES
TELEPHONE : (732) 312-9800
FAX : (732) 312-9801
1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	Existing Drainage Area A PER	DRAINAGE AREA NOTATION:	DA-Ex-A PER

Open Channel Flow:

	Segment 6		Segment 7	
Hydraulic Length:	90	ft	89	ft
Slope:	0.015	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	1.053	ft^2	2.064	ft^2
Wetted Perimeter:	2.77	ft	3.88	ft
Velocity:	7.25	fps	5.37	fps
Travel time, T_t:	0.2	minutes	0.3	minutes

Open Channel Flow:

	Segment 8		Segment 9	
Hydraulic Length:	43	ft	17	ft
Slope:	0.006	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	6.44	fps	5.99	fps
Travel time, T_t:	0.1	minutes	0.0	minutes

Open Channel Flow:

	Segment 10		Segment 11	
Hydraulic Length:	31	ft	253	ft
Slope:	0.009	ft/ft	0.003	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	7.68	fps	4.51	fps
Travel time, T_t:	0.1	minutes	0.9	minutes

Total Time of Concentration:	13.8	minutes	user input

FRENCH & PARRELLO ASSOCIATES

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1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	Existing Drainage Area A IMP	DRAINAGE AREA NOTATION:	DA-Ex-A IMP

Sheet Flow: Segment 1

Surface Type:	Smooth surface (concrete, asphalt, gravel, or bare soil)	
Slope of land surface, S:	0.013	ft/ft
n-value (from Table 15-1):	0.011	---
Limiting Length of flow, *l*:	100.0	ft
2-year, 24 hours rainfall, P_2:	3.300	in
Travel time, T_t:	1.4	minutes

calculations for sheet flow based upon Equation 15-8 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{0.007(n l)^{0.8}}{(P_2)^{0.5} S^{0.4}} \quad \text{(Eq 15-8)}$$

Shallow Concentrated Flow: Segment 2

Surface Type:	Pavement and small upland gullies	
Flow length, l:	90	ft
Slope of land surface, S:	0.055	ft/ft
n-value (from Table 15-3):	0.025	---
Average velocity, V:	4.767	ft/s
Travel time, T_t:	0.3	minutes

calculations for shallow concentrated flow based upon Equation 15-1 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{l}{3{,}600V} \quad \text{(Eq 15-1)}$$

Shallow Concentrated Flow: Segment 3

Surface Type:	Short-grass pasture	
Flow length, l:	43	ft
Slope of land surface, S:	0.055	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	1.633	ft/s
Travel time, T_t:	0.4	minutes

Open Channel Flow:

	Segment 4		Segment 5	
Hydraulic Length:	45	ft	89	ft
Slope:	0.034	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.064	ft^2	2.064	ft^2
Wetted Perimeter:	3.88	ft	3.88	ft
Velocity:	13.83	fps	5.37	fps
Travel time, T_t:	0.1	minutes	0.3	minutes

Continued on next sheet

FRENCH & PARRELLO ASSOCIATES
TELEPHONE : (732) 312-9800
FAX : (732) 312-9801
1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	Existing Drainage Area A IMP	DRAINAGE AREA NOTATION:	DA-Ex-A IMP

Open Channel Flow:

	Segment 6		Segment 7	
Hydraulic Length:	43	ft	17	ft
Slope:	0.006	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	6.44	fps	5.99	fps
Travel time, T_t:	0.1	minutes	0.0	minutes

Open Channel Flow:

	Segment 8		Segment 9	
Hydraulic Length:	31	ft	253	ft
Slope:	0.009	ft/ft	0.003	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	7.68	fps	4.51	fps
Travel time, T_t:	0.1	minutes	0.9	minutes

Open Channel Flow:

	Segment 10		Segment 11	
Hydraulic Length:		ft		ft
Slope:	0.009	ft/ft	0.003	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	7.68	fps	4.51	fps
Travel time, T_t:	0.0	minutes	0.0	minutes

Total Time of Concentration:	3.7	minutes	user input

FRENCH & PARRELLO ASSOCIATES

TELEPHONE : (732) 312-9800
FAX : (732) 312-9801

1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	EXISTING DRAINAGE AREA B IMP	DRAINAGE AREA NOTATION:	DA-B-EX-IMI

Sheet Flow: Segment 1

Surface Type:	Smooth surface (concrete, asphalt, gravel, or bare soil)	
Slope of land surface, S:	0.021	ft/ft
n-value (from Table 15-1):	0.011	---
Limiting Length of flow, *l*:	100.0	ft
2-year, 24 hours rainfall, P_2:	3.300	in
Travel time, T_t:	1.2	minutes

calculations for sheet flow based upon Equation 15-8 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{0.007(n l)^{0.8}}{(P_2)^{0.5} S^{0.4}} \quad \text{(Eq 15-8)}$$

Shallow Concentrated Flow: Segment 2

Surface Type:	Short-grass pasture	
Flow length, l:	289	ft
Slope of land surface, S:	0.021	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	1.009	ft/s
Travel time, T_t:	4.8	minutes

calculations for shallow concentrated flow based upon Equation 15-1 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{l}{3{,}600V} \quad \text{(Eq 15-1)}$$

Shallow Concentrated Flow: Segment 3

Surface Type:	Short-grass pasture	
Flow length, l:		ft
Slope of land surface, S:	0.027	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	1.148	ft/s
Travel time, T_t:	0.0	minutes

Open Channel Flow:

	Segment 4		Segment 5	
Hydraulic Length:	46	ft		ft
Slope:	0.005	ft/ft	0.016	ft/ft
Manning's n:	0.012	---	0.013	---
Flow Area:	1.227	ft^2	1.053	ft^2
Wetted Perimeter:	3.93	ft	2.77	ft
Velocity:	4.04	fps	7.61	fps
Travel time, T_t:	0.2	minutes	0.0	minutes

Continued on next sheet

FRENCH & PARRELLO ASSOCIATES
TELEPHONE : (732) 312-9800
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1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	EXISTING DRAINAGE AREA B IMP	DRAINAGE AREA NOTATION:	DA-B-EX-IMI

Open Channel Flow:

	Segment 6		Segment 7	
Hydraulic Length:		ft		ft
Slope:	0.015	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	1.053	ft^2	2.064	ft^2
Wetted Perimeter:	2.77	ft	3.88	ft
Velocity:	7.25	fps	5.37	fps
Travel time, T_t:	0.0	minutes	0.0	minutes

Open Channel Flow:

	Segment 8		Segment 9	
Hydraulic Length:		ft		ft
Slope:	0.006	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	6.44	fps	5.99	fps
Travel time, T_t:	0.0	minutes	0.0	minutes

Open Channel Flow:

	Segment 10		Segment 11	
Hydraulic Length:		ft		ft
Slope:	0.009	ft/ft	0.003	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	7.68	fps	4.51	fps
Travel time, T_t:	0.0	minutes	0.0	minutes

Total Time of Concentration:	6.1	minutes	user input

FRENCH & PARRELLO ASSOCIATES

TELEPHONE : (732) 312-9800
FAX : (732) 312-9801

1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	existing drainage area b perv	DRAINAGE AREA NOTATION:	DA-B-EX-PER

Sheet Flow: Segment 1

Surface Type:	Grass: Short-grass prairie	
Slope of land surface, S:	0.021	ft/ft
n-value (from Table 15-1):	0.15	---
Limiting Length of flow, *l*:	85.0	ft
2-year, 24 hours rainfall, P_2:	3.300	in
Travel time, T_t:	8.3	minutes

calculations for sheet flow based upon Equation 15-8 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{0.007(n l)^{0.8}}{(P_2)^{0.5} S^{0.4}} \quad \text{(Eq 15-8)}$$

Shallow Concentrated Flow: Segment 2

Surface Type:	Short-grass pasture	
Flow length, l:		ft
Slope of land surface, S:	0.021	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	1.009	ft/s
Travel time, T_t:	0.0	minutes

calculations for shallow concentrated flow based upon Equation 15-1 from "Part 630 Hydrology, National Engineering Handbook: Chapter 15 - Time of Concentration" issued by the United States Department of Agriculture, Natural Resources Conservation Service.

$$T_t = \frac{l}{3{,}600V} \quad \text{(Eq 15-1)}$$

Shallow Concentrated Flow: Segment 3

Surface Type:	Short-grass pasture	
Flow length, l:		ft
Slope of land surface, S:	0.027	ft/ft
n-value (from Table 15-3):	0.073	---
Average velocity, V:	1.148	ft/s
Travel time, T_t:	0.0	minutes

Open Channel Flow:

	Segment 4		Segment 5	
Hydraulic Length:	190	ft	45	ft
Slope:	0.010	ft/ft	0.016	ft/ft
Manning's n:	0.012	---	0.013	---
Flow Area:	1.227	ft^2	1.053	ft^2
Wetted Perimeter:	3.93	ft	2.77	ft
Velocity:	5.72	fps	7.61	fps
Travel time, T_t:	0.6	minutes	0.1	minutes

Continued on next sheet

FRENCH & PARRELLO ASSOCIATES
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1800 ROUTE 34, SUITE 101
WALL, NEW JERSEY 07719

PROJECT NUMBER:	06C028T.003		
PROJECT NAME:	Penn Med Parking Garage		
CALCULATED BY:	SP	DATE:	11/18/2022
CHECKED BY:		DATE:	
REVISED BY:		DATE:	

TIME OF CONCENTRATION CALCULATOR

DRAINAGE AREA NAME:	existing drainage area b perv	DRAINAGE AREA NOTATION:	DA-B-EX-PER

Open Channel Flow:

	Segment 6		Segment 7	
Hydraulic Length:	90	ft		ft
Slope:	0.015	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	1.053	ft^2	2.064	ft^2
Wetted Perimeter:	2.77	ft	3.88	ft
Velocity:	7.25	fps	5.37	fps
Travel time, T_t:	0.2	minutes	0.0	minutes

Open Channel Flow:

	Segment 8		Segment 9	
Hydraulic Length:		ft		ft
Slope:	0.006	ft/ft	0.005	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	6.44	fps	5.99	fps
Travel time, T_t:	0.0	minutes	0.0	minutes

Open Channel Flow:

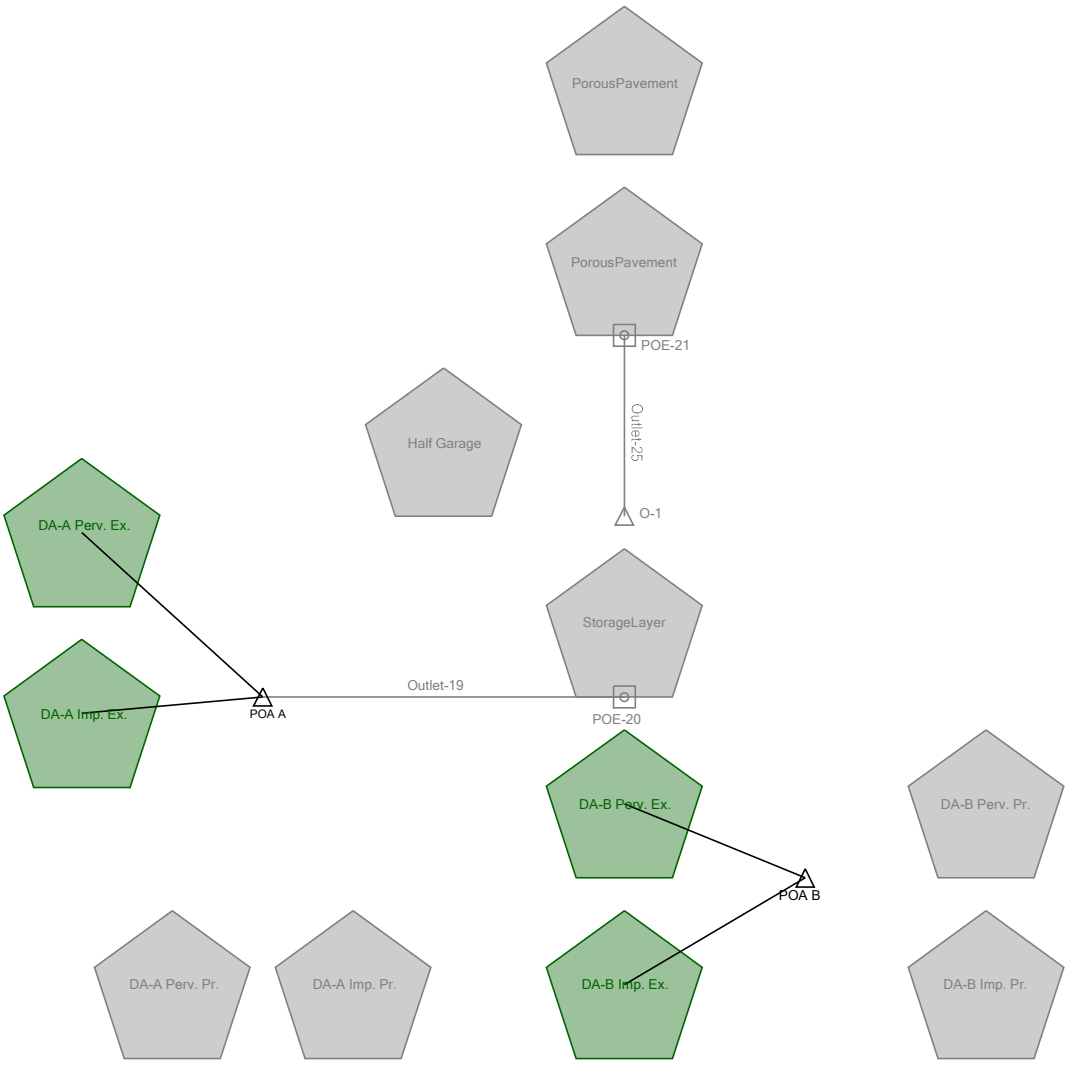
	Segment 10		Segment 11	
Hydraulic Length:		ft		ft
Slope:	0.009	ft/ft	0.003	ft/ft
Manning's n:	0.013	---	0.013	---
Flow Area:	2.695	ft^2	2.695	ft^2
Wetted Perimeter:	4.43	ft	4.43	ft
Velocity:	7.68	fps	4.51	fps
Travel time, T_t:	0.0	minutes	0.0	minutes

Total Time of Concentration:	9.2	minutes	user input

Parking Garage

Project Summary	
Title	Princeton Cancer Center Parking Garage
Engineer	Kiera Nissen
Company	French and Parrello Associates
Date	12/14/2022

Notes EXISTING CONDITIONS RUNOFF CALCULATIONS - TOTAL



P23-03 DRC 05/18/23

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Parking Garage

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DA-A Perv. Ex.	Pre-Development 2 year	2	3,559.000	732.000	0.74
DA-A Perv. Ex.	Pre-Development 10 year	10	8,952.000	732.000	2.13
DA-A Perv. Ex.	Pre-Development 25 year	25	13,409.000	732.000	3.25
DA-A Perv. Ex.	Pre-Development 100 year	100	22,419.000	731.000	5.48
DA-B Imp. Ex.	Pre-Development 2 year	2	11,440.000	727.000	3.20
DA-B Imp. Ex.	Pre-Development 10 year	10	17,922.000	727.000	4.92
DA-B Imp. Ex.	Pre-Development 25 year	25	22,467.000	727.000	6.13
DA-B Imp. Ex.	Pre-Development 100 year	100	30,793.000	727.000	8.32
DA-B Perv. Ex.	Pre-Development 2 year	2	1,904.000	729.000	0.48
DA-B Perv. Ex.	Pre-Development 10 year	10	4,687.000	729.000	1.32
DA-B Perv. Ex.	Pre-Development 25 year	25	6,968.000	729.000	1.99
DA-B Perv. Ex.	Pre-Development 100 year	100	11,553.000	729.000	3.31
DA-A Imp. Ex.	Pre-Development 2 year	2	33,114.000	726.000	9.57
DA-A Imp. Ex.	Pre-Development 10 year	10	51,878.000	726.000	14.72
DA-A Imp. Ex.	Pre-Development 25 year	25	65,036.000	726.000	18.32
DA-A Imp. Ex.	Pre-Development 100 year	100	89,136.000	726.000	24.89

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
POA A	Pre-Development 2 year	2	36,673.000	727.000	10.10
POA A	Pre-Development 10 year	10	60,830.000	727.000	16.41
POA A	Pre-Development 25 year	25	78,445.000	727.000	20.97
POA A	Pre-Development 100 year	100	111,555.000	727.000	29.47
POA B	Pre-Development 2 year	2	13,344.000	727.000	3.63
POA B	Pre-Development 10 year	10	22,609.000	727.000	6.15

Parking Garage

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
POA B	Pre-Development 25 year	25	29,435.000	727.000	7.99
POA B	Pre-Development 100 year	100	42,346.000	727.000	11.45

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Ex.
Scenario: Pre-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.929 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	9.65 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	9.57 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.929 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	33,140.325 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	33,114.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	39.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Ex.
Scenario: Pre-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.929 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	14.84 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	14.72 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.929 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	51,917.213 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	51,878.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	39.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Ex.
Scenario: Pre-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.929 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	18.47 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	18.32 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.929 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	65,085.291 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	65,036.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	39.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Ex.
Scenario: Pre-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.929 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	25.10 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	24.89 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.929 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	89,203.029 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	89,136.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	39.82 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)	
Return Event	2	years
Duration	1,440.000	min
Depth	3.35	in
Time of Concentration (Composite)	13.800	min
Area (User Defined)	1.368	acres

Computational Time Increment	1.840	min
Time to Peak (Computed)	732.320	min
Flow (Peak, Computed)	0.75	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	732.000	min
Flow (Peak Interpolated Output)	0.74	ft³/s

Drainage Area		
SCS CN (Composite)	66.000	
Area (User Defined)	1.368	acres
Maximum Retention (Pervious)	5.15	in
Maximum Retention (Pervious, 20 percent)	1.03	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	0.72	in
Runoff Volume (Pervious)	3,576.549	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	3,559.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	13.800	min
Computational Time Increment	1.840	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	6.74	ft³/s
Unit peak time, Tp	9.200	min
Unit receding limb, Tr	36.800	min
Total unit time, Tb	46.000	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)	
Return Event	10	years
Duration	1,440.000	min
Depth	5.12	in
Time of Concentration (Composite)	13.800	min
Area (User Defined)	1.368	acres

Computational Time Increment	1.840	min
Time to Peak (Computed)	732.320	min
Flow (Peak, Computed)	2.13	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	732.000	min
Flow (Peak Interpolated Output)	2.13	ft³/s

Drainage Area		
SCS CN (Composite)	66.000	
Area (User Defined)	1.368	acres
Maximum Retention (Pervious)	5.15	in
Maximum Retention (Pervious, 20 percent)	1.03	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	1.81	in
Runoff Volume (Pervious)	8,987.648	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	8,952.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	13.800	min
Computational Time Increment	1.840	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	6.74	ft³/s
Unit peak time, Tp	9.200	min
Unit receding limb, Tr	36.800	min
Total unit time, Tb	46.000	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	1.368 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	732.320 min
Flow (Peak, Computed)	3.25 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	732.000 min
Flow (Peak Interpolated Output)	3.25 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	1.368 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.71 in
Runoff Volume (Pervious)	13,458.176 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	13,409.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.74 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	1.368 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	730.480 min
Flow (Peak, Computed)	5.49 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	731.000 min
Flow (Peak Interpolated Output)	5.48 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	1.368 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.53 in
Runoff Volume (Pervious)	22,492.294 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	22,419.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.74 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Ex.
Scenario: Pre-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)	
Return Event	2	years
Duration	1,440.000	min
Depth	3.35	in
Time of Concentration (Composite)	6.100	min
Area (User Defined)	1.012	acres

Computational Time Increment	0.813	min
Time to Peak (Computed)	727.120	min
Flow (Peak, Computed)	3.21	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	727.000	min
Flow (Peak Interpolated Output)	3.20	ft³/s

Drainage Area		
SCS CN (Composite)	98.000	
Area (User Defined)	1.012	acres
Maximum Retention (Pervious)	0.20	in
Maximum Retention (Pervious, 20 percent)	0.04	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	3.12	in
Runoff Volume (Pervious)	11,450.325	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	11,440.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	6.100	min
Computational Time Increment	0.813	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	11.28	ft³/s
Unit peak time, Tp	4.067	min
Unit receding limb, Tr	16.267	min
Total unit time, Tb	20.333	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Ex.
Scenario: Pre-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)	
Return Event	10	years
Duration	1,440.000	min
Depth	5.12	in
Time of Concentration (Composite)	6.100	min
Area (User Defined)	1.012	acres

Computational Time Increment	0.813	min
Time to Peak (Computed)	727.120	min
Flow (Peak, Computed)	4.93	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	727.000	min
Flow (Peak Interpolated Output)	4.92	ft³/s

Drainage Area		
SCS CN (Composite)	98.000	
Area (User Defined)	1.012	acres
Maximum Retention (Pervious)	0.20	in
Maximum Retention (Pervious, 20 percent)	0.04	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	4.88	in
Runoff Volume (Pervious)	17,937.939	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	17,922.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	6.100	min
Computational Time Increment	0.813	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	11.28	ft³/s
Unit peak time, Tp	4.067	min
Unit receding limb, Tr	16.267	min
Total unit time, Tb	20.333	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Ex.
Scenario: Pre-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)	
Return Event	25	years
Duration	1,440.000	min
Depth	6.36	in
Time of Concentration (Composite)	6.100	min
Area (User Defined)	1.012	acres

Computational Time Increment	0.813	min
Time to Peak (Computed)	727.120	min
Flow (Peak, Computed)	6.14	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	727.000	min
Flow (Peak Interpolated Output)	6.13	ft³/s

Drainage Area		
SCS CN (Composite)	98.000	
Area (User Defined)	1.012	acres
Maximum Retention (Pervious)	0.20	in
Maximum Retention (Pervious, 20 percent)	0.04	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	6.12	in
Runoff Volume (Pervious)	22,487.649	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	22,467.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	6.100	min
Computational Time Increment	0.813	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	11.28	ft³/s
Unit peak time, Tp	4.067	min
Unit receding limb, Tr	16.267	min
Total unit time, Tb	20.333	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Ex.
Scenario: Pre-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	6.100 min
Area (User Defined)	1.012 acres

Computational Time Increment	0.813 min
Time to Peak (Computed)	727.120 min
Flow (Peak, Computed)	8.34 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	727.000 min
Flow (Peak Interpolated Output)	8.32 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	1.012 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	30,820.575 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	30,793.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	6.100 min
Computational Time Increment	0.813 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.28 ft³/s
Unit peak time, Tp	4.067 min
Unit receding limb, Tr	16.267 min
Total unit time, Tb	20.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Ex.
Scenario: Pre-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)	
Return Event	2	years
Duration	1,440.000	min
Depth	3.35	in
Time of Concentration (Composite)	9.200	min
Area (User Defined)	0.686	acres

Computational Time Increment	1.227	min
Time to Peak (Computed)	729.867	min
Flow (Peak, Computed)	0.48	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	729.000	min
Flow (Peak Interpolated Output)	0.48	ft³/s

Drainage Area		
SCS CN (Composite)	67.000	
Area (User Defined)	0.686	acres
Maximum Retention (Pervious)	4.93	in
Maximum Retention (Pervious, 20 percent)	0.99	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	0.77	in
Runoff Volume (Pervious)	1,910.382	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	1,904.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	9.200	min
Computational Time Increment	1.227	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	5.07	ft³/s
Unit peak time, Tp	6.133	min
Unit receding limb, Tr	24.533	min
Total unit time, Tb	30.667	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Ex.
Scenario: Pre-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)	
Return Event	10	years
Duration	1,440.000	min
Depth	5.12	in
Time of Concentration (Composite)	9.200	min
Area (User Defined)	0.686	acres

Computational Time Increment	1.227	min
Time to Peak (Computed)	728.640	min
Flow (Peak, Computed)	1.33	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	729.000	min
Flow (Peak Interpolated Output)	1.32	ft³/s

Drainage Area		
SCS CN (Composite)	67.000	
Area (User Defined)	0.686	acres
Maximum Retention (Pervious)	4.93	in
Maximum Retention (Pervious, 20 percent)	0.99	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	1.89	in
Runoff Volume (Pervious)	4,699.196	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	4,687.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	9.200	min
Computational Time Increment	1.227	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	5.07	ft³/s
Unit peak time, Tp	6.133	min
Unit receding limb, Tr	24.533	min
Total unit time, Tb	30.667	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Ex.
Scenario: Pre-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	9.200 min
Area (User Defined)	0.686 acres

Computational Time Increment	1.227 min
Time to Peak (Computed)	728.640 min
Flow (Peak, Computed)	2.00 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	729.000 min
Flow (Peak Interpolated Output)	1.99 ft³/s

Drainage Area	
SCS CN (Composite)	67.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	4.93 in
Maximum Retention (Pervious, 20 percent)	0.99 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.80 in
Runoff Volume (Pervious)	6,984.347 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6,968.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	9.200 min
Computational Time Increment	1.227 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.07 ft³/s
Unit peak time, Tp	6.133 min
Unit receding limb, Tr	24.533 min
Total unit time, Tb	30.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Ex.
Scenario: Pre-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	9.200 min
Area (User Defined)	0.686 acres

Computational Time Increment	1.227 min
Time to Peak (Computed)	728.640 min
Flow (Peak, Computed)	3.33 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	729.000 min
Flow (Peak Interpolated Output)	3.31 ft³/s

Drainage Area	
SCS CN (Composite)	67.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	4.93 in
Maximum Retention (Pervious, 20 percent)	0.99 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.65 in
Runoff Volume (Pervious)	11,577.949 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	11,553.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	9.200 min
Computational Time Increment	1.227 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.07 ft³/s
Unit peak time, Tp	6.133 min
Unit receding limb, Tr	24.533 min
Total unit time, Tb	30.667 min

Parking Garage

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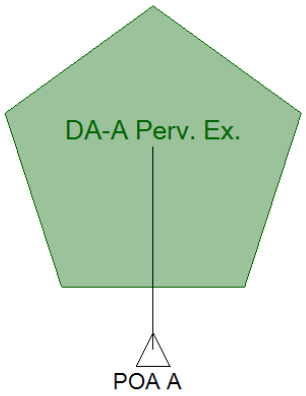
Parking Garage

Project Summary	
Title	Princeton Cancer Center Parking Garage
Engineer	Kiera Nissen
Company	French and Parrello Associates
Date	12/14/2022

Notes EXISTING CONDITIONS RUNOFF CALCULATIONS - REDUCTION AREAS



P23-03 DRC 05/18/23

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Parking Garage

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DA-A Perv. Ex.	Pre-Development 2 year	2	1,545.000	732.000	0.34
DA-A Perv. Ex.	Pre-Development 10 year	10	3,653.000	732.000	0.88
DA-A Perv. Ex.	Pre-Development 100 year	100	8,741.000	731.000	2.14

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
POA A	Pre-Development 2 year	2	1,545.000	732.000	0.34
POA A	Pre-Development 10 year	10	3,653.000	732.000	0.88
POA A	Pre-Development 100 year	100	8,741.000	731.000	2.14

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)	
Return Event	2	years
Duration	1,440.000	min
Depth	3.35	in
Time of Concentration (Composite)	13.800	min
Area (User Defined)	0.494	acres

Computational Time Increment	1.840	min
Time to Peak (Computed)	732.320	min
Flow (Peak, Computed)	0.35	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	732.000	min
Flow (Peak Interpolated Output)	0.34	ft³/s

Drainage Area		
SCS CN (Composite)	69.000	
Area (User Defined)	0.494	acres
Maximum Retention (Pervious)	4.49	in
Maximum Retention (Pervious, 20 percent)	0.90	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	0.87	in
Runoff Volume (Pervious)	1,551.876	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	1,545.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	13.800	min
Computational Time Increment	1.840	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	2.43	ft³/s
Unit peak time, Tp	9.200	min
Unit receding limb, Tr	36.800	min
Total unit time, Tb	46.000	min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	0.494 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	732.320 min
Flow (Peak, Computed)	0.88 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	732.000 min
Flow (Peak Interpolated Output)	0.88 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	0.494 acres
Maximum Retention (Pervious)	4.49 in
Maximum Retention (Pervious, 20 percent)	0.90 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.05 in
Runoff Volume (Pervious)	3,667.153 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3,653.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.43 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Ex.
Scenario: Pre-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)	
Return Event	100	years
Duration	1,440.000	min
Depth	8.63	in
Time of Concentration (Composite)	13.800	min
Area (User Defined)	0.494	acres

Computational Time Increment	1.840	min
Time to Peak (Computed)	730.480	min
Flow (Peak, Computed)	2.14	ft³/s
Output Increment	1.002	min
Time to Flow (Peak Interpolated Output)	731.000	min
Flow (Peak Interpolated Output)	2.14	ft³/s

Drainage Area		
SCS CN (Composite)	69.000	
Area (User Defined)	0.494	acres
Maximum Retention (Pervious)	4.49	in
Maximum Retention (Pervious, 20 percent)	0.90	in

Cumulative Runoff		
Cumulative Runoff Depth (Pervious)	4.89	in
Runoff Volume (Pervious)	8,768.693	ft³

Hydrograph Volume (Area under Hydrograph curve)		
Volume	8,741.000	ft³

SCS Unit Hydrograph Parameters		
Time of Concentration (Composite)	13.800	min
Computational Time Increment	1.840	min
Unit Hydrograph Shape Factor	483.432	
K Factor	0.749	
Receding/Rising, Tr/Tp	1.670	
Unit peak, qp	2.43	ft³/s
Unit peak time, Tp	9.200	min
Unit receding limb, Tr	36.800	min
Total unit time, Tb	46.000	min

Parking Garage

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Master Network Summary...2

Appendix C
Proposed Conditions Calculations

Storage | Outlets | Pond Tools | Graphs | Table

Contours | Manual

Trapezoid | Chambers

Item	Input
Storage Type =	UG Chambers
Invert Elev. Dn (ft) =	81.41
Rise (ft) =	1.50
Shape =	Circular
Span (ft) =	1.50
Barrel Length (ft) =	95.00
No. Barrels =	12
Slope (%) =	0.000
Headers =	No
Stone Encasement =	No
Bottom Elev. (ft) =	0.00
Width (ft) =	0.00
Depth (ft) =	0.00
Voids (%) =	100.00

Clear | Apply

Pond Name: Pipes

Row	Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incremental Storage (cuft)	Total Storage (cuft)
0	0.00	81.41	n/a	0.000	0.000
1	0.15	81.56	n/a	105	105
2	0.30	81.71	n/a	182	287
3	0.45	81.86	n/a	222	509
4	0.60	82.01	n/a	244	753
5	0.75	82.16	n/a	255	1,008
6	0.90	82.31	n/a	255	1,263
7	1.05	82.46	n/a	244	1,507
8	1.20	82.61	n/a	221	1,728
9	1.35	82.76	n/a	182	1,910
10	1.50	82.91	n/a	105	2,015
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Contours | Manual

Trapezoid | Chambers

Item	Input
Storage Type =	UG Chambers
Invert Elev. Dn (ft) =	81.41
Rise (ft) =	1.50
Shape =	Box
Span (ft) =	38.00
Barrel Length (ft) =	100.00
No. Barrels =	1
Slope (%) =	0.000
Headers =	No
Stone Encasement =	No
Bottom Elev. (ft) =	0.00
Width (ft) =	0.00
Depth (ft) =	0.00
Voids (%) =	100.00

Clear | Apply

Pond Name: Stone

Row	Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incremental Storage (cuft)	Total Storage (cuft)
0	0.00	81.41	n/a	0.000	0.000
1	0.15	81.56	n/a	570	570
2	0.30	81.71	n/a	570	1,140
3	0.45	81.86	n/a	570	1,710
4	0.60	82.01	n/a	570	2,280
5	0.75	82.16	n/a	570	2,851
6	0.90	82.31	n/a	570	3,421
7	1.05	82.46	n/a	570	3,991
8	1.20	82.61	n/a	570	4,561
9	1.35	82.76	n/a	570	5,131
10	1.50	82.91	n/a	570	5,701
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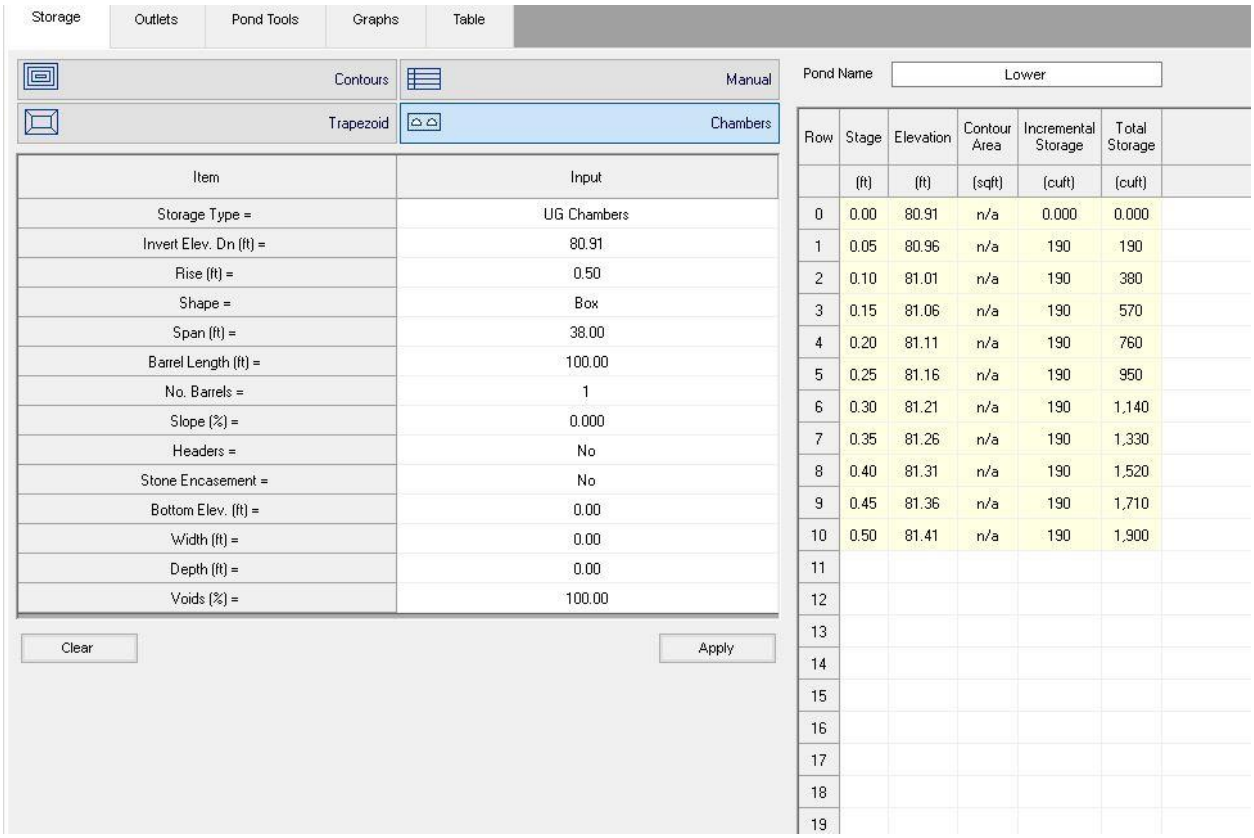
19					
20					



Storage | Outlets | Pond Tools | Graphs | Table

Contours | Manual

Trapezoid | Chambers

Pond Name: Lower

Item	Input
Storage Type =	UG Chambers
Invert Elev. Dn (ft) =	80.91
Rise (ft) =	0.50
Shape =	Box
Span (ft) =	38.00
Barrel Length (ft) =	100.00
No. Barrels =	1
Slope (%) =	0.000
Headers =	No
Stone Encasement =	No
Bottom Elev. (ft) =	0.00
Width (ft) =	0.00
Depth (ft) =	0.00
Voids (%) =	100.00

Clear | Apply

Row	Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incremental Storage (cuft)	Total Storage (cuft)
0	0.00	80.91	n/a	0.000	0.000
1	0.05	80.96	n/a	190	190
2	0.10	81.01	n/a	190	380
3	0.15	81.06	n/a	190	570
4	0.20	81.11	n/a	190	760
5	0.25	81.16	n/a	190	950
6	0.30	81.21	n/a	190	1,140
7	0.35	81.26	n/a	190	1,330
8	0.40	81.31	n/a	190	1,520
9	0.45	81.36	n/a	190	1,710
10	0.50	81.41	n/a	190	1,900
11					
12					
13					
14					
15					
16					
17					
18					
19					

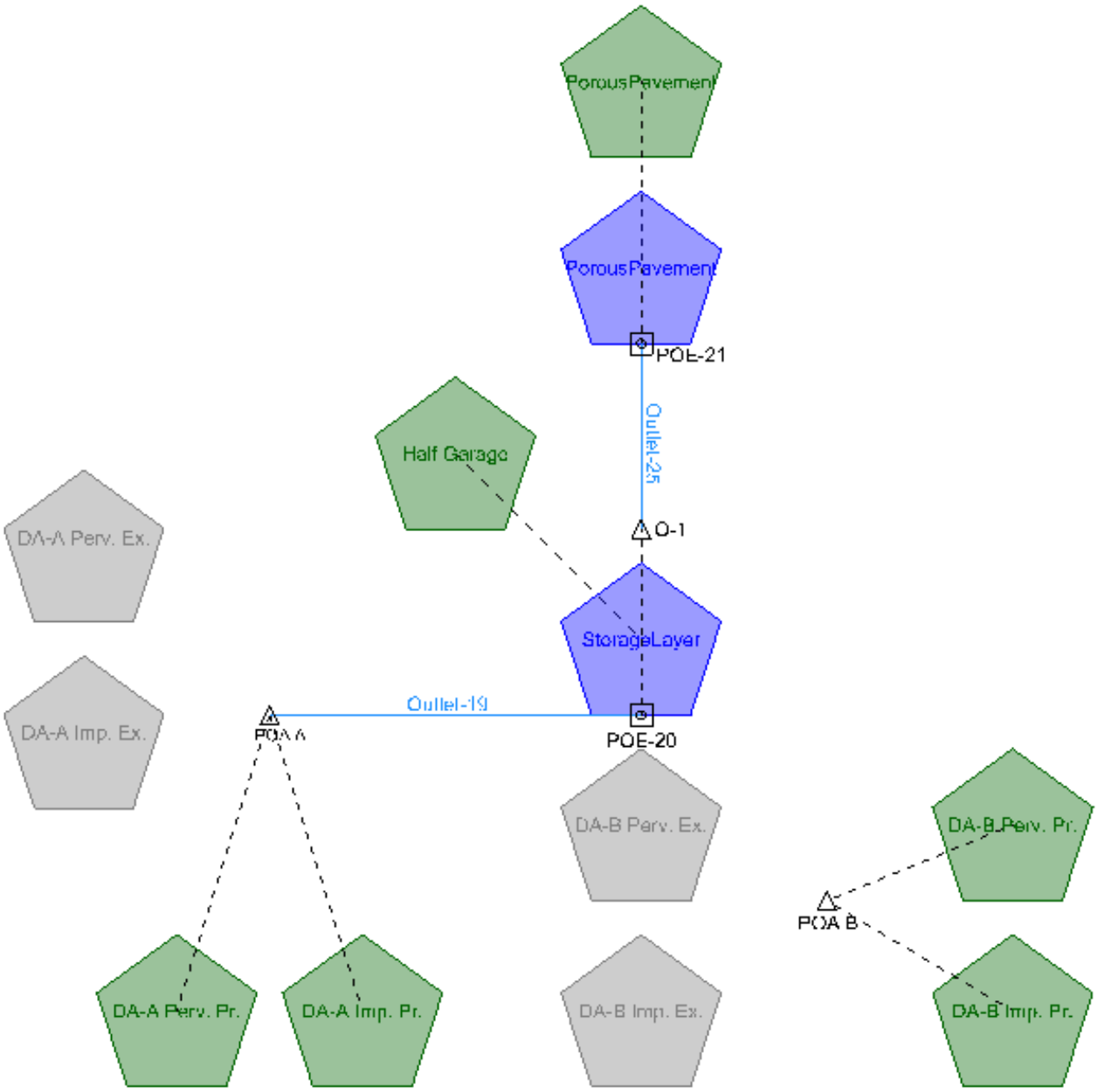
PERVIOUS PAVEMENT STORAGE VOLUME						
4x76 LF 24" Pipe and 42' Wide Trench						
Elevation	Pipe Volume cu. ft.	Additonal Stone Vol* cu. ft.	Stone Volume** cu. ft.	Net Stone Volume, cu. ft. (40% void)***	Total Volume	
					cu. ft.	ac. ft.
84.00	0	0	0	0	0	0.000
84.20	0	292	0	117	117	0.003
84.40	0	583	0	233	233	0.005
84.60	0	875	0	350	350	0.008
84.80	0	1,167	0	467	467	0.011
85.00	0	1,458	0	583	583	0.013
85.20	50	1,458	292	680	730	0.017
85.40	136	1,458	583	762	898	0.021
85.60	241	1,458	875	837	1,078	0.025
85.80	357	1,458	1,167	907	1,264	0.029
86.00	478	1,458	1,458	975	1,453	0.033
86.20	599	1,458	1,750	1,044	1,643	0.038
86.40	714	1,458	2,042	1,114	1,828	0.042
86.60	819	1,458	2,333	1,189	2,008	0.046
86.80	906	1,458	2,625	1,271	2,177	0.050
87.00	955	1,458	2,917	1,368	2,323	0.053
87.40	955	2,041	2,917	1,601	2,556	0.059
87.80	955	2,625	2,917	1,835	2,790	0.064
88.20	955	3,208	2,917	2,068	3,023	0.069
88.60	955	3,791	2,917	2,301	3,256	0.075
89.00	955	4,375	2,917	2,535	3,490	0.080

* Additional Stone Volume includes foot of stone below the 24" inch ADS pipe and two feet above
** Stone volume assumes a box including the pipe
***** Net Stone volume = [(Stone Volume - Pipe volume) + Additional Stone Volume]*0.4**

Parking Garage

Project Summary	
Title	Princeton Cancer Center Parking Garage
Engineer	Kiera Nissen
Company	French and Parrello Associates
Date	12/14/2022

Notes	PROPOSED CALCULATIONS



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Parking Garage

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DA-A Perv. Pr.	Post-Development 2 year	2	2,500.000	732.000	0.52
DA-A Perv. Pr.	Post-Development 10 year	10	6,289.000	732.000	1.49
DA-A Perv. Pr.	Post-Development 25 year	25	9,420.000	732.000	2.28
DA-A Perv. Pr.	Post-Development 100 year	100	15,749.000	731.000	3.85
PorousPavement	Post-Development 2 year	2	7,462.000	726.000	2.16
PorousPavement	Post-Development 10 year	10	11,690.000	726.000	3.32
PorousPavement	Post-Development 25 year	25	14,655.000	726.000	4.13
PorousPavement	Post-Development 100 year	100	20,085.000	726.000	5.61
DA-A Imp. Pr.	Post-Development 2 year	2	22,713.000	726.000	6.56
DA-A Imp. Pr.	Post-Development 10 year	10	35,583.000	726.000	10.10
DA-A Imp. Pr.	Post-Development 25 year	25	44,608.000	726.000	12.56
DA-A Imp. Pr.	Post-Development 100 year	100	61,138.000	726.000	17.08
Half Garage	Post-Development 2 year	2	8,694.000	726.000	2.51
Half Garage	Post-Development 10 year	10	13,620.000	726.000	3.86
Half Garage	Post-Development 25 year	25	17,075.000	726.000	4.81
Half Garage	Post-Development 100 year	100	23,402.000	726.000	6.54
DA-B Perv. Pr.	Post-Development 2 year	2	1,828.000	728.000	0.51
DA-B Perv. Pr.	Post-Development 10 year	10	4,407.000	728.000	1.35
DA-B Perv. Pr.	Post-Development 25 year	25	6,504.000	728.000	2.01
DA-B Perv. Pr.	Post-Development 100 year	100	10,699.000	728.000	3.30
DA-B Imp. Pr.	Post-Development 2 year	2	10,931.000	727.000	3.06
DA-B Imp. Pr.	Post-Development 10 year	10	17,125.000	727.000	4.70
DA-B Imp. Pr.	Post-Development 25 year	25	21,468.000	727.000	5.85
DA-B Imp. Pr.	Post-Development 100 year	100	29,424.000	727.000	7.95

Parking Garage

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
POA A	Post-Development 2 year	2	37,982.000	727.000	7.70
POA A	Post-Development 10 year	10	63,643.000	727.000	14.13
POA A	Post-Development 25 year	25	82,129.000	727.000	18.96
POA A	Post-Development 100 year	100	116,585.000	727.000	27.13
POA B	Post-Development 2 year	2	12,759.000	727.000	3.55
POA B	Post-Development 10 year	10	21,532.000	727.000	6.01
POA B	Post-Development 25 year	25	27,973.000	727.000	7.81
POA B	Post-Development 100 year	100	40,123.000	727.000	11.19

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
StorageLayer (IN)	Post-Development 2 year	2	13,009.000	727.000	2.70	(N/A)	(N/A)
StorageLayer (OUT)	Post-Development 2 year	2	12,769.000	739.000	1.11	81.99	2,080.000
StorageLayer (IN)	Post-Development 10 year	10	22,081.000	727.000	4.81	(N/A)	(N/A)
StorageLayer (OUT)	Post-Development 10 year	10	21,771.000	730.000	3.47	82.32	2,910.000
StorageLayer (IN)	Post-Development 25 year	25	28,444.000	727.000	6.21	(N/A)	(N/A)
StorageLayer (OUT)	Post-Development 25 year	25	28,100.000	730.000	5.03	82.48	3,301.000
StorageLayer (IN)	Post-Development 100 year	100	40,101.000	727.000	8.66	(N/A)	(N/A)
StorageLayer (OUT)	Post-Development 100 year	100	39,698.000	729.000	7.41	82.69	3,795.000
PorousPavement (IN)	Post-Development 2 year	2	7,462.000	726.000	2.16	(N/A)	(N/A)

Parking Garage

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
PorousPavement (OUT)	Post-Development 2 year	2	4,315.000	747.000	0.42	88.96	4,282.000
PorousPavement (IN)	Post-Development 10 year	10	11,690.000	726.000	3.32	(N/A)	(N/A)
PorousPavement (OUT)	Post-Development 10 year	10	8,461.000	735.000	1.20	89.09	5,717.000
PorousPavement (IN)	Post-Development 25 year	25	14,655.000	726.000	4.13	(N/A)	(N/A)
PorousPavement (OUT)	Post-Development 25 year	25	11,369.000	733.000	1.71	89.15	6,433.000
PorousPavement (IN)	Post-Development 100 year	100	20,085.000	726.000	5.61	(N/A)	(N/A)
PorousPavement (OUT)	Post-Development 100 year	100	16,699.000	733.000	2.53	89.24	7,503.000

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.009 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	6.62 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	6.56 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.009 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	22,730.936 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	22,713.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.32 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.009 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	10.18 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	10.10 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.009 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	35,609.997 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	35,583.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.32 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.009 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	12.67 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	12.56 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.009 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	44,641.977 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	44,608.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.32 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.009 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	17.21 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	17.08 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.009 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	61,184.324 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	61,138.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.32 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	0.961 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	732.320 min
Flow (Peak, Computed)	0.52 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	732.000 min
Flow (Peak Interpolated Output)	0.52 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	0.961 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.72 in
Runoff Volume (Pervious)	2,512.473 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,500.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.73 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	0.961 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	732.320 min
Flow (Peak, Computed)	1.50 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	732.000 min
Flow (Peak Interpolated Output)	1.49 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	0.961 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.81 in
Runoff Volume (Pervious)	6,313.691 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6,289.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.73 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	0.961 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	732.320 min
Flow (Peak, Computed)	2.28 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	732.000 min
Flow (Peak Interpolated Output)	2.28 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	0.961 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.71 in
Runoff Volume (Pervious)	9,454.172 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	9,420.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.73 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	0.961 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	730.480 min
Flow (Peak, Computed)	3.85 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	731.000 min
Flow (Peak Interpolated Output)	3.85 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	0.961 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.53 in
Runoff Volume (Pervious)	15,800.507 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	15,749.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.73 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	6.100 min
Area (User Defined)	0.967 acres

Computational Time Increment	0.813 min
Time to Peak (Computed)	727.120 min
Flow (Peak, Computed)	3.06 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	727.000 min
Flow (Peak Interpolated Output)	3.06 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.967 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	10,941.171 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	10,931.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	6.100 min
Computational Time Increment	0.813 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.78 ft³/s
Unit peak time, Tp	4.067 min
Unit receding limb, Tr	16.267 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	20.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	6.100 min
Area (User Defined)	0.967 acres

Computational Time Increment	0.813 min
Time to Peak (Computed)	727.120 min
Flow (Peak, Computed)	4.71 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	727.000 min
Flow (Peak Interpolated Output)	4.70 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.967 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	17,140.304 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	17,125.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	6.100 min
Computational Time Increment	0.813 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.78 ft³/s
Unit peak time, Tp	4.067 min
Unit receding limb, Tr	16.267 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	20.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	6.100 min
Area (User Defined)	0.967 acres

Computational Time Increment	0.813 min
Time to Peak (Computed)	727.120 min
Flow (Peak, Computed)	5.86 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	727.000 min
Flow (Peak Interpolated Output)	5.85 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.967 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	21,487.704 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	21,468.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	6.100 min
Computational Time Increment	0.813 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.78 ft³/s
Unit peak time, Tp	4.067 min
Unit receding limb, Tr	16.267 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	20.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	6.100 min
Area (User Defined)	0.967 acres

Computational Time Increment	0.813 min
Time to Peak (Computed)	727.120 min
Flow (Peak, Computed)	7.97 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	727.000 min
Flow (Peak Interpolated Output)	7.95 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.967 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	29,450.095 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	29,424.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	6.100 min
Computational Time Increment	0.813 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.78 ft³/s
Unit peak time, Tp	4.067 min
Unit receding limb, Tr	16.267 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	20.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	7.500 min
Area (User Defined)	0.619 acres

Computational Time Increment	1.000 min
Time to Peak (Computed)	728.000 min
Flow (Peak, Computed)	0.51 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	728.000 min
Flow (Peak Interpolated Output)	0.51 ft³/s

Drainage Area	
SCS CN (Composite)	68.000
Area (User Defined)	0.619 acres
Maximum Retention (Pervious)	4.71 in
Maximum Retention (Pervious, 20 percent)	0.94 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.82 in
Runoff Volume (Pervious)	1,832.527 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,828.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	7.500 min
Computational Time Increment	1.000 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.61 ft³/s
Unit peak time, Tp	5.000 min
Unit receding limb, Tr	20.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	25.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	7.500 min
Area (User Defined)	0.619 acres

Computational Time Increment	1.000 min
Time to Peak (Computed)	728.000 min
Flow (Peak, Computed)	1.35 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	728.000 min
Flow (Peak Interpolated Output)	1.35 ft³/s

Drainage Area	
SCS CN (Composite)	68.000
Area (User Defined)	0.619 acres
Maximum Retention (Pervious)	4.71 in
Maximum Retention (Pervious, 20 percent)	0.94 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.97 in
Runoff Volume (Pervious)	4,416.337 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	4,407.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	7.500 min
Computational Time Increment	1.000 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.61 ft³/s
Unit peak time, Tp	5.000 min
Unit receding limb, Tr	20.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	25.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	7.500 min
Area (User Defined)	0.619 acres

Computational Time Increment	1.000 min
Time to Peak (Computed)	728.000 min
Flow (Peak, Computed)	2.01 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	728.000 min
Flow (Peak Interpolated Output)	2.01 ft³/s

Drainage Area	
SCS CN (Composite)	68.000
Area (User Defined)	0.619 acres
Maximum Retention (Pervious)	4.71 in
Maximum Retention (Pervious, 20 percent)	0.94 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.90 in
Runoff Volume (Pervious)	6,516.657 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6,504.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	7.500 min
Computational Time Increment	1.000 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.61 ft³/s
Unit peak time, Tp	5.000 min
Unit receding limb, Tr	20.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	25.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	7.500 min
Area (User Defined)	0.619 acres

Computational Time Increment	1.000 min
Time to Peak (Computed)	728.000 min
Flow (Peak, Computed)	3.30 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	728.000 min
Flow (Peak Interpolated Output)	3.30 ft³/s

Drainage Area	
SCS CN (Composite)	68.000
Area (User Defined)	0.619 acres
Maximum Retention (Pervious)	4.71 in
Maximum Retention (Pervious, 20 percent)	0.94 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	10,717.188 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	10,699.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	7.500 min
Computational Time Increment	1.000 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.61 ft³/s
Unit peak time, Tp	5.000 min
Unit receding limb, Tr	20.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	25.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.769 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	2.53 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	2.51 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.769 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	8,700.891 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	8,694.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.46 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.769 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	3.90 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	3.86 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.769 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	13,630.706 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	13,620.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.46 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.769 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	4.85 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	4.81 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.769 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	17,087.944 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	17,075.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.46 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.769 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	6.59 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	6.54 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.769 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	23,419.983 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	23,402.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.46 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Storm Event	NOAA-D (3.35 in)
Return Event	2 years
Duration	1,440.000 min
Depth	3.35 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.660 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	2.17 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	2.16 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.660 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.12 in
Runoff Volume (Pervious)	7,467.605 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	7,462.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.97 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Storm Event	NOAA-D (5.12 in)
Return Event	10 years
Duration	1,440.000 min
Depth	5.12 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.660 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	3.34 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	3.32 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.660 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.88 in
Runoff Volume (Pervious)	11,698.655 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	11,690.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.97 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Storm Event	NOAA-D (6.36 in)
Return Event	25 years
Duration	1,440.000 min
Depth	6.36 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.660 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	4.16 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	4.13 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.660 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.12 in
Runoff Volume (Pervious)	14,665.856 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	14,655.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.97 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Storm Event	NOAA-D (8.63 in)
Return Event	100 years
Duration	1,440.000 min
Depth	8.63 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.660 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	726.667 min
Flow (Peak, Computed)	5.66 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	726.000 min
Flow (Peak Interpolated Output)	5.61 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.660 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.39 in
Runoff Volume (Pervious)	20,100.375 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	20,085.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.97 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Elevation-Area Volume Curve
Label: PorousPavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Elevation (ft)	Planimeter (ft^2)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ft^3)	Volume (Total) (ft^3)
88.59	0.0	0.660	0.000	0.000	0.000
89.25	0.0	0.660	1.980	18,975.000	7,590.000

Parking Garage

Subsection: Elevation vs. Volume Curve
Label: StorageLayer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Elevation-Volume

Pond Elevation (ft)	Pond Volume (ft³)
80.91	0.000
81.01	152.000
81.11	304.000
81.21	456.000
81.31	608.000
81.41	760.000
81.56	1,051.000
81.71	1,388.000
81.86	1,749.000
82.01	2,124.000
82.16	2,505.000
82.31	2,886.000
82.46	3,261.000
82.61	3,621.000
82.76	3,958.000
82.91	4,249.000

Parking Garage

Subsection: Outlet Input Data
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	88.59 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	89.25 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward + Reverse	TW	88.85	89.25
Tailwater Settings	Tailwater			(N/A)	(N/A)

Parking Garage

Subsection: Outlet Input Data
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	88.85 ft
Weir Length	3.50 ft
Weir Coefficient	3.00 (ft^0.5)/s

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	80.91	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	80.91	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	80.91	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	80.91	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	80.91	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	80.91	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	80.91	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	80.91	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	80.91	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.01	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.01	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.01	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.01	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.01	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.01	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.01	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.01	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.01	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.11	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.11	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.11	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.11	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.11	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.11	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.11	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.11	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.11	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.21	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.21	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.21	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.21	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.21	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.21	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.21	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.21	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.21	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.31	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.31	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.31	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.31	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.31	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.31	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.31	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.31	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.31	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.41	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.41	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.41	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.41	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.41	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.41	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.41	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.41	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.41	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.51	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.51	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.51	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.51	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.51	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.51	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.51	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.51	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.51	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.61	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.61	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.61	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.61	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.61	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.61	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.61	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.61	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.61	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.71	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.71	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.71	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.71	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.71	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.71	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.71	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.71	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.71	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.81	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.81	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.81	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.81	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.81	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.81	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.81	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.81	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.81	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	81.91	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	81.91	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	81.91	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	81.91	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	81.91	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	81.91	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	81.91	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	81.91	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	81.91	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.01	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.01	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.01	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.01	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.01	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.01	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.01	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.01	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.01	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.11	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.11	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.11	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.11	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.11	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.11	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.11	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.11	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.11	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.21	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.21	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.21	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.21	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.21	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.21	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.21	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.21	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.21	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.31	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.31	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.31	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.31	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.31	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.31	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.31	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.31	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.31	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.41	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.41	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.41	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.41	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.41	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.41	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.41	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.41	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.41	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.51	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.51	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.51	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.51	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.51	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.51	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.51	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.51	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.51	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.61	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.61	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.61	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.61	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.61	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.61	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.61	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.61	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.61	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.71	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.71	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.71	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.71	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.71	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.71	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.71	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.71	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.71	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.81	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.81	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.81	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.81	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.81	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.81	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.81	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.81	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.81	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Individual Outlet Curves
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
88.59	0.00	82.91	0.00	HW & TW below Inv.El.=88.850
88.69	0.00	82.91	0.00	HW & TW below Inv.El.=88.850
88.79	0.00	82.91	0.00	HW & TW below Inv.El.=88.850
88.85	0.00	82.91	0.00	H=.00; Htw=.00; Qfree=.00;
88.89	0.08	82.91	0.00	H=.04; Htw=.00; Qfree=.08;
88.99	0.55	82.91	0.00	H=.14; Htw=.00; Qfree=.55;
89.09	1.22	82.91	0.00	H=.24; Htw=.00; Qfree=1.22;
89.19	2.04	82.91	0.00	H=.34; Htw=.00; Qfree=2.04;
89.25	2.60	82.91	0.00	H=.40; Htw=.00; Qfree=2.60;

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	80.91	0.00	None Contributing
88.69	0.00	80.91	0.00	None Contributing
88.79	0.00	80.91	0.00	None Contributing
88.85	0.00	80.91	0.00	Weir - 1
88.89	0.08	80.91	0.00	Weir - 1
88.99	0.55	80.91	0.00	Weir - 1
89.09	1.22	80.91	0.00	Weir - 1
89.19	2.04	80.91	0.00	Weir - 1
89.25	2.60	80.91	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.01	0.00	None Contributing
88.69	0.00	81.01	0.00	None Contributing
88.79	0.00	81.01	0.00	None Contributing
88.85	0.00	81.01	0.00	Weir - 1
88.89	0.08	81.01	0.00	Weir - 1
88.99	0.55	81.01	0.00	Weir - 1
89.09	1.22	81.01	0.00	Weir - 1
89.19	2.04	81.01	0.00	Weir - 1
89.25	2.60	81.01	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.11	0.00	None Contributing
88.69	0.00	81.11	0.00	None Contributing
88.79	0.00	81.11	0.00	None Contributing
88.85	0.00	81.11	0.00	Weir - 1
88.89	0.08	81.11	0.00	Weir - 1
88.99	0.55	81.11	0.00	Weir - 1
89.09	1.22	81.11	0.00	Weir - 1
89.19	2.04	81.11	0.00	Weir - 1
89.25	2.60	81.11	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.21	0.00	None Contributing
88.69	0.00	81.21	0.00	None Contributing
88.79	0.00	81.21	0.00	None Contributing
88.85	0.00	81.21	0.00	Weir - 1
88.89	0.08	81.21	0.00	Weir - 1
88.99	0.55	81.21	0.00	Weir - 1
89.09	1.22	81.21	0.00	Weir - 1
89.19	2.04	81.21	0.00	Weir - 1
89.25	2.60	81.21	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.31	0.00	None Contributing
88.69	0.00	81.31	0.00	None Contributing
88.79	0.00	81.31	0.00	None Contributing
88.85	0.00	81.31	0.00	Weir - 1
88.89	0.08	81.31	0.00	Weir - 1
88.99	0.55	81.31	0.00	Weir - 1
89.09	1.22	81.31	0.00	Weir - 1
89.19	2.04	81.31	0.00	Weir - 1
89.25	2.60	81.31	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.41	0.00	None Contributing
88.69	0.00	81.41	0.00	None Contributing
88.79	0.00	81.41	0.00	None Contributing
88.85	0.00	81.41	0.00	Weir - 1
88.89	0.08	81.41	0.00	Weir - 1
88.99	0.55	81.41	0.00	Weir - 1
89.09	1.22	81.41	0.00	Weir - 1
89.19	2.04	81.41	0.00	Weir - 1
89.25	2.60	81.41	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.51	0.00	None Contributing
88.69	0.00	81.51	0.00	None Contributing
88.79	0.00	81.51	0.00	None Contributing
88.85	0.00	81.51	0.00	Weir - 1
88.89	0.08	81.51	0.00	Weir - 1
88.99	0.55	81.51	0.00	Weir - 1
89.09	1.22	81.51	0.00	Weir - 1
89.19	2.04	81.51	0.00	Weir - 1
89.25	2.60	81.51	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.61	0.00	None Contributing
88.69	0.00	81.61	0.00	None Contributing
88.79	0.00	81.61	0.00	None Contributing
88.85	0.00	81.61	0.00	Weir - 1
88.89	0.08	81.61	0.00	Weir - 1
88.99	0.55	81.61	0.00	Weir - 1
89.09	1.22	81.61	0.00	Weir - 1
89.19	2.04	81.61	0.00	Weir - 1
89.25	2.60	81.61	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.71	0.00	None Contributing
88.69	0.00	81.71	0.00	None Contributing
88.79	0.00	81.71	0.00	None Contributing
88.85	0.00	81.71	0.00	Weir - 1
88.89	0.08	81.71	0.00	Weir - 1
88.99	0.55	81.71	0.00	Weir - 1
89.09	1.22	81.71	0.00	Weir - 1
89.19	2.04	81.71	0.00	Weir - 1
89.25	2.60	81.71	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.81	0.00	None Contributing
88.69	0.00	81.81	0.00	None Contributing
88.79	0.00	81.81	0.00	None Contributing
88.85	0.00	81.81	0.00	Weir - 1
88.89	0.08	81.81	0.00	Weir - 1
88.99	0.55	81.81	0.00	Weir - 1
89.09	1.22	81.81	0.00	Weir - 1
89.19	2.04	81.81	0.00	Weir - 1
89.25	2.60	81.81	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.91	0.00	None Contributing
88.69	0.00	81.91	0.00	None Contributing
88.79	0.00	81.91	0.00	None Contributing
88.85	0.00	81.91	0.00	Weir - 1
88.89	0.08	81.91	0.00	Weir - 1
88.99	0.55	81.91	0.00	Weir - 1
89.09	1.22	81.91	0.00	Weir - 1
89.19	2.04	81.91	0.00	Weir - 1
89.25	2.60	81.91	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.01	0.00	None Contributing
88.69	0.00	82.01	0.00	None Contributing
88.79	0.00	82.01	0.00	None Contributing
88.85	0.00	82.01	0.00	Weir - 1
88.89	0.08	82.01	0.00	Weir - 1
88.99	0.55	82.01	0.00	Weir - 1
89.09	1.22	82.01	0.00	Weir - 1
89.19	2.04	82.01	0.00	Weir - 1
89.25	2.60	82.01	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.11	0.00	None Contributing
88.69	0.00	82.11	0.00	None Contributing
88.79	0.00	82.11	0.00	None Contributing
88.85	0.00	82.11	0.00	Weir - 1
88.89	0.08	82.11	0.00	Weir - 1
88.99	0.55	82.11	0.00	Weir - 1
89.09	1.22	82.11	0.00	Weir - 1
89.19	2.04	82.11	0.00	Weir - 1
89.25	2.60	82.11	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.21	0.00	None Contributing
88.69	0.00	82.21	0.00	None Contributing
88.79	0.00	82.21	0.00	None Contributing
88.85	0.00	82.21	0.00	Weir - 1
88.89	0.08	82.21	0.00	Weir - 1
88.99	0.55	82.21	0.00	Weir - 1
89.09	1.22	82.21	0.00	Weir - 1
89.19	2.04	82.21	0.00	Weir - 1
89.25	2.60	82.21	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.31	0.00	None Contributing
88.69	0.00	82.31	0.00	None Contributing
88.79	0.00	82.31	0.00	None Contributing
88.85	0.00	82.31	0.00	Weir - 1
88.89	0.08	82.31	0.00	Weir - 1
88.99	0.55	82.31	0.00	Weir - 1
89.09	1.22	82.31	0.00	Weir - 1
89.19	2.04	82.31	0.00	Weir - 1
89.25	2.60	82.31	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.41	0.00	None Contributing
88.69	0.00	82.41	0.00	None Contributing
88.79	0.00	82.41	0.00	None Contributing
88.85	0.00	82.41	0.00	Weir - 1
88.89	0.08	82.41	0.00	Weir - 1
88.99	0.55	82.41	0.00	Weir - 1
89.09	1.22	82.41	0.00	Weir - 1
89.19	2.04	82.41	0.00	Weir - 1
89.25	2.60	82.41	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.51	0.00	None Contributing
88.69	0.00	82.51	0.00	None Contributing
88.79	0.00	82.51	0.00	None Contributing
88.85	0.00	82.51	0.00	Weir - 1
88.89	0.08	82.51	0.00	Weir - 1
88.99	0.55	82.51	0.00	Weir - 1
89.09	1.22	82.51	0.00	Weir - 1
89.19	2.04	82.51	0.00	Weir - 1
89.25	2.60	82.51	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.61	0.00	None Contributing
88.69	0.00	82.61	0.00	None Contributing
88.79	0.00	82.61	0.00	None Contributing
88.85	0.00	82.61	0.00	Weir - 1
88.89	0.08	82.61	0.00	Weir - 1
88.99	0.55	82.61	0.00	Weir - 1
89.09	1.22	82.61	0.00	Weir - 1
89.19	2.04	82.61	0.00	Weir - 1
89.25	2.60	82.61	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.71	0.00	None Contributing
88.69	0.00	82.71	0.00	None Contributing
88.79	0.00	82.71	0.00	None Contributing
88.85	0.00	82.71	0.00	Weir - 1
88.89	0.08	82.71	0.00	Weir - 1
88.99	0.55	82.71	0.00	Weir - 1
89.09	1.22	82.71	0.00	Weir - 1
89.19	2.04	82.71	0.00	Weir - 1
89.25	2.60	82.71	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.81	0.00	None Contributing
88.69	0.00	82.81	0.00	None Contributing
88.79	0.00	82.81	0.00	None Contributing
88.85	0.00	82.81	0.00	Weir - 1
88.89	0.08	82.81	0.00	Weir - 1
88.99	0.55	82.81	0.00	Weir - 1
89.09	1.22	82.81	0.00	Weir - 1
89.19	2.04	82.81	0.00	Weir - 1
89.25	2.60	82.81	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.91	0.00	None Contributing
88.69	0.00	82.91	0.00	None Contributing
88.79	0.00	82.91	0.00	None Contributing
88.85	0.00	82.91	0.00	Weir - 1
88.89	0.08	82.91	0.00	Weir - 1
88.99	0.55	82.91	0.00	Weir - 1
89.09	1.22	82.91	0.00	Weir - 1
89.19	2.04	82.91	0.00	Weir - 1
89.25	2.60	82.91	0.00	Weir - 1

Parking Garage

Subsection: Outlet Input Data
Label: Storage Layer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	80.91 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	82.91 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 2	Forward	TW	80.91	82.91
Rectangular Weir	Weir - 1	Forward	TW	81.91	82.91
Tailwater Settings	Tailwater			(N/A)	(N/A)

Parking Garage

Subsection: Outlet Input Data
Label: Storage Layer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	81.91 ft
Weir Length	3.00 ft
Weir Coefficient	3.20 (ft^0.5)/s

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	80.91 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Parking Garage

Subsection: Individual Outlet Curves
Label: Storage Layer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Rectangular Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
80.91	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.01	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.11	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.21	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.31	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.41	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.51	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.61	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.71	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.81	0.00	(N/A)	0.00	HW & TW below Inv.El.=81.910
81.91	0.00	(N/A)	0.00	H=.00; Htw=.00; Qfree=.00;
82.01	0.30	(N/A)	0.00	H=.10; Htw=.00; Qfree=.30;
82.11	0.85	(N/A)	0.00	H=.20; Htw=.00; Qfree=.85;
82.21	1.55	(N/A)	0.00	H=.30; Htw=.00; Qfree=1.55;
82.31	2.36	(N/A)	0.00	H=.40; Htw=.00; Qfree=2.36;
82.41	3.28	(N/A)	0.00	H=.50; Htw=.00; Qfree=3.28;
82.51	4.28	(N/A)	0.00	H=.60; Htw=.00; Qfree=4.28;
82.61	5.36	(N/A)	0.00	H=.70; Htw=.00; Qfree=5.36;
82.71	6.50	(N/A)	0.00	H=.80; Htw=.00; Qfree=6.50;
82.81	7.70	(N/A)	0.00	H=.90; Htw=.00; Qfree=7.70;
82.91	8.96	(N/A)	0.00	H=1.00; Htw=.00; Qfree=8.96;

Parking Garage

Subsection: Individual Outlet Curves
Label: Storage Layer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
80.91	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
81.01	0.02	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .025ft Dcr= .074ft CRIT.DEPTH Hev= .00ft
81.11	0.09	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .053ft Dcr= .146ft CRIT.DEPTH Hev= .00ft
81.21	0.19	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .083ft Dcr= .217ft CRIT.DEPTH Hev= .00ft
81.31	0.31	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .116ft Dcr= .283ft CRIT.DEPTH Hev= .00ft
81.41	0.47	(N/A)	0.00	H =.25
81.51	0.56	(N/A)	0.00	H =.35
81.61	0.63	(N/A)	0.00	H =.45
81.71	0.70	(N/A)	0.00	H =.55
81.81	0.76	(N/A)	0.00	H =.65
81.91	0.82	(N/A)	0.00	H =.75
82.01	0.87	(N/A)	0.00	H =.85
82.11	0.92	(N/A)	0.00	H =.95
82.21	0.97	(N/A)	0.00	H =1.05
82.31	1.01	(N/A)	0.00	H =1.15
82.41	1.06	(N/A)	0.00	H =1.25
82.51	1.10	(N/A)	0.00	H =1.35
82.61	1.14	(N/A)	0.00	H =1.45
82.71	1.18	(N/A)	0.00	H =1.55
82.81	1.21	(N/A)	0.00	H =1.65
82.91	1.25	(N/A)	0.00	H =1.75

Parking Garage

Subsection: Composite Rating Curve
Label: Storage Layer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
80.91	0.00	(N/A)	0.00	None Contributing
81.01	0.02	(N/A)	0.00	Orifice - 2
81.11	0.09	(N/A)	0.00	Orifice - 2
81.21	0.19	(N/A)	0.00	Orifice - 2
81.31	0.31	(N/A)	0.00	Orifice - 2
81.41	0.47	(N/A)	0.00	Orifice - 2
81.51	0.56	(N/A)	0.00	Orifice - 2
81.61	0.63	(N/A)	0.00	Orifice - 2
81.71	0.70	(N/A)	0.00	Orifice - 2
81.81	0.76	(N/A)	0.00	Orifice - 2
81.91	0.82	(N/A)	0.00	Orifice - 2 + Weir - 1
82.01	1.17	(N/A)	0.00	Orifice - 2 + Weir - 1
82.11	1.77	(N/A)	0.00	Orifice - 2 + Weir - 1
82.21	2.51	(N/A)	0.00	Orifice - 2 + Weir - 1
82.31	3.38	(N/A)	0.00	Orifice - 2 + Weir - 1
82.41	4.34	(N/A)	0.00	Orifice - 2 + Weir - 1
82.51	5.38	(N/A)	0.00	Orifice - 2 + Weir - 1
82.61	6.50	(N/A)	0.00	Orifice - 2 + Weir - 1
82.71	7.68	(N/A)	0.00	Orifice - 2 + Weir - 1
82.81	8.92	(N/A)	0.00	Orifice - 2 + Weir - 1
82.91	10.21	(N/A)	0.00	Orifice - 2 + Weir - 1

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: PorousPavement
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	88.59	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

Time to Peak (min)	Maximum Storage Elevation (ft)	Maximum Storage Volume (ft³)
747.000	88.96	4,282.000

	Forward Flow Peaks Time to Peak (min)	Forward Flow Peaks Flow (Peak) (ft³/s)	Reverse Flow Peaks Time to Peak (min)	Reverse Flow Peaks Flow (Peak) (ft³/s)
Pond Inflow....	726.000	2.16	0.000	0.00
Pond Outflow...	747.000	0.42	0.000	0.00

	Total Volume In Volume (ft³)	Total Volume In Direction	Total Volume Out Volume (ft³)	Total Volume Out Direction
Pond Inflow....	7,462.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	4,315.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	7,462.000 ft³
Volume (Total Out ICPM)	4,315.000 ft³
Volume (Ending)	3,146.000 ft³
Elevation (Ending)	88.86 ft
Difference	1.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.011 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: PorousPavement
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	88.59	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	735.000	89.09	5,717.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	726.000	3.32	0.000	0.00
Pond Outflow...	735.000	1.20	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	11,690.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	8,461.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	11,690.000 ft³
Volume (Total Out ICPM)	8,461.000 ft³
Volume (Ending)	3,228.000 ft³
Elevation (Ending)	88.87 ft
Difference	1.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.011 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: PorousPavement
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	88.59	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	733.000	89.15	6,433.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	726.000	4.13	0.000	0.00
Pond Outflow...	733.000	1.71	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	14,655.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	11,369.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	14,655.000 ft³
Volume (Total Out ICPM)	11,369.000 ft³
Volume (Ending)	3,285.000 ft³
Elevation (Ending)	88.88 ft
Difference	2.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.011 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: PorousPavement
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	88.59	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	733.000	89.24	7,503.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	726.000	5.61	0.000	0.00
Pond Outflow...	733.000	2.53	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	20,085.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	16,699.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	20,085.000 ft³
Volume (Total Out ICPM)	16,699.000 ft³
Volume (Ending)	3,384.000 ft³
Elevation (Ending)	88.88 ft
Difference	2.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.011 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: StorageLayer
Scenario: Post-Development 2 year

Return Event: 2 years
Storm Event: NOAA-D (3.35 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	80.91	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

Time to Peak (min)	Maximum Storage Elevation (ft)	Maximum Storage Volume (ft³)
739.000	81.99	2,080.000

	Forward Flow Peaks Time to Peak (min)	Forward Flow Peaks Flow (Peak) (ft³/s)	Reverse Flow Peaks Time to Peak (min)	Reverse Flow Peaks Flow (Peak) (ft³/s)
Pond Inflow....	727.000	2.70	0.000	0.00
Pond Outflow...	739.000	1.11	0.000	0.00

	Total Volume In Volume (ft³)	Total Volume In Direction	Total Volume Out Volume (ft³)	Total Volume Out Direction
Pond Inflow....	13,009.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	12,769.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	13,009.000 ft³
Volume (Total Out ICPM)	12,769.000 ft³
Volume (Ending)	239.000 ft³
Elevation (Ending)	81.07 ft
Difference	2.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.014 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: StorageLayer
Scenario: Post-Development 10 year

Return Event: 10 years
Storm Event: NOAA-D (5.12 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	80.91	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	730.000	82.32	2,910.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	727.000	4.81	0.000	0.00
Pond Outflow...	730.000	3.47	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	22,081.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	21,771.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	22,081.000 ft³
Volume (Total Out ICPM)	21,771.000 ft³
Volume (Ending)	307.000 ft³
Elevation (Ending)	81.11 ft
Difference	3.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.012 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: StorageLayer
Scenario: Post-Development 25 year

Return Event: 25 years
Storm Event: NOAA-D (6.36 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	80.91	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	730.000	82.48	3,301.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	727.000	6.21	0.000	0.00
Pond Outflow...	730.000	5.03	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	28,444.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	28,100.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	28,444.000 ft³
Volume (Total Out ICPM)	28,100.000 ft³
Volume (Ending)	340.000 ft³
Elevation (Ending)	81.13 ft
Difference	3.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.012 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: StorageLayer
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: NOAA-D (8.63 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	80.91	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	729.000	82.69	3,795.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	727.000	8.66	0.000	0.00
Pond Outflow...	729.000	7.41	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	40,101.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	39,698.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	40,101.000 ft³
Volume (Total Out ICPM)	39,698.000 ft³
Volume (Ending)	399.000 ft³
Elevation (Ending)	81.17 ft
Difference	5.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.011 %

Parking Garage

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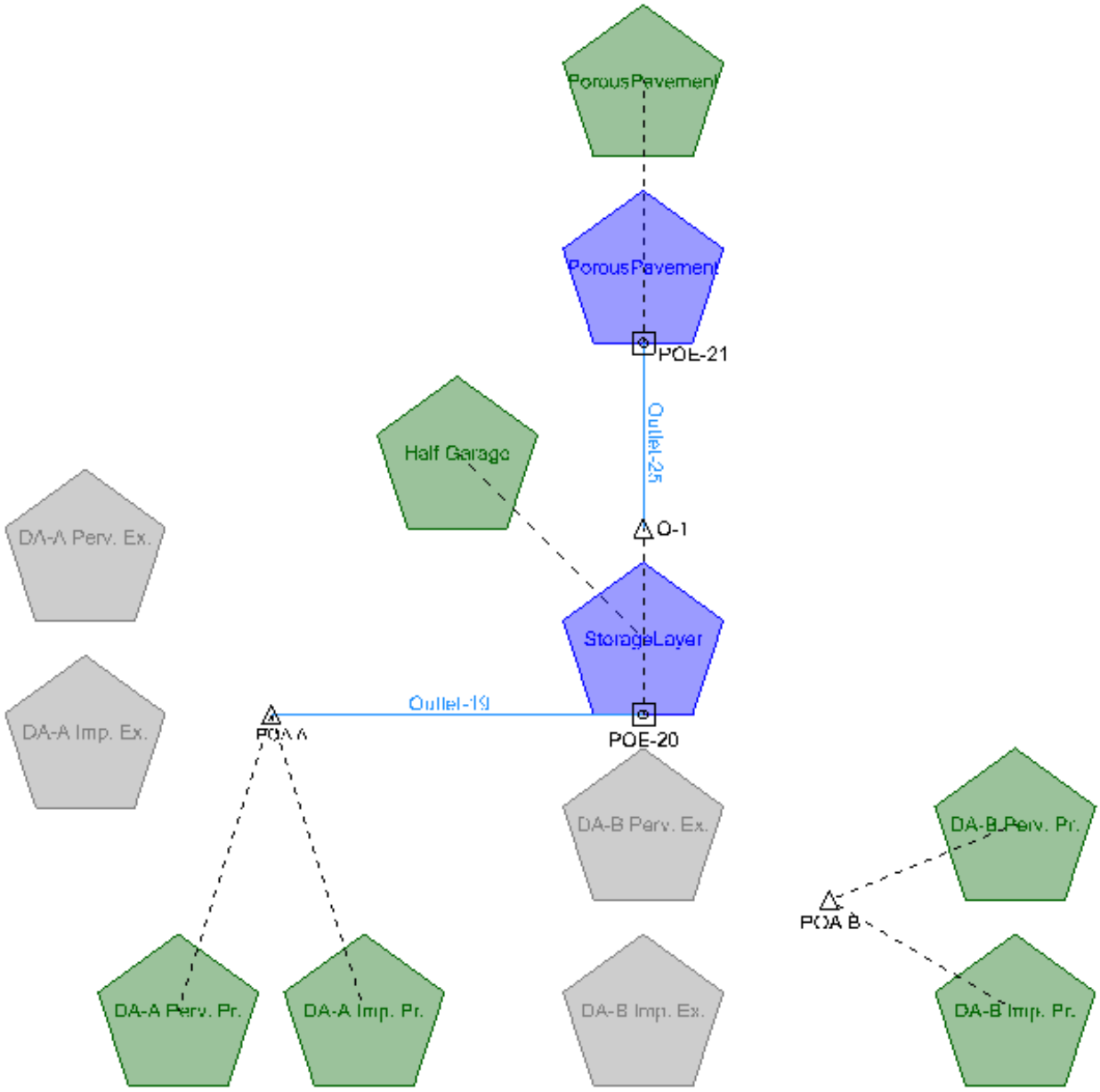
Appendix D
Water Quality Calculations

Parking Garage

Project Summary	
Title	Princeton Cancer Center Parking Garage
Engineer	Kiera Nissen
Company	French and Parrello Associates
Date	12/14/2022

Notes	WATER QUALITY CALCULATIONS



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Parking Garage

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
DA-A Imp. Pr.	Post-Development Water Quality Storm	1	7,545.000	65.000	5.99
DA-A Perv. Pr.	Post-Development Water Quality Storm	1	31.000	108.000	0.02
DA-B Imp. Pr.	Post-Development Water Quality Storm	1	3,631.000	66.000	2.82
DA-B Perv. Pr.	Post-Development Water Quality Storm	1	43.000	106.000	0.02
Half Garage	Post-Development Water Quality Storm	1	2,888.000	65.000	2.29
PorousPavement	Post-Development Water Quality Storm	1	2,479.000	65.000	1.97

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
POA A	Post-Development Water Quality Storm	1	10,464.000	65.000	6.60
POA B	Post-Development Water Quality Storm	1	3,674.000	66.000	2.82

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
PorousPavement (IN)	Post-Development Water Quality Storm	1	2,479.000	65.000	1.97	(N/A)	(N/A)
PorousPavement (OUT)	Post-Development Water Quality Storm	1	0.000	0.000	0.00	88.81	2,479.000
StorageLayer (IN)	Post-Development Water Quality Storm	1	2,888.000	65.000	2.29	(N/A)	(N/A)
StorageLayer (OUT)	Post-Development Water Quality Storm	1	2,888.000	74.000	0.73	81.76	1,518.000

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	2.009 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	65.333 min
Flow (Peak, Computed)	6.01 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	65.000 min
Flow (Peak Interpolated Output)	5.99 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	2.009 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	7,544.794 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	7,545.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	27.32 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Imp. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	13.800 min
Area (User Defined)	0.961 acres

Computational Time Increment	1.840 min
Time to Peak (Computed)	108.560 min
Flow (Peak, Computed)	0.02 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	108.000 min
Flow (Peak Interpolated Output)	0.02 ft³/s

Drainage Area	
SCS CN (Composite)	66.000
Area (User Defined)	0.961 acres
Maximum Retention (Pervious)	5.15 in
Maximum Retention (Pervious, 20 percent)	1.03 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.01 in
Runoff Volume (Pervious)	31.348 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	31.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	13.800 min
Computational Time Increment	1.840 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.73 ft³/s
Unit peak time, Tp	9.200 min
Unit receding limb, Tr	36.800 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-A Perv. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	46.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	6.100 min
Area (User Defined)	0.967 acres

Computational Time Increment	0.813 min
Time to Peak (Computed)	65.880 min
Flow (Peak, Computed)	2.83 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	66.000 min
Flow (Peak Interpolated Output)	2.82 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.967 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	3,631.566 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3,631.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	6.100 min
Computational Time Increment	0.813 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.78 ft³/s
Unit peak time, Tp	4.067 min
Unit receding limb, Tr	16.267 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Imp. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	20.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	7.500 min
Area (User Defined)	0.619 acres

Computational Time Increment	1.000 min
Time to Peak (Computed)	106.000 min
Flow (Peak, Computed)	0.02 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	106.000 min
Flow (Peak Interpolated Output)	0.02 ft³/s

Drainage Area	
SCS CN (Composite)	68.000
Area (User Defined)	0.619 acres
Maximum Retention (Pervious)	4.71 in
Maximum Retention (Pervious, 20 percent)	0.94 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.02 in
Runoff Volume (Pervious)	42.734 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	43.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	7.500 min
Computational Time Increment	1.000 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.61 ft³/s
Unit peak time, Tp	5.000 min
Unit receding limb, Tr	20.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: DA-B Perv. Pr.
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	25.000 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.769 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	65.333 min
Flow (Peak, Computed)	2.30 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	65.000 min
Flow (Peak Interpolated Output)	2.29 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.769 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	2,887.978 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,888.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	10.46 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: Half Garage
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Storm Event	NJWQ (1.3 in)
Return Event	1 years
Duration	1,440.000 min
Depth	1.25 in
Time of Concentration (Composite)	5.000 min
Area (User Defined)	0.660 acres

Computational Time Increment	0.667 min
Time to Peak (Computed)	65.333 min
Flow (Peak, Computed)	1.97 ft³/s
Output Increment	1.002 min
Time to Flow (Peak Interpolated Output)	65.000 min
Flow (Peak Interpolated Output)	1.97 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.660 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	2,478.628 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,479.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	5.000 min
Computational Time Increment	0.667 min
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.97 ft³/s
Unit peak time, Tp	3.333 min
Unit receding limb, Tr	13.333 min

Parking Garage

Subsection: Unit Hydrograph Summary
Label: PorousPavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

SCS Unit Hydrograph Parameters	
Total unit time, Tb	16.667 min

Parking Garage

Subsection: Elevation-Area Volume Curve
Label: PorousPavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ft³)	Volume (Total) (ft³)
88.59	0.0	0.660	0.000	0.000	0.000
89.25	0.0	0.660	1.980	18,975.000	7,590.000

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	80.91	0.00	None Contributing
88.69	0.00	80.91	0.00	None Contributing
88.79	0.00	80.91	0.00	None Contributing
88.85	0.00	80.91	0.00	Weir - 1
88.89	0.08	80.91	0.00	Weir - 1
88.99	0.55	80.91	0.00	Weir - 1
89.09	1.22	80.91	0.00	Weir - 1
89.19	2.04	80.91	0.00	Weir - 1
89.25	2.60	80.91	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.01	0.00	None Contributing
88.69	0.00	81.01	0.00	None Contributing
88.79	0.00	81.01	0.00	None Contributing
88.85	0.00	81.01	0.00	Weir - 1
88.89	0.08	81.01	0.00	Weir - 1
88.99	0.55	81.01	0.00	Weir - 1
89.09	1.22	81.01	0.00	Weir - 1
89.19	2.04	81.01	0.00	Weir - 1
89.25	2.60	81.01	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.11	0.00	None Contributing
88.69	0.00	81.11	0.00	None Contributing
88.79	0.00	81.11	0.00	None Contributing
88.85	0.00	81.11	0.00	Weir - 1
88.89	0.08	81.11	0.00	Weir - 1
88.99	0.55	81.11	0.00	Weir - 1
89.09	1.22	81.11	0.00	Weir - 1
89.19	2.04	81.11	0.00	Weir - 1
89.25	2.60	81.11	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.21	0.00	None Contributing
88.69	0.00	81.21	0.00	None Contributing
88.79	0.00	81.21	0.00	None Contributing
88.85	0.00	81.21	0.00	Weir - 1
88.89	0.08	81.21	0.00	Weir - 1
88.99	0.55	81.21	0.00	Weir - 1
89.09	1.22	81.21	0.00	Weir - 1
89.19	2.04	81.21	0.00	Weir - 1
89.25	2.60	81.21	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.31	0.00	None Contributing
88.69	0.00	81.31	0.00	None Contributing
88.79	0.00	81.31	0.00	None Contributing
88.85	0.00	81.31	0.00	Weir - 1
88.89	0.08	81.31	0.00	Weir - 1
88.99	0.55	81.31	0.00	Weir - 1
89.09	1.22	81.31	0.00	Weir - 1
89.19	2.04	81.31	0.00	Weir - 1
89.25	2.60	81.31	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.41	0.00	None Contributing
88.69	0.00	81.41	0.00	None Contributing
88.79	0.00	81.41	0.00	None Contributing
88.85	0.00	81.41	0.00	Weir - 1
88.89	0.08	81.41	0.00	Weir - 1
88.99	0.55	81.41	0.00	Weir - 1
89.09	1.22	81.41	0.00	Weir - 1
89.19	2.04	81.41	0.00	Weir - 1
89.25	2.60	81.41	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.51	0.00	None Contributing
88.69	0.00	81.51	0.00	None Contributing
88.79	0.00	81.51	0.00	None Contributing
88.85	0.00	81.51	0.00	Weir - 1
88.89	0.08	81.51	0.00	Weir - 1
88.99	0.55	81.51	0.00	Weir - 1
89.09	1.22	81.51	0.00	Weir - 1
89.19	2.04	81.51	0.00	Weir - 1
89.25	2.60	81.51	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.61	0.00	None Contributing
88.69	0.00	81.61	0.00	None Contributing
88.79	0.00	81.61	0.00	None Contributing
88.85	0.00	81.61	0.00	Weir - 1
88.89	0.08	81.61	0.00	Weir - 1
88.99	0.55	81.61	0.00	Weir - 1
89.09	1.22	81.61	0.00	Weir - 1
89.19	2.04	81.61	0.00	Weir - 1
89.25	2.60	81.61	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.71	0.00	None Contributing
88.69	0.00	81.71	0.00	None Contributing
88.79	0.00	81.71	0.00	None Contributing
88.85	0.00	81.71	0.00	Weir - 1
88.89	0.08	81.71	0.00	Weir - 1
88.99	0.55	81.71	0.00	Weir - 1
89.09	1.22	81.71	0.00	Weir - 1
89.19	2.04	81.71	0.00	Weir - 1
89.25	2.60	81.71	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.81	0.00	None Contributing
88.69	0.00	81.81	0.00	None Contributing
88.79	0.00	81.81	0.00	None Contributing
88.85	0.00	81.81	0.00	Weir - 1
88.89	0.08	81.81	0.00	Weir - 1
88.99	0.55	81.81	0.00	Weir - 1
89.09	1.22	81.81	0.00	Weir - 1
89.19	2.04	81.81	0.00	Weir - 1
89.25	2.60	81.81	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	81.91	0.00	None Contributing
88.69	0.00	81.91	0.00	None Contributing
88.79	0.00	81.91	0.00	None Contributing
88.85	0.00	81.91	0.00	Weir - 1
88.89	0.08	81.91	0.00	Weir - 1
88.99	0.55	81.91	0.00	Weir - 1
89.09	1.22	81.91	0.00	Weir - 1
89.19	2.04	81.91	0.00	Weir - 1
89.25	2.60	81.91	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.01	0.00	None Contributing
88.69	0.00	82.01	0.00	None Contributing
88.79	0.00	82.01	0.00	None Contributing
88.85	0.00	82.01	0.00	Weir - 1
88.89	0.08	82.01	0.00	Weir - 1
88.99	0.55	82.01	0.00	Weir - 1
89.09	1.22	82.01	0.00	Weir - 1
89.19	2.04	82.01	0.00	Weir - 1
89.25	2.60	82.01	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.11	0.00	None Contributing
88.69	0.00	82.11	0.00	None Contributing
88.79	0.00	82.11	0.00	None Contributing
88.85	0.00	82.11	0.00	Weir - 1
88.89	0.08	82.11	0.00	Weir - 1
88.99	0.55	82.11	0.00	Weir - 1
89.09	1.22	82.11	0.00	Weir - 1
89.19	2.04	82.11	0.00	Weir - 1
89.25	2.60	82.11	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.21	0.00	None Contributing
88.69	0.00	82.21	0.00	None Contributing
88.79	0.00	82.21	0.00	None Contributing
88.85	0.00	82.21	0.00	Weir - 1
88.89	0.08	82.21	0.00	Weir - 1
88.99	0.55	82.21	0.00	Weir - 1
89.09	1.22	82.21	0.00	Weir - 1
89.19	2.04	82.21	0.00	Weir - 1
89.25	2.60	82.21	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.31	0.00	None Contributing
88.69	0.00	82.31	0.00	None Contributing
88.79	0.00	82.31	0.00	None Contributing
88.85	0.00	82.31	0.00	Weir - 1
88.89	0.08	82.31	0.00	Weir - 1
88.99	0.55	82.31	0.00	Weir - 1
89.09	1.22	82.31	0.00	Weir - 1
89.19	2.04	82.31	0.00	Weir - 1
89.25	2.60	82.31	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.41	0.00	None Contributing
88.69	0.00	82.41	0.00	None Contributing
88.79	0.00	82.41	0.00	None Contributing
88.85	0.00	82.41	0.00	Weir - 1
88.89	0.08	82.41	0.00	Weir - 1
88.99	0.55	82.41	0.00	Weir - 1
89.09	1.22	82.41	0.00	Weir - 1
89.19	2.04	82.41	0.00	Weir - 1
89.25	2.60	82.41	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.51	0.00	None Contributing
88.69	0.00	82.51	0.00	None Contributing
88.79	0.00	82.51	0.00	None Contributing
88.85	0.00	82.51	0.00	Weir - 1
88.89	0.08	82.51	0.00	Weir - 1
88.99	0.55	82.51	0.00	Weir - 1
89.09	1.22	82.51	0.00	Weir - 1
89.19	2.04	82.51	0.00	Weir - 1
89.25	2.60	82.51	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.61	0.00	None Contributing
88.69	0.00	82.61	0.00	None Contributing
88.79	0.00	82.61	0.00	None Contributing
88.85	0.00	82.61	0.00	Weir - 1
88.89	0.08	82.61	0.00	Weir - 1
88.99	0.55	82.61	0.00	Weir - 1
89.09	1.22	82.61	0.00	Weir - 1
89.19	2.04	82.61	0.00	Weir - 1
89.25	2.60	82.61	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.71	0.00	None Contributing
88.69	0.00	82.71	0.00	None Contributing
88.79	0.00	82.71	0.00	None Contributing
88.85	0.00	82.71	0.00	Weir - 1
88.89	0.08	82.71	0.00	Weir - 1
88.99	0.55	82.71	0.00	Weir - 1
89.09	1.22	82.71	0.00	Weir - 1
89.19	2.04	82.71	0.00	Weir - 1
89.25	2.60	82.71	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.81	0.00	None Contributing
88.69	0.00	82.81	0.00	None Contributing
88.79	0.00	82.81	0.00	None Contributing
88.85	0.00	82.81	0.00	Weir - 1
88.89	0.08	82.81	0.00	Weir - 1
88.99	0.55	82.81	0.00	Weir - 1
89.09	1.22	82.81	0.00	Weir - 1
89.19	2.04	82.81	0.00	Weir - 1
89.25	2.60	82.81	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Porous Pavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
88.59	0.00	82.91	0.00	None Contributing
88.69	0.00	82.91	0.00	None Contributing
88.79	0.00	82.91	0.00	None Contributing
88.85	0.00	82.91	0.00	Weir - 1
88.89	0.08	82.91	0.00	Weir - 1
88.99	0.55	82.91	0.00	Weir - 1
89.09	1.22	82.91	0.00	Weir - 1
89.19	2.04	82.91	0.00	Weir - 1
89.25	2.60	82.91	0.00	Weir - 1

Parking Garage

Subsection: Composite Rating Curve
Label: Storage Layer
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
80.91	0.00	(N/A)	0.00	None Contributing
81.01	0.02	(N/A)	0.00	Orifice - 2
81.11	0.09	(N/A)	0.00	Orifice - 2
81.21	0.19	(N/A)	0.00	Orifice - 2
81.31	0.31	(N/A)	0.00	Orifice - 2
81.41	0.47	(N/A)	0.00	Orifice - 2
81.51	0.56	(N/A)	0.00	Orifice - 2
81.61	0.63	(N/A)	0.00	Orifice - 2
81.71	0.70	(N/A)	0.00	Orifice - 2
81.81	0.76	(N/A)	0.00	Orifice - 2
81.91	0.82	(N/A)	0.00	Orifice - 2 + Weir - 1
82.01	1.17	(N/A)	0.00	Orifice - 2 + Weir - 1
82.11	1.77	(N/A)	0.00	Orifice - 2 + Weir - 1
82.21	2.51	(N/A)	0.00	Orifice - 2 + Weir - 1
82.31	3.38	(N/A)	0.00	Orifice - 2 + Weir - 1
82.41	4.34	(N/A)	0.00	Orifice - 2 + Weir - 1
82.51	5.38	(N/A)	0.00	Orifice - 2 + Weir - 1
82.61	6.50	(N/A)	0.00	Orifice - 2 + Weir - 1
82.71	7.68	(N/A)	0.00	Orifice - 2 + Weir - 1
82.81	8.92	(N/A)	0.00	Orifice - 2 + Weir - 1
82.91	10.21	(N/A)	0.00	Orifice - 2 + Weir - 1

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: PorousPavement
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	88.59	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ft³)
	132.000	88.81	2,479.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	65.000	1.97	0.000	0.00
Pond Outflow...	0.000	0.00	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	2,479.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	2,479.000 ft³
Volume (Total Out ICPM)	0.000 ft³
Volume (Ending)	2,479.000 ft³
Elevation (Ending)	88.81 ft
Difference	0.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.000 %

Parking Garage

Subsection: Interconnected Pond Routing Summary
Label: StorageLayer
Scenario: Post-Development Water Quality Storm

Return Event: 1 years
Storm Event: NJWQ (1.3 in)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	80.91	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ft³	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	1.000	min

Time to Peak (min)	Maximum Storage Elevation (ft)	Maximum Storage Volume (ft³)
74.000	81.76	1,518.000

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	65.000	2.29	0.000	0.00
Pond Outflow...	74.000	0.73	0.000	0.00

	Total Volume In		Total Volume Out	
	Volume (ft³)	Direction	Volume (ft³)	Direction
Pond Inflow....	2,888.000	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	2,888.000	Forward

Mass Balance (ft³)	
Volume (Initial ICPM)	0.000 ft³
Volume (Total In ICPM)	2,888.000 ft³
Volume (Total Out ICPM)	2,888.000 ft³
Volume (Ending)	0.000 ft³
Elevation (Ending)	80.91 ft
Difference	0.000 ft³
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.000 %

Parking Garage

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Appendix E
Delaware and Raritan Canal Commission

NJDEP Nonstructural Strategies Points System (NSPS)

Version: January 31, 2006

Note: Input Values in Yellow Cells Only

Project:	Parking Garage
Date:	December 6, 2022
User:	FPA
Notes:	

Step 1 - Provide Basic Major Development Site Information

A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 = 5.2 **Acres**

B. Specify by Percent the Various Planning Areas Located within the Development Site:

State Plan Planning Area:	PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5	Total % Area
Percent of Each Planning Area within Site:		100.0%					100.0%

Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts

Step 2 - Describe Existing or Pre-Developed Site Conditions

A. Specify Existing Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals	Points
		HSG A	HSG B	HSG C	HSG D		
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space		0.7	0.8		1.5	80
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0
7	Woods - Indigenous					0.0	0
8	Woods - Planted					0.0	0
9	Woods and Grass Combination					0.0	0
10	Ponds, Lakes, and Other Open Water					0.0	0
11	Gravel and Dirt					0.0	0
12	Porous and Permeable Paving					0.0	0
13	Directly Connected Impervious		1.8	1.9		3.7	0
14	Unconnected Impervious with Small D/S Pervious					0.0	0
15	Unconnected Impervious with Large D/S Pervious					0.0	0
	HSG Subtotals (Acres):	0.0	2.5	2.7	0.0	**Total Area:**	5.2
	HSG Subtotals (%):	0.0%	48.1%	51.9%	0.0%	**Total % Area:**	100.0%

Points Subtotal: **80**

Total Existing Site Points: **80**

Step 3 - Describe Proposed or Post-Developed Site Conditions

A. Specify Proposed Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals		Points
		HSG A	HSG B	HSG C	HSG D			
1	Wetlands and Undisturbed Stream Buffers					0.0		0
2	Lawn and Open Space		0.5	0.6		1.1		58
3	Brush and Shrub					0.0		0
4	Meadow, Pasture, Grassland, or Range					0.0		0
5	Row Crop					0.0		0
6	Small Grain and Legumes					0.0		0
7	Woods - Indigenous					0.0		0
8	Woods - Planted					0.0		0
9	Woods and Grass Combination					0.0		0
10	Ponds, Lakes, and Other Open Water					0.0		0
11	Gravel and Dirt					0.0		0
12	Porous and Permeable Paving			0.7		0.7		31
13	Directly Connected Impervious		2.0	1.4		3.4		0
14	Unconnected Impervious with Small D/S Pervious					0.0		0
15	Unconnected Impervious with Large D/S Pervious					0.0		0
	HSG Subtotals (Acres):	0.0	2.5	2.7	0.0		**Total Area:**	5.2
	HSG Subtotals (%):	0.0%	48.1%	51.9%	0.0%		**Total % Area:**	100.0%
							Points Subtotal:	**89**

B. Compare Proposed Impervious Coverage with Maximum Allowable Impervious Coverage:

Total Directly Connected Impervious Coverage =	65%	% of Site
Total Unconnected Impervious Coverage with Small D/S Pervious =	0%	% of Site
Total Unconnected Impervious Coverage with Large D/S Pervious =	0%	% of Site
Total Site Impervious Coverage =	65%	% of Site
Effective Site Impervious Coverage =	65%	% of Site
Specify Source of Maximum Allowable Impervious Coverage:	None	(None or Table)

Points Subtotal: 0

C. Compare Proposed Site Disturbance with Maximum Allowable Site Disturbance:

Total Proposed Site Disturbance =	100%	% of Site
Maximum Allowable Site Disturbance by Municipal Ordinance =	100%	% of Site

Points Subtotal: 0

D. Describe Proposed Runoff Conveyance System:

Total Length of Runoff Conveyance System =		Feet
Length of Vegetated Runoff Conveyance System =		Feet
% of Total Runoff Conveyance System That is Vegetated =	0%	

Points Subtotal: 0

E. Residential Lot Clustering:

Percent of Total Site Area that will be Clustered =		% of Site
Minimum Standard Lot Size as Per Zoning (Note: 1/2 Acre or Greater) =		Acres
Maximum Proposed Cluster Lot Size (Note:1/4 Acre or Less) =		Acres
Percent of Clustered Portion of Site to be Preserved as Vegetated Open Space =		% of Clustered Site Portion

Points Subtotal: 0

F. Will the Following be Utilized to Minimize Soil Compaction?

Proposed Lawn Areas will be Graded with Lightweight Construction Equipment:	No	(Yes or No)
Percent of Proposed Lawn Areas to be Graded with Such Equipment:	0%	% of Lawn Areas

Points Subtotal: 0

G. Are Any of the Following Stormwater Management Standards Met Using Only Nonstructural Strategies and Measures?

Groundwater Recharge Standards (NJAC 7:8-5.4-a-2):	No	(Yes or No)
Stormwater Runoff Quality Standards (NJAC 7:8-5.5):	No	(Yes or No)
Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3):	No	(Yes or No)

Points Subtotal: 0

Note: If the Answers to All Three Questions at G Above are "Yes", Adequate Nonstructural Measures have been Utilized.

Total Proposed Site Points: 89

Ratio of Proposed to Existing Site Points: 112%

Required Site Points Ratio: 88%

Nonstructural Point System Results: Proposed Nonstructural Measures are Adequate

Appendix F
Drainage Area Maps

S74° 00' 04"E 921.49'

TIME OF CONCENTRATION PATHWAY POA-A

EXISTING DRAINAGE AREA IN BUILDING FOOTPRINT

PERVIOUS, LAWN, TYPE B	8,642 SF	(0.199 AC)
PERVIOUS, LAWN, TYPE C	12,843 SF	(0.295 AC)
IMPERVIOUS	48,144 SF	(1.105 AC)
TOTAL AREA	69,629 SF	(1.598 AC)

EXISTING DRAINAGE AREA A (TO POA-A)

PERVIOUS, LAWN, TYPE B	34,837 SF	(0.800 AC)
PERVIOUS, LAWN, TYPE C	24,727 SF	(0.568 AC)
MOTOR VEHICLE SURFACE	108,706 SF	(2.496 AC)
NON-MVS IMPERVIOUS	18,880 SF	(0.433 AC)
TOTAL AREA	187,150 SF	(4.296 AC)

POINT OF ANALYSIS A (POA-A)

TIME OF CONCENTRATION PATHWAY POA-B

EXISTING DRAINAGE AREA B (TO POA-B)

PERVIOUS, LAWN, TYPE B	15,155 SF	(0.348 AC)
PERVIOUS, LAWN, TYPE C	14,735 SF	(0.338 AC)
MOTOR VEHICLE SURFACE	36,582 SF	(0.840 AC)
NON-MVS IMPERVIOUS	7,474 SF	(0.172 AC)
TOTAL AREA	73,946 SF	(1.698 AC)

POINT OF ANALYSIS B (POA-B)

No.	Date	Revision	Revised By	Checked By

SCALE IN FEET

FPA FRENCH & PARRELLO ASSOCIATES
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

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EXISTING DRAINAGE AREA PLAN
FOR
PRELIMINARY AND MAJOR SITE PLAN
FOR
PENN MEDICINE PRINCETON MEDICAL CENTER
PARKING GARAGE
BLOCK 1701, LOT 3.01
TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
12/16/2022		1" = 20'	06C0228T.003
DRAWN BY:	CHECKED BY:	FIELD BOOK	SHEET:
KN			of 18

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D:\CE\2006\06C0228T – Cancer Center\06C0228T.003 – Penn Medical Cancer Center\CADD\DWG\06C0228T – Parking Garage\06C0228T.003 – DX.dwg EX

S74° 00' 04"E 921.49'

PROPOSED DRAINAGE AREA A (TO POA-A)

PERVIOUS, LAWN, TYPE B	25,992 SF	(0.597 AC)
PERVIOUS, LAWN, TYPE C	15,841 SF	(0.364 AC)
MOTOR VEHICLE SURFACE	131,194 SF	(3.012 AC)
NON-MVS IMPERVIOUS	18,567 SF	(0.426 AC)
TOTAL AREA	191,594 SF	(4.398 AC)

POINT OF ANALYSIS A (POA-A)

PROPOSED DRAINAGE AREA B (TO POA-B)

PERVIOUS, LAWN, TYPE B	13,006 SF	(0.299 AC)
PERVIOUS, LAWN, TYPE C	13,936 SF	(0.320 AC)
MOTOR VEHICLE SURFACE	33,823 SF	(0.776 AC)
NON-MVS IMPERVIOUS	8,325 SF	(0.191 AC)
TOTAL AREA	69,090 SF	(1.586 AC)

POINT OF ANALYSIS B (POA-B)

SETBACK ENCROACHMENT AREA

25' WATER EASEMENT

Multi-Level Building "Medical Arts Pavilion"

LEASE AREA (DB6222-PG.144)

No.	Date	Revision	Revised By	Checked By

SCALE IN FEET

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FOR
PRELIMINARY AND MAJOR SITE PLAN
FOR
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PARKING GARAGE
BLOCK 1701, LOT 3.01
TOWNSHIP OF PLAINSBORO
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DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
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DRAWN BY:	CHECKED BY:	FIELD BOOK	SHEET:
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G:\CAD\2006\06C0281 – Cancer Center\06C028T.003 – Penn Medical Cancer Center\CADD\DWG\06C028T – Parking Garage\06C028T.003 – DA.dwg, FR

1.0 PUNIA PARKING LOT EARTHWORK CALCULATIONS

PERVIOUS PAVEMENT VOLUME CALCULATIONS		
3	IN	THICK PERMEABLE ASPHALT
1	IN	THICK CHOKE COURSE
+ 3	IN	THICK STORAGE BED
7	IN	PERVIOUS PAVEMENT CROSS SECTION THICKNESS
0.583	FT	PERVIOUS PAVEMENT CROSS SECTION THICKNESS
X 200,418	SF	PERVIOUS PAVEMENT AREA
116,911	CF	PERVIOUS PAVEMENT VOLUME

CULTEC CHAMBER STORAGE AREAS VOLUME CALCULATIONS		
15	IN	REMAINING STONE ABOVE CHAMBER
36	IN	CULTEC 360HD HEIGHT
+ 6	IN	STONE BELOW CHAMBERS
57	IN	CULTEC CHAMBER STORAGE AREAS THICKNESS
4.750	FT	CULTEC CHAMBER STORAGE AREAS THICKNESS
X 28,689	SF	CULTEC CHAMBER STORAGE AREAS
136,273	CF	CULTEC CHAMBER STORAGE AREAS VOLUME

PUNIA PARKING LOT EARTHWORK CALCULATIONS			
	CUT (CY)	**FILL (CY)**	**NET (CY)**
EXISTING SURFACE TO PROPOSED SURFACE FINISHED ELEVATIONS	111	8,609	8,499
PERVIOUS PAVEMENT VOLUME	4,330	0	-4,330
CULTEC CHAMBER STORAGE AREAS VOLUME	5,047	0	-5,047
TOTAL PUNIA PARKING LOT EARTHWORK CALCS	**9,488**	**8,609**	**-879**

2.0 PARKING GARAGE EARTHWORK CALCULATIONS

LANDSCAPE AREAS TO REGULAR PAVEMENT (CUT)		
2	IN	THICK SURFACE COURSE
3	IN	THICK BASE COURSE
+ 6	IN	THICK DENSE GRADED AGGREGATE
11	IN	REGULAR PAVEMENT CROSS SECTION THICKNESS
0.917	FT	REGULAR PAVEMENT CROSS SECTION THICKNESS
X 7,535	SF	REGULAR PAVEMENT AREA
6,907	CF	REGULAR PAVEMENT VOLUME

LANDSCAPE AREAS TO PERVIOUS PAVEMENT (CUT)		
3	IN	THICK PERMEABLE ASPHALT
1	IN	THICK CHOKE COURSE
+ 3	IN	THICK STORAGE BED
7	IN	PERVIOUS PAVEMENT CROSS SECTION THICKNESS
0.583	FT	PERVIOUS PAVEMENT CROSS SECTION THICKNESS
X 2,071	SF	PERVIOUS PAVEMENT AREA
1,208	CF	PERVIOUS PAVEMENT VOLUME

CULTEC CHAMBER STORAGE AREAS VOLUME CALCULATIONS		
2	IN	THICK SURFACE COURSE
3	IN	THICK BASE COURSE
+ 6	IN	THICK DENSE GRADED AGGREGATE
11	IN	REGULAR PAVEMENT CROSS SECTION THICKNESS
0.917	FT	PERVIOUS PAVEMENT CROSS SECTION THICKNESS
X 9,373	SF	PERVIOUS PAVEMENT AREA
8,592	CF	PERVIOUS PAVEMENT VOLUME

PUNIA PARKING LOT EARTHWORK CALCULATIONS			
	CUT (CY)	FILL (CY)	NET (CY)
EXISTING SURFACE TO PROPOSED SURFACE FINISHED ELEVATIONS	985	1,830	845
LANDSCAPE AREAS TO REGULAR PAVEMENT	256	0	-256
LANDSCAPE AREAS TO PERVIOUS PAVEMENT	45	0	-45
PAVEMENT AREAS TO LANDSCAPE	0	318	318
TOTAL PARKING GARAGE EARTHWORK CALCS	**1,286**	**2,148**	**862**

P23-03 DRC 05/18/23

FRENCH & PARRELLO ASSOCIATES

ENGINEERING AND CONSULTING **SINCE 1974**

Environmental Impact Assessment prepared for **Penn Medicine Princeton Health Cancer Center Garage**

Township of Plainsboro
Middlesex County, New Jersey
Block 1701, Lots 3.01 & 4.04

Prepared For:

Princeton HealthCare System
A New Jersey Nonprofit Corporation
d/b/a Penn Medicine Princeton Health
1 Plainsboro Road
Plainsboro, NJ 08536

_____

Andrew L. French
Professional Engineer, NJ License No # 42894

April 14, 2023| FPA No. 06C028T.003
1800 Route 34, Suite 101, Wall Township, NJ 07719

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SECTION A - PROJECT DESCRIPTION

The Penn Medicine Princeton HealthCare System Campus has been designated as an area for redevelopment in Plainsboro Township and the township has adopted the Amended Redevelopment for the Princeton HealthCare System at Plainsboro Site, dated March 13, 2013 which establishes the zoning requirements for the project. Penn Medicine Princeton Health ("PMPH" "Applicant") has identified a need for a Cancer Center facility and associated parking garage. The project site for the Cancer Center and Parking Garage is in the Hospital Medical Office Complex (HMOC) district within the Redevelopment Plan. A temporary surface parking lot is proposed on vacant Lot 4.04 located in the Office and Residential Complex (ORC) Zone to account for the on-site parking displaced during construction.

Penn Medicine Princeton HealthCare System is developing a plan for a new cancer center as part of the second phase of development of the HMOC site. It has been decided to separate the second phase into two site plan applications, one to address the new parking structure and one to address the new cancer center. The purpose of separating the overall project into two site plan applications is to allow the construction sequencing of the parking garage first and then the Cancer Center to minimize the impact on the existing operation of the HMOC. This application is for site plan approval for the parking structure on Lot 3.01 and the temporary parking area on Lot 4.04.

The Parking Garage is a permitted accessory use within the HMOC Zone District. A deviation is necessary for the "minimum building setback from perimeter lot lines" for the proposed parking garage setback of proposed 69 feet where 75 feet is required. The temporary parking lot is also a permitted accessory use and it conforms to the Amended Redevelopment Plan requirements. A deviation from the landscape requirements is needed for the temporary parking lot. The intent is to maximize the temporary parking and minimize the overall disturbance. The temporary lot will be removed upon the completion of construction, therefore, the landscaping would also be removed. Other than the deviations noted, the proposed project conforms to the land use plan and bulk design standards set forth in the Plan. The building orientation, massing, materials and landscape design will be consistent with the Plan requirements and will maintain the same high quality standards within the healthcare campus. See Figure 1 for an overall site plan depicting the location of each project.

Parking Garage

The proposed parking garage consists of a six-level parking facility which will provide 1,161 spaces including 117 ADA spaces.

Temporary Parking Lot

349 parking spaces, including 19 handicap spaces, will be displaced as a result of the Cancer Center and Parking Garage construction. The applicant is proposing to construct replacement temporary spaces on the vacant lot adjacent to the campus. The temporary parking lot will also provide parking spaces for construction workers during construction. The ADA spaces will be temporarily relocated near the main hospital entrance and near the Education Building. The surface of the parking lot will be constructed

with a combination of traditional bituminous concrete and pervious type pavement. Even though the temporary lot will be removed after construction is completed, the stormwater management system was designed in accordance with the Stormwater Management Rules at NJAC 7:8.

The following Environmental Impact Assessment ("EIA") has been prepared on behalf of the applicant in accordance with Plainsboro Township Land Use ordinance, Chapter 20, Section 10. This EIA provides a description of the proposed project and site, an inventory of existing environmental conditions and assessment of probable impacts, a list and evaluation of adverse environmental impacts which cannot be avoided and a discussion of alternatives to the proposed project.

SECTION B - SITE DESCRIPTION AND INVENTORY

1) Environmentally Sensitive Areas

Wetlands

Based on recent site visits and a review of the NJDEP Geoweb Wetlands Mapping (see Figure 2), there are no freshwater wetlands located within the area of the proposed site improvements for the Parking Garage and Temporary Parking Area.

Floodplains

According to the FEMA Flood Insurance Rate Maps, the project site is not located within a flood hazard area (see Figure 3).

Aquifer Recharge

Aquifer recharge is the process of increasing water to an aquifer through ground water recharge that can provide water to natural springs and wells. According to the NJDEP Geoweb, the area of the proposed Cancer Center and Parking Garage has a ground water recharge potential of 1 to 7 in/yr and 11 to 15 in/yr. The area designated for the Temporary Parking Lot has a ground water recharge potential of 11 to 15 in/yr (see figure 4). The amount of water from ground water recharge that reaches the aquifer depends on many factors such as land use, soil type and extent of water features. The New Jersey Geological Survey (NJGS) has developed aquifer recharge mapping for Middlesex County (see Figure 5). The mapping suggests that the potential for aquifer recharge within the project area is similar to the potential for ground water recharge.

However, over the past 15 years, the soil conditions of the property have been heavily disturbed and compacted where the soil is not providing infiltration of the groundwater. FPA has performed several soil logs to an approximate depth of 10 feet below the surface throughout the property to assess the subsurface soil conditions, estimate the seasonal high water table and perform soil percolation testing of the surface soils. Based on the soil logs, seasonal high water table was not encountered in any of the soil excavations, which is consistent with the findings of the subsurface soil conditions performed for the Regional Detention Basin located at the rear of the property. Also, on-site percolation testing was performed at each soil log excavation at depths from 7" to 14" below the surface and all percolation

testing failed during the pre-soak where the water elevation either did not drop at all or insignificantly after 1 hour. The on-site percolation testing results indicated that the existing surface soil conditions do not provide any infiltration of stormwater runoff into the groundwater. Therefore, the annual pre-construction groundwater recharge is zero and the requirement for post-construction recharge would be the same. Since there is no groundwater recharge under the existing conditions, the project meets the recharge requirements of N.J.A.C. 7:8 New Jersey Stormwater Management Rules or a waiver is hereby requested. See the Stormwater Management Report prepared by FPA for Soil Logs and on-site percolation testing results.

Woodland and Wildlife Habitat

The project area consists of only urban land. According to the NJDEP GeoWeb, the site does not contain any wildlife habitats of specific priority (see Figure 6).

Agricultural Land

The project site of the Parking Garage does not contain area that is currently being farmed. A small portion of Lot 4.04 is currently being farmed for small grains but since the parking area is only temporary, once the temporary is no longer needed the area can be farmed again.

Archaeological and Historic Sites

According to the NJDEP GeoWeb, the project site does not contain any historical and/or archeological significant areas within the area of the proposed site improvements (see Figure 7).

Intermittent Streams

There are no existing streams located on the subject property. A Tributary to Millstone River is located approximately 580 feet southeast of the proposed Temporary Parking, Lot 4.01, Block 1701 (see Figure 8).

2) Soil Classifications

Three soil types are found on the project site which can be found in Appendix A. Below are the soil types found within the proposed portion of the site.

a. NknB: Nixon loam, 2 to 5 percent slopes
   This soil type is most likely to be found on flat land. It has a moderate available water capacity of about 6.4 inches. This soil does not experience frequent flooding or ponding and is well drained.

b. SacC: Sassafras sandy loam, 5 to 10 percent slopes
   This soil type is most likely to be found on slightly sloped land. It has a moderate available water capacity of about 6.4 inches. This soil does not experience frequent flooding or ponding and is somewhat excessively drained.

c. NkrA: Nixon moderately well drained variant loam, 0 to 2 percent slopes

This soil type is most likely to be found on flat land. It has a moderate available water capacity of about 5.3 inches. This soil does not experience frequent flooding or ponding and is well drained.

3) Topography

The topography of the overall project generally slopes in a southeasterly direction from elevation 93 feet at the north side of the proposed parking garage to elevation 74 at the existing stormwater basin just east of the proposed temporary parking lot. No major elevation changes or drainage pattern alterations will occur as a result of this project.

4) Geology

The existing project area is underlain by the Stockton Formation (see Figure 9). According to the NJDEP GeoWeb, the Stockton Formation is composed of Triassic siltstone, shale, sandstone, conglomerates, and mudstone.

5) Vegetation

The area proposed for the new Parking Garage is currently developed with parking, drive aisles, sidewalks and maintained landscaped areas. The area of the proposed Temporary Parking Lot was previously covered in stone for utilization as a parking lot. The stone was removed approximately 10 years ago. This area was recently utilized as a staging area for the construction of the adjacent assisted living facility providing additional disturbance. After construction was completed in 2019, the westerly portion of Lot 4.04 was farmed with small grains. The easterly portion was restored and is currently vegetated.

6) Existing Development Features

The project area is part of the Penn Medicine Health Care Campus and currently contains an existing parking lot, access driveway, storage shed, site lighting, a manmade retention pond, stormwater structures and other associated improvements.

7) Ground, Surface, Potable Water

The project site of the Parking Garage currently has an existing man-made retention pond that is used to detain and treat stormwater runoff. Much of the stormwater runoff is directed to the man-made retention pond through overland flow and a storm sewer system. The project site for the temporary parking area currently has an existing Regional Detention Basin to manage and control the stormwater runoff from Lot 4.04. Potable water is currently provided to the site through an existing New Jersey American Water Company water main.

8) Sewerage Facilities

The site is currently serviced with a 12" sanitary sewer pipe that runs on the north and south sides of the existing buildings.

9) Drainage

The site currently has an existing man-made retention pond that is used to detain and treat stormwater runoff. The majority of the stormwater runoff is directed to the man-made retention pond through overland flow and a storm sewer system. Lot 4.04 has a regional detention basin which serves Lot 4.04, the assisted living facility and the daycare center.

10) Depth to Seasonally High Groundwater

The entire project site has been previously developed and seasonal high groundwater was not encountered. We don't anticipate encountering the seasonally high groundwater during the construction of the proposed site improvements.

11) Erosion Hazards

Currently the site is a stable, developed facility with pervious and impervious areas mixed throughout the property. There are minimal amounts of steep slopes on the project site.

12) Traffic

The project site is located at the intersection of Route 1 and Plainsboro Road with two main access locations to the health care campus. Punia Boulevard is the main "spine" entry roadway into the Health Care Campus. Punia Boulevard starts at Plainsboro Road and proceeds northward to connect to Hospital Drive. Hospital Drive is the secondary entry roadway that links Punia Boulevard to Campus Road to the east.

SECTION C - ANTICIPATED ENVIRONMENTAL IMPACT

1) Land Use

The Penn Medicine Princeton HealthCare System Campus has been designated as an area for redevelopment in Plainsboro Township and the township has adopted the Amended Redevelopment for the Princeton HealthCare System at Plainsboro Site, dated March 13, 2013 which establishes the zoning requirements for the project. The project site for the Cancer Center and Parking Garage is located in the Hospital Medical Office Complex (HMOC) district within the Redevelopment Plan. The temporary parking lot is located in the Office and Residential Complex (ORC) Zone.

The Parking Garage is a permitted accessory use within the HMOC Zone District. A deviation is necessary for the "minimum building setback from perimeter lot lines" for the proposed parking garage

setback of proposed 69 feet where 75 feet is required. The temporary parking lot is also a permitted accessory use and it conforms to the Amended Redevelopment Plan requirements. The temporary parking lot is being proposed to manage the displaced parking during construction and to maintain adequate parking for the current operation on the project site. A deviation from the landscape requirements is needed for the temporary parking lot. The intent is to maximize the temporary parking and minimize the overall disturbance. The temporary lot will be removed upon the completion of construction, therefore, the landscaping would also be removed. Other than the deviations noted, the proposed project conforms to the land use plan and bulk design standards set forth in the Plan. The building orientation, massing, materials and landscape design will be consistent with the Plan requirements and will maintain the same high quality standards within the healthcare campus.

2) Ground, Surface, Potable Water

Ground water is not anticipated to be encountered during the construction of the proposed site improvements. The proposed parking garage will be designed to comply with the Township Stormwater Management requirements, which include stormwater quantity reductions and water quality treatment using Green Infrastructure (GI) elements. Please refer to the Stormwater Management Report for specific details. Potable water will be supplied to the parking Garage facility by service connections to the existing 8" NJAW main.

3) Air Quality

The level of air quality in the State of New Jersey is monitored on a regular basis by the NJDEP at a number of stations located throughout the State. The closest station to the site is located at Rider University, which is in close proximity to the site. Since this monitoring station is located in an area that is similar to the project site, it is reasonable to assume that the ambient air quality at the site is similar to the monitoring station. Monitor readings taken at various days between November 17, 2022 and December 7, 2022, were recorded for the site to have "GOOD" air quality,[5] see Appendix B. The project site will not impact the air quality of the Township of Plainsboro in terms of traffic congestion and auto emissions build-up sufficient to exceed NJDEP Air Quality Standards. A minor temporary increase in air pollution can be expected from dust during installation operations but will quickly dissipate upon construction completion.

4) Wildlife Habitat

As stated earlier, the site is currently developed and does not contain any wildlife habitats of specific priority according to the NJDEP Geoweb.

[5] Obtained from the NJDEP Bureau of Air Quality Monitoring website (https://www.njaqinow.net/). See Appendix A.

5) Social and Economic Aspects of the Community

The construction of this facility will benefit the Community, surrounding areas and Township by providing support for the future Cancer Center and medical services on the HMOC site.

6) Noise

Table 1 displays common noise levels associated with a range of indoor and outdoor activities. Levels of 70 decibels (dBA) or above have been generally accepted as interfering with normal conversation. Noise levels in the range of 45 to 55 dBA can be disruptive to normal sleep patterns. Actual on-site measurements of noise levels were not conducted for this EIA. Temporary increased noise levels will be generated at the site due to the short term activity involving the construction of the proposed site improvements.

TABLE 1[1]

COMMON NOISE LEVELS

COMMON OUTDOOR NOISE LEVELS	NOISE LEVEL (DbA)	COMMON INDOOR NOISE LEVELS
Jet Flyover at 1,000 feet	110	Rock Band
Gas Lawn Mower at 3 feet	100	Inside Subway Train
Diesel Truck at 50 feet	90	Flood Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet Shouting at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Heavy Traffic at 300 feet	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater
Quiet Rural Nighttime	30	Bedroom at Night Concert Hall (background)

[1] Source: Bolt, Beranek & Newman, Inc. Fundamentals and Abatement of Highway Traffic Noise, Office of Environmental Policy, Federal Highway Administration, U.S. Department of Transportation, Washington D.C., 1973.

7) Solid and Other Waste

The proposed improvements are expected to increase the amount of solid and other waste associated with the Princeton Healthcare Campus. Currently a private waste management service handles and removes the solid waste in accordance with local and state regulations for the existing medical center use. The existing facilities will be utilized for waste management. No change to the existing facility is proposed.

8) Cultural Activities

The proposed site improvements will not impact the cultural activities of the community.

9) Aesthetics of the Project Area

The proposed project conforms to the Hospital Medical Office Complex (HMOC) use standards under the amended Redevelopment Plan. The location of the proposed facilities will be landscaped with the high quality of plantings consistent with the Health Care Campus landscaping.

The proposed development complies with the Open Space requirements of the Amended Redevelopment Plan and does not impact the existing open space areas on the hospital site. The open space areas located on the project site will remain, which includes the healing gardens, educational gardens and landscape areas on the hospital site. The existing Public Park on the south side of Plainsboro Road will not be impacted by the proposed development and pedestrian access to the passive park will be maintained. The area surrounding the parking garage will be landscaped with pedestrian paths.

10) Archaeological and Historic Sites

According to the NJDEP GeoWeb, the project site does not contain any historical and/or archeological significant areas within the area of the proposed facility and site improvements. Therefore, there shall be no adverse impact to archaeological or historic sites as a result of the proposed project.

11) Traffic

The proposed parking garage is situated within the existing P6 parking area which will maintain the existing site circulation on the north side of the hospital site. Vehicular access to the parking garage will be on the southwestern portion of the structure, which will keep queuing of vehicles off of Hospital

Drive. There will be another vehicular entrance to the parking garage directly aligned with the exit of the expanded patient drop-off area. Also, there will be an exit only access from the parking garage directly onto Hospital Drive which will be aligned with the P10 access driveway and with consideration of the pedestrian crossing of Hospital Drive. The temporary parking area located on Lot 4.04 will use the existing access driveway on Punia Boulevard for both ingress and egress to the temporary parking area. Please refer to the traffic impact analysis prepared by others for a detailed analysis.

12) Drainage

The proposed parking garage has been designed to comply with the Township Stormwater Management requirements, which include stormwater quantity reductions and water quality treatment using Green Infrastructure (GI) elements. The temporary parking lot has also been designed to comply with the Township Stormwater Management requirements, even though it is temporary and will be removed. Please refer to the Stormwater Management for a detailed description.

13) Erosion Hazard

The project proposes soil erosion and sediment control measures in accordance with the current standards for soil erosion and sediment control in New Jersey. The applicant will apply to the Freehold Soil Conservation District for soil erosion and sediment control for certification of our plan.

14) Other Environmental Impacts

We do not anticipate any other environmental impacts associated with the proposed site improvements that have not already been discussed herein.

SECTION D - CUMULATIVE AND/OR LONG TERM ENVIRONMENTAL EFFECTS

1) Surface Water Runoff

The proposed stormwater management plan is consistent with the NJDEP Stormwater Management rules and Township requirements. The project is in compliance with the N.J.A.C. 7:8, New Jersey Stormwater Management Rules.

2) Displacement of People and Businesses

The proposed Cancer Center and Parking Garage will result in approximately 110 new permanent jobs (over a period of time) for the operation of the facility. The construction estimate for the project is an investment of approximately $200 million which is anticipated to create approximately 200 jobs throughout the construction period of this project.

SECTION E - EVALUATION OF UNAVOIDABLE IMPACTS

It is our opinion, that any impacts that are unavoidable as a result of this project, will not compromise the integrity of the project and the betterment of the uses on the HMOC site which will provide a benefit to the community.

SECTION F - METHODS OF MITIGATING ADVERSE ENVIRONMENTAL IMPACTS

Various mitigating measures will be implemented to reduce the minor environmental impacts that will occur from the development of the site. Certain steps will be taken to ensure the impacts that do occur are minimal and that the proposed project is compatible with the surrounding environment.

1) Noise

Construction noise, which is a temporary impact, can be mitigated by the proper selection of construction equipment. The ambient noise level may slightly increase during construction; however, it should not generally be uncomfortable or objectionable. Some of the methods of reducing noise impact during this phase may include the following:

a. Installation of noise suppressors on all construction equipment, where applicable.
b. Limitation of construction operations to normal working hours during weekdays and whenever possible, elimination of work on weekends.
c. Retention of as much existing vegetation as possible which will dissipate noise.
d. Expeditious scheduling of those activities that generate noise to minimize their duration.

2) Surface Water Runoff

Mitigation through stormwater management measures have been incorporated into the design of the site. Please see the Stormwater Management Report submitted separately with this application. A Soil Erosion and Sediment Control Plan will be required since the disturbance area is greater than 5,000 square feet. Some of the erosion control procedures may include:

a. Installation of hay bale filters or silt fence to trap sediment before leaving the site.
b. Installation of a gravel-tracking pad at the construction entrance of the site to prevent off-site tracking of mud.

3) Air Quality

Construction work will also have a minimal, temporary impact on air quality. This impact will occur mainly from truck and construction equipment exhaust emissions and dust associated with the construction of the proposed improvements. Impacts, besides being temporary, can be mitigated by reducing vehicular idling time, and using accepted construction techniques.

SECTION G - ALTERNATIVES TO THE PROPOSED PROJECT

In considering alternatives to the project, three scenarios were considered:

1) No-Build/Postponement

No-Build/Postponement - The no-build/postponement alternative is not considered a viable option since the proposed project will benefit the community by providing State of the Art Diagnostic and Treatment Services.

2) Alternative Location

The property and location is best suited for the project because it is an approved use within the Amended Redevelopment Plan and provides compatibility and synergy with the other medical uses on the project site.

3) Alternative Design

Various designs were considered for the proposed site. The current design was determined to best suit the property constraints and meet environmental objectives while still satisfying the overall goals of the project.

SECTION H - CONCLUSION

As demonstrated in this report, the project site for the Cancer Center Parking Garage does not have any environmental constraints (wetlands, streams, riparian zones, flood plains, etc.), the site is currently developed with an existing parking lot, the parking garage location is consistent with the Redevelopment Plan, the location of the parking garage is situated on the Hospital Site where there is the highest demand for parking and the parking garage is required to support the development of the Cancer Center on the Hospital Site. Based on review and consideration of the site constraints and requirements of the Redevelopment Plan, it was determined that the proposed Parking Garage is required and situated at the best location to support the Hospital Site.

Appendix A
NRCS Web Soil Map and Descriptions

Map Scale: 1:3,450 if printed on A landscape (11" x 8.5") sheet.

N

0 50 100 200 300 Meters

0 150 300 600 900 Feet

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

P23-03 DRC 05/18/23

Component Text Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The component descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the associated soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas (components) for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Component Nontechnical Descriptions" report gives a brief, general description of the soil components that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Component Text Descriptions

Middlesex County, New Jersey

Map Unit: NknB—Nixon loam, 2 to 5 percent slopes

Description Category: GENSOIL

Nixon: 85 percent

The Nixon component makes up 85 percent of the map unit. Slopes are 2 to 5 percent. This component is on flats on North atlantic coastal plains. The parent material consists of old fine-loamy alluvium derived from arkose and/or shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Description Category: GENSOIL

Lansdowne: 5 percent

Generated brief soil descriptions are created for major soil components. The Lansdowne soil is a minor component.

Description Category: GENSOIL

Woodstown: 5 percent

Generated brief soil descriptions are created for major soil components. The Woodstown soil is a minor component.

Description Category: GENSOIL

Sassafras: 5 percent

Generated brief soil descriptions are created for major soil components. The Sassafras soil is a minor component.

Map Unit: NkrA—Nixon moderately well drained variant loam, 0 to 2 percent slopes

Description Category: GENSOIL

Nixon, moderately well drained: 85 percent

The Nixon, moderately well drained component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on piedmonts. The parent material consists of old fine-loamy alluvium derived from arkose and/or shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Description Category: GENSOIL

Fallsington, bedrock substratum, rarely flooded: 5 percent

Generated brief soil descriptions are created for major soil components. The Fallsington, bedrock substratum, rarely flooded soil is a minor component.

Description Category: GENSOIL

Woodstown: 5 percent

Generated brief soil descriptions are created for major soil components. The Woodstown soil is a minor component.

Description Category: GENSOIL

Sassafras: 5 percent

Generated brief soil descriptions are created for major soil components. The Sassafras soil is a minor component.

Map Unit: SacC—Sassafras sandy loam, 5 to 10 percent slopes, Northern Coastal Plain

Description Category: GENSOIL

Sassafras: 80 percent

The Sassafras component makes up 80 percent of the map unit. Slopes are 5 to 10 percent. This component is on fluviomarine terraces on uplands coastal plains. The parent material consists of loamy fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria.

Description Category: GENSOIL

Downer: 4 percent

Generated brief soil descriptions are created for major soil components. The Downer soil is a minor component.

Description Category: GENSOIL

Woodstown: 4 percent

Generated brief soil descriptions are created for major soil components. The Woodstown soil is a minor component.

Description Category: GENSOIL

Fallsington, drained: 4 percent

Generated brief soil descriptions are created for major soil components. The Fallsington, drained soil is a minor component.

Description Category: GENSOIL

Ingleside: 4 percent

Generated brief soil descriptions are created for major soil components. The Ingleside soil is a minor component.

Description Category: GENSOIL

Aura: 4 percent

Generated brief soil descriptions are created for major soil components. The Aura soil is a minor component.

Data Source Information

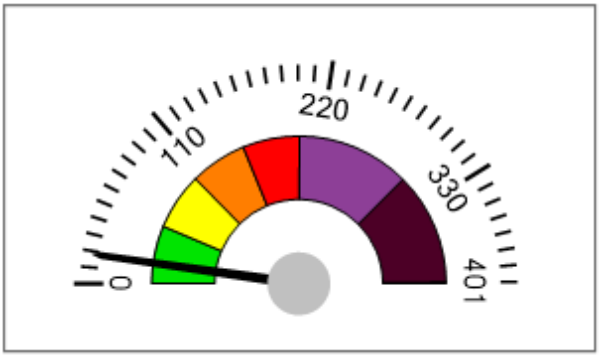
Soil Survey Area: Middlesex County, New Jersey
Survey Area Data: Version 18, Aug 30, 2022

Appendix B
Air Quality Readings

P23-03 DRC 05/18/23

Station Information

Rider University



Download API

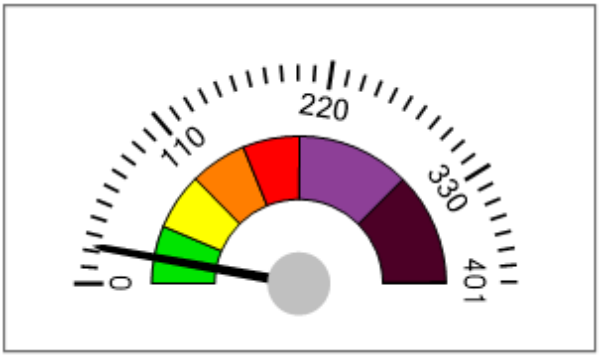
Index Value : 18
Pollutants : O3,PM 2.5
Dominant Pollution : O3

Last Received	RH	TEMP	O3	WSPD	WDIR	SOLAR	BP	PM2.5
	%	DegF	ppm	mph	Deg	Langleys	in Hg	ppb
11/17/2022 4:00 PM	44.6	40	0.025	8.0	313		29.89	

P23-03 DRC 05/18/23

Station Information

Rider University



Download API

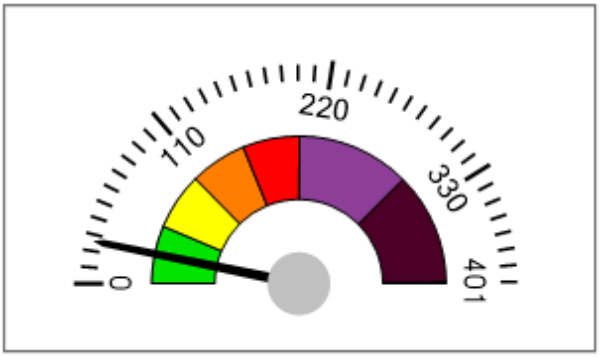
Index Value : 23
Pollutants : O3,PM 2.5
Dominant Pollution : O3

Last Received	RH	TEMP	O3	WSPD	WDIR	SOLAR	BP	PM2.5
	%	DegF	ppm	mph	Deg	Langleys	in Hg	ppb
11/21/2022 4:00 PM	25.4	41	0.031	4.9	195		30.19	1.6

P23-03 DRC 05/18/23

Station Information

Rider University



Download API

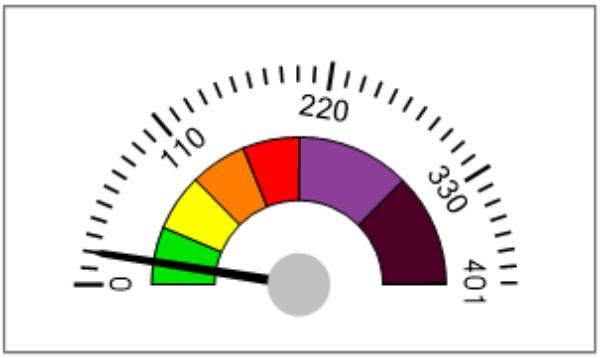
Index Value : 26
Pollutants : O3,PM 2.5
Dominant Pollution : O3

Last Received	RH	TEMP	O3	WSPD	WDIR	SOLAR	BP	PM2.5
	%	DegF	ppm	mph	Deg	Langleys	in Hg	ppb
11/22/2022 2:00 PM	31.6	51	0.033	4.0	232		30.16	-1.1

P23-03 DRC 05/18/23

Station Information

Rider University



Download API

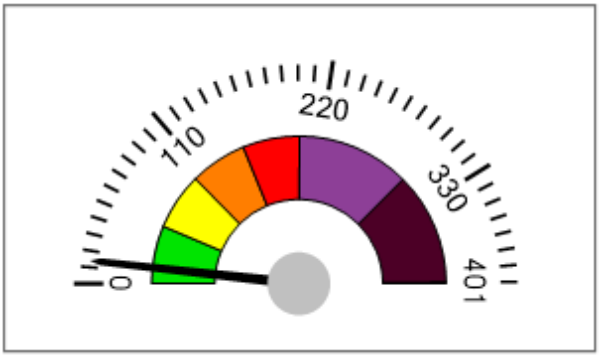
Index Value : 20
Pollutants : O3,PM 2.5
Dominant Pollution : O3

Last Received	RH	TEMP	O3	WSPD	WDIR	SOLAR	BP	PM2.5
	%	DegF	ppm	mph	Deg	Langleys	in Hg	ppb
11/29/2022 1:00 PM	51.7	42	0.026	4.3	251		30.16	-4.1

P23-03 DRC 05/18/23

Station Information

Rider University



Download API

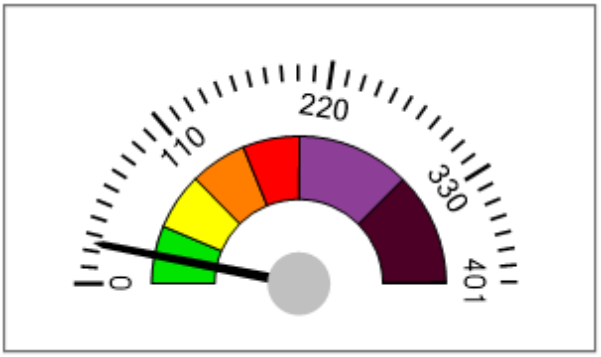
Index Value : 14
Pollutants : O3,PM 2.5
Dominant Pollution : O3

Last Received	RH	TEMP	O3	WSPD	WDIR	SOLAR	BP	PM2.5
	%	DegF	ppm	mph	Deg	Langleys	in Hg	ppb
11/30/2022 2:00 PM	90.6	54	0.018	2.4	244		29.61	-11.6

P23-03 DRC 05/18/23

Station Information

Rider University



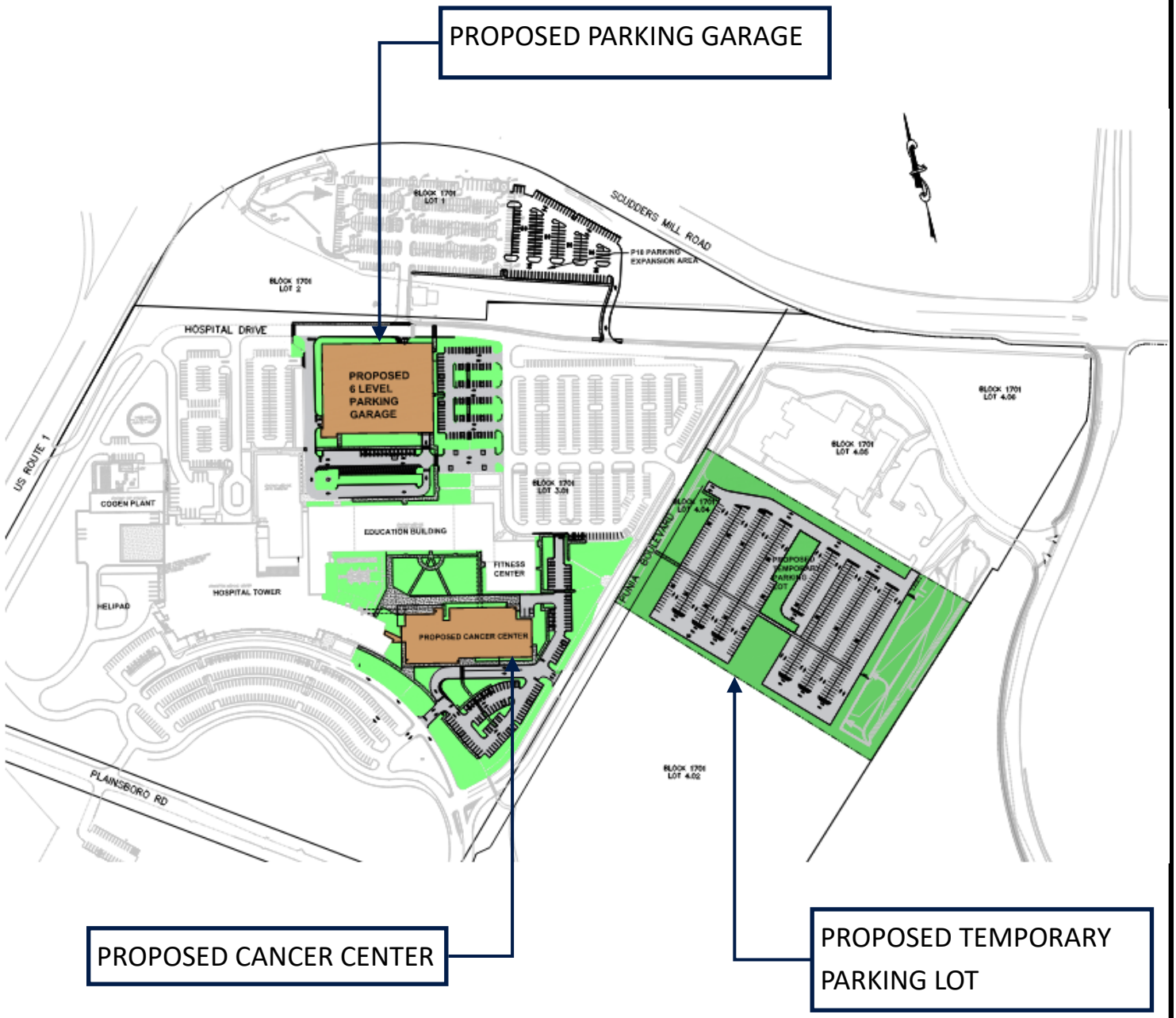
Download API

Index Value : 25
Pollutants : O3,PM 2.5
Dominant Pollution : PM 2.5

Last Received	RH	TEMP	O3	WSPD	WDIR	SOLAR	BP	PM2.5
	%	DegF	ppm	mph	Deg	Langleys	in Hg	ppb
12/7/2022 10:00 AM	92.4	54	0.005	1.8	193		30.06	6.6

Appendix C
Figures

P23-03 DRC 05/18/23



PROPOSED CANCER CENTER

PROPOSED TEMPORARY PARKING LOT

FRENCH & PARRELLO ASSOCIATES

OVERALL SITE MAP

PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 1

PROPOSED PARKING GARAGE

NJ-GeoWeb Wetlands

PROPOSED CANCER CENTER

PROPOSED TEMPORARY PARKING LOT

FRENCH & PARRELLO ASSOCIATES

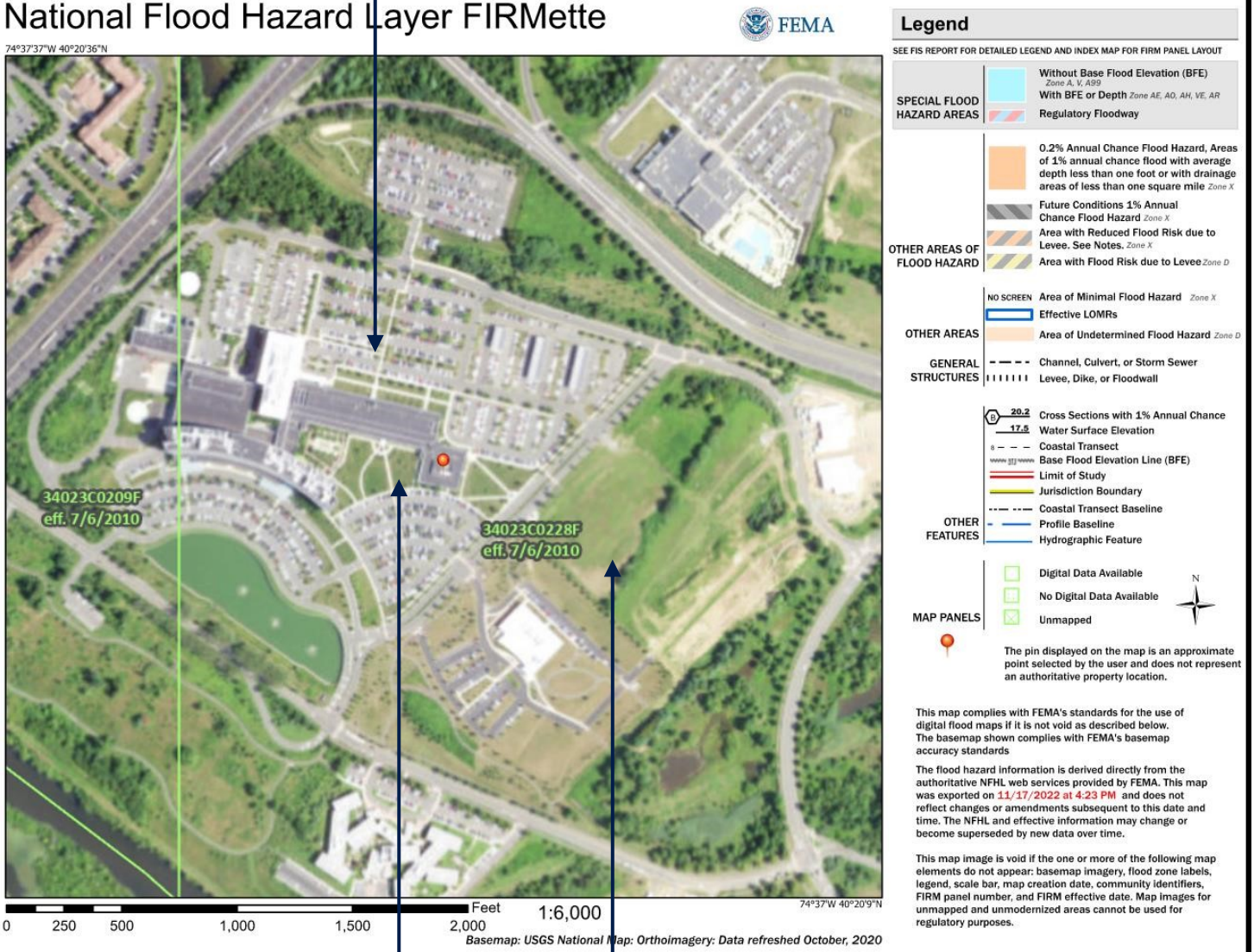
NJDEP WETLANDS MAP

PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 2

PROPOSED PARKING GARAGE



PROPOSED CANCER CENTER

PROPOSED TEMPORARY PARKING LOT

FRENCH & PARRELLO ASSOCIATES

FEMA FIRM
PENN MEDICINE PRINCETON HEALTH

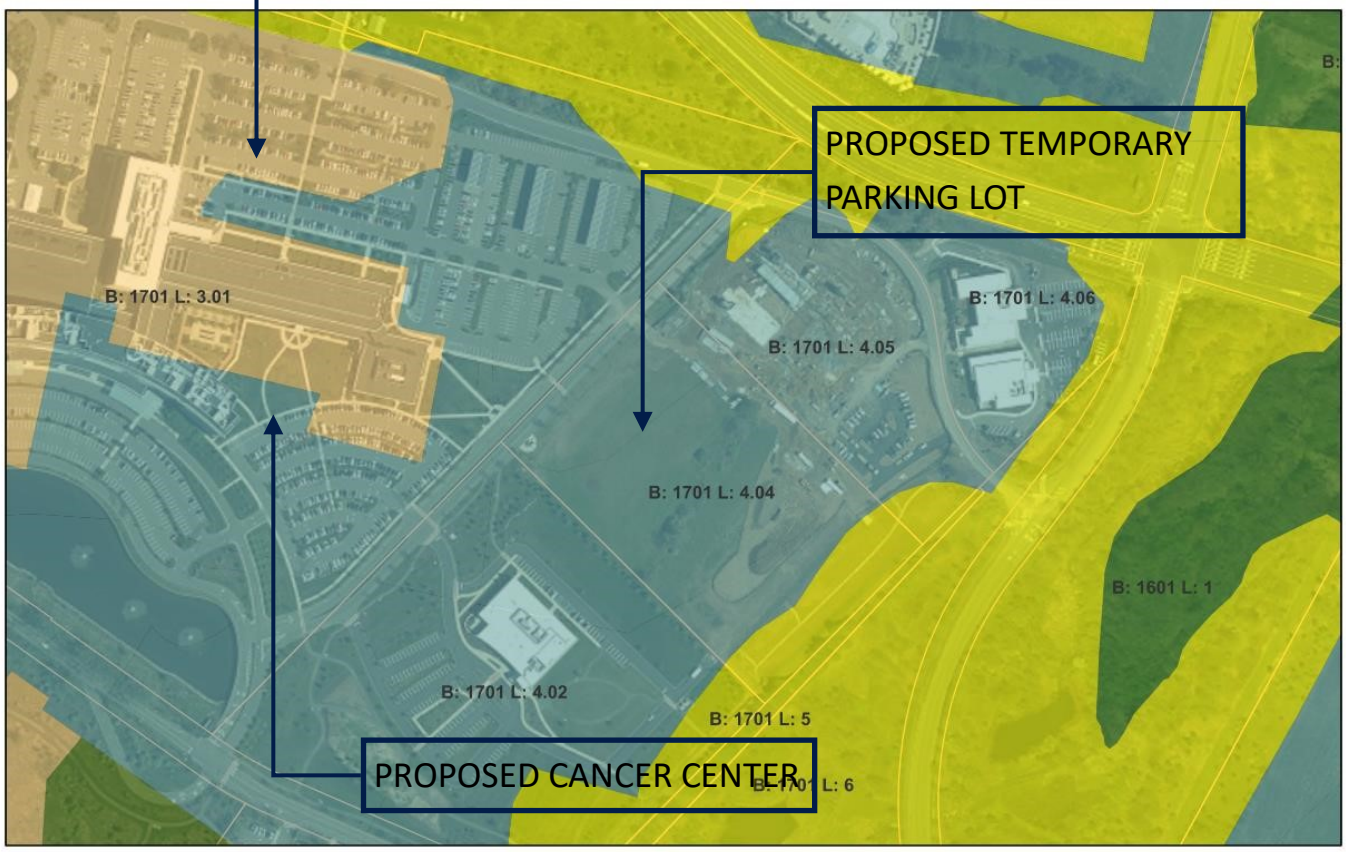
Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	**DECEMBER 2022**	**06C028T.003**	**FIGURE 3**

P23-03 DRC 05/18/23

PROPOSED PARKING GARAGE

NJ-GeoWeb Ground Water Recharge

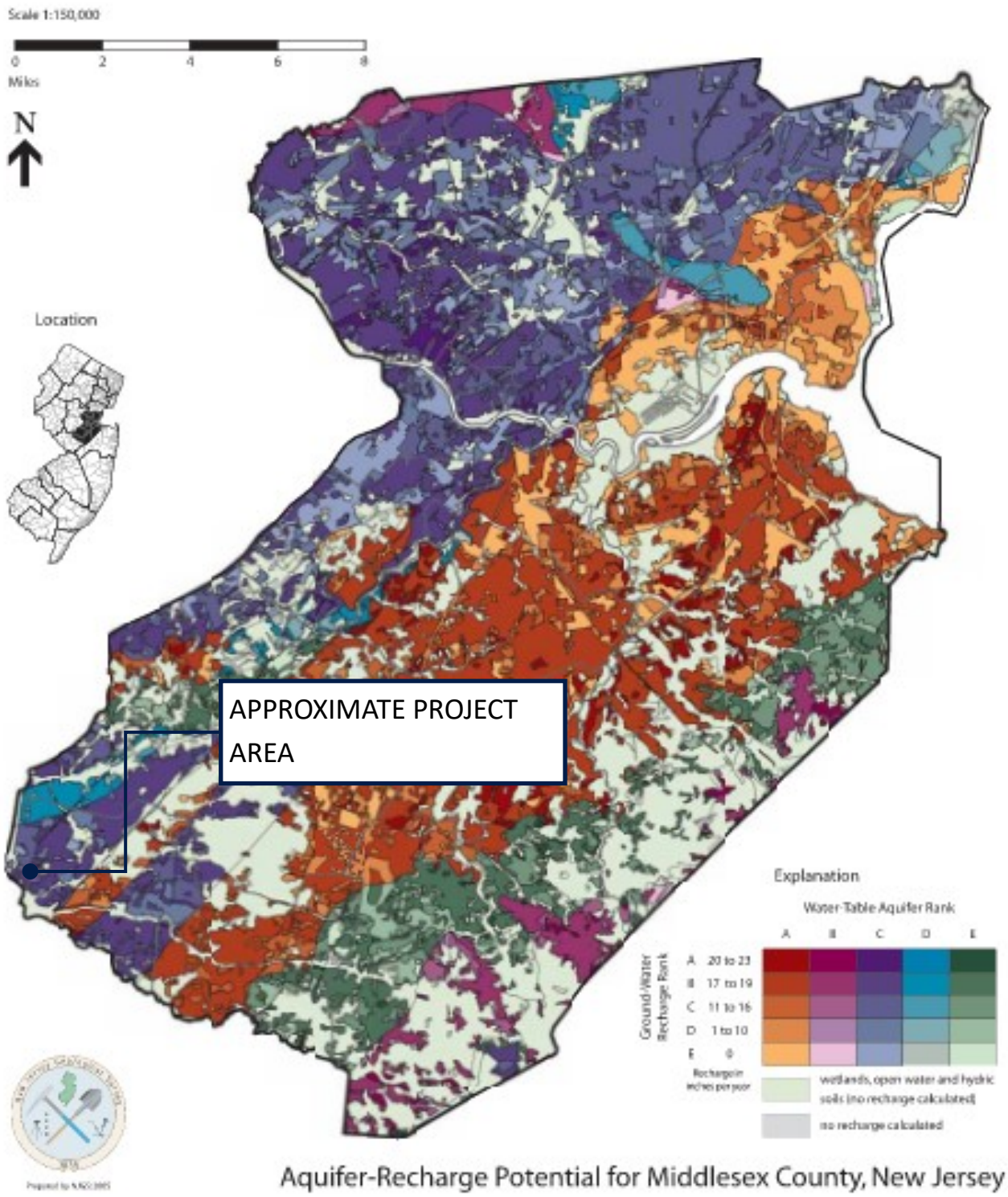


FRENCH & PARRELLO ASSOCIATES

GROUND WATER RECHARGE MAP
PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 4



Aquifer-Recharge Potential for Middlesex County, New Jersey

FRENCH & PARRELLO ASSOCIATES

AQUIFER RECHARGE MAP
PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 5

PROPOSED PARKING GARAGE

NJ-GeoWeb Landscape Project

PROPOSED CANCER CENTER

PROPOSED TEMPORARY PARKING LOT

FRENCH & PARRELLO ASSOCIATES

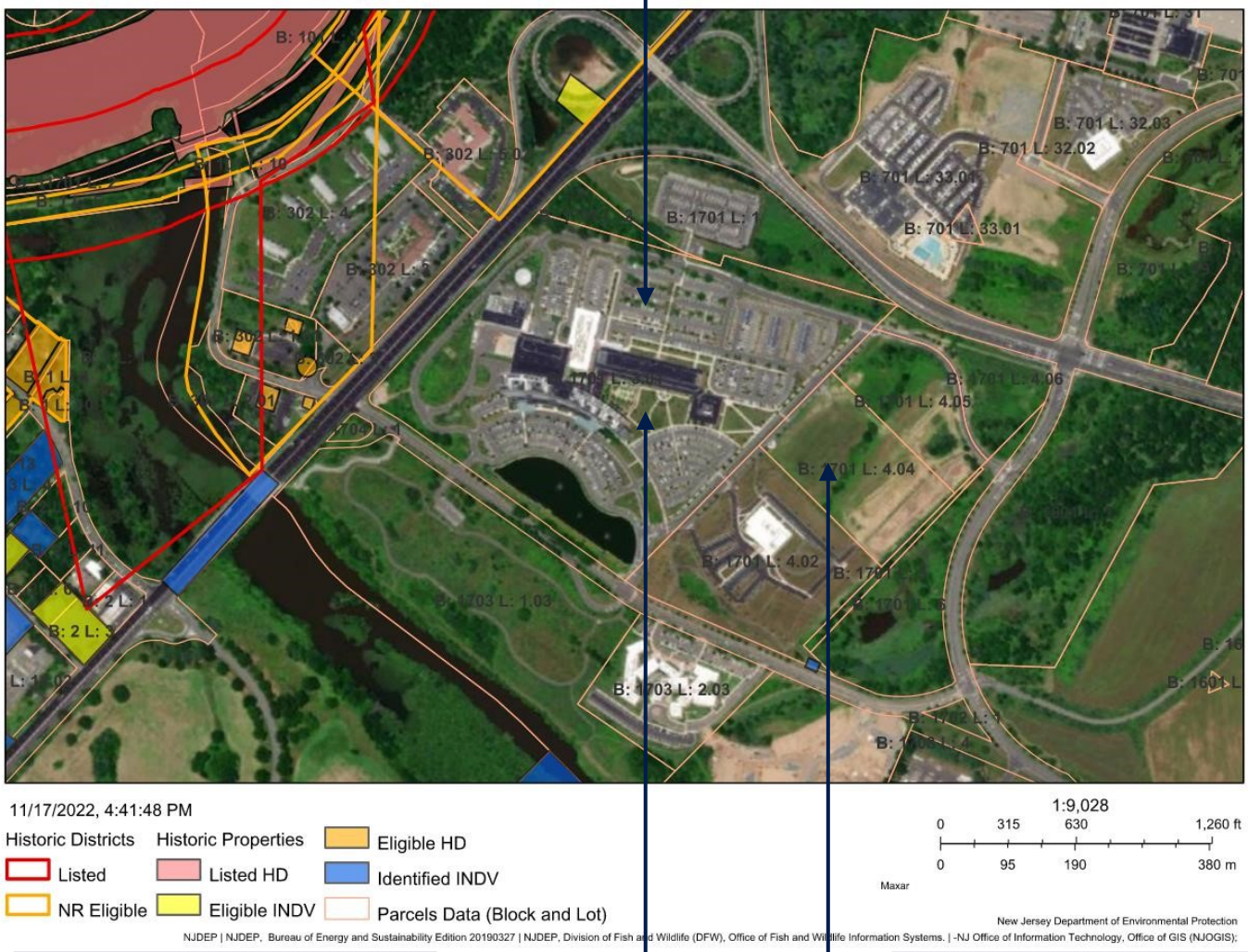
NJDEP LANDSCAPE PROJECT MAP
PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 6

PROPOSED PARKING GARAGE

NJ-GeoWeb Historic Preservation



PROPOSED CANCER CENTER

PROPOSED TEMPORARY PARKING LOT

FRENCH & PARRELLO ASSOCIATES

NJDEP HISTORIC PRESERVATION MAP

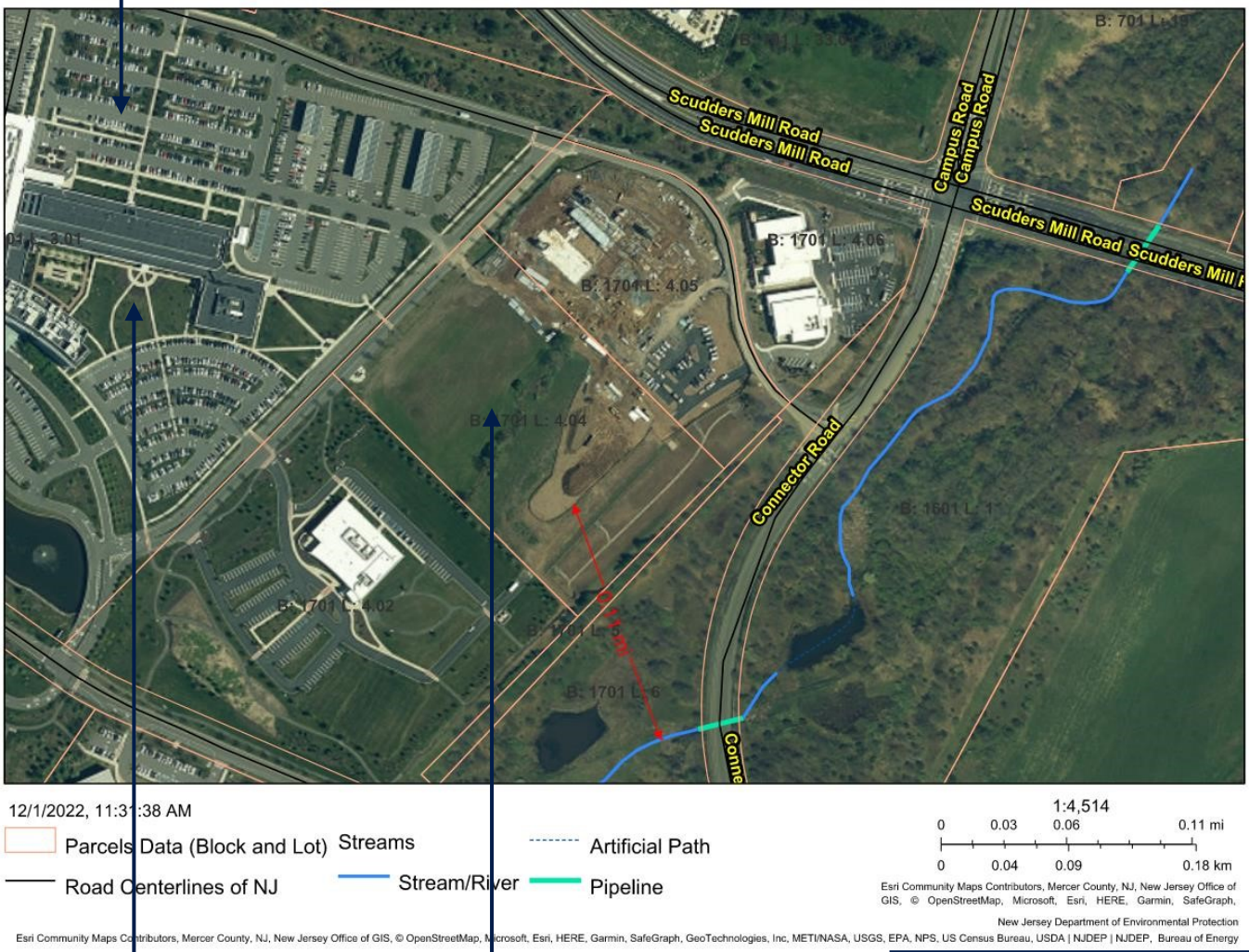
PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 7

PROPOSED PARKING GARAGE

NJ-GeoWeb Streams



PROPOSED TEMPORARY PARKING LOT

PROPOSED CANCER CENTER

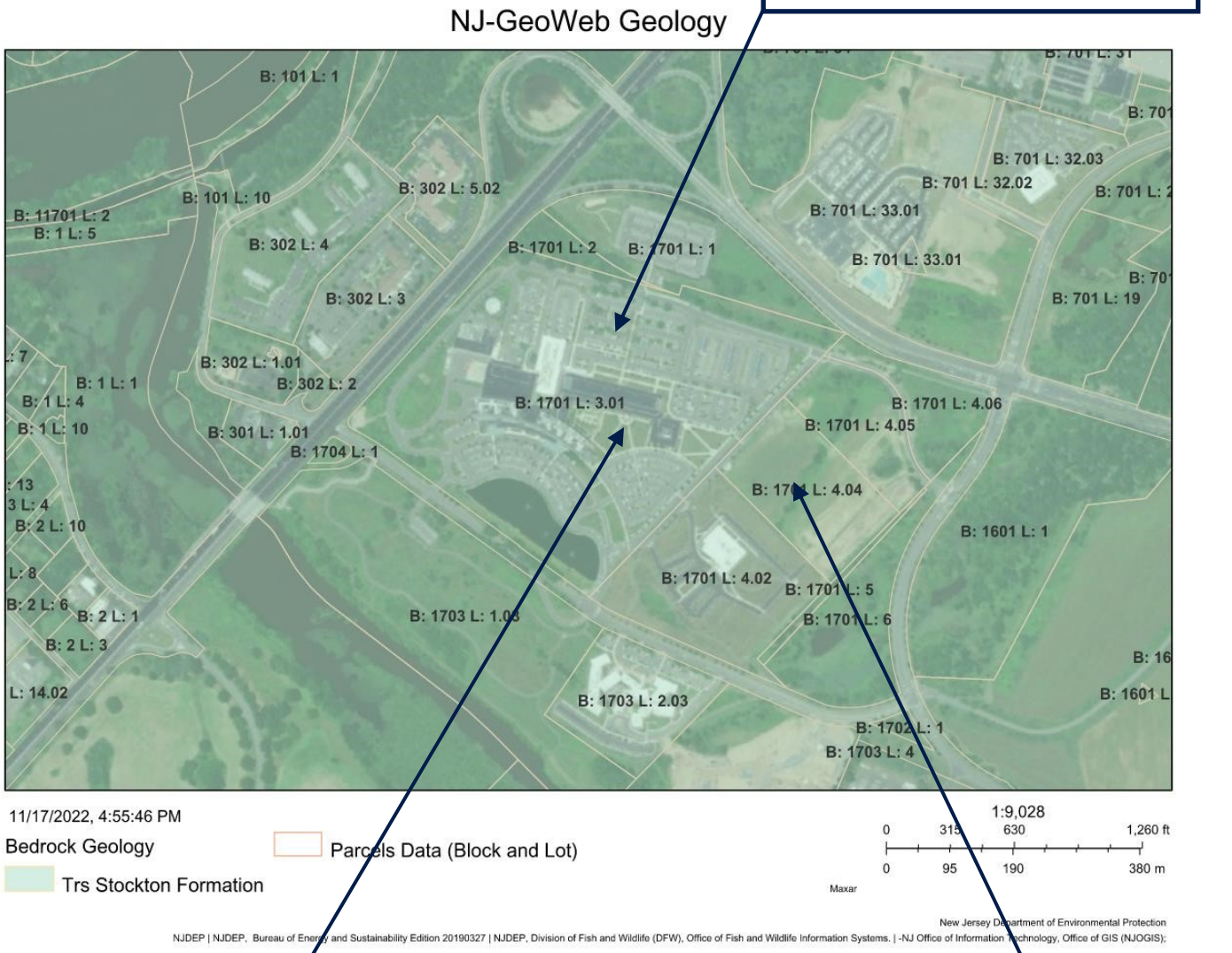
FRENCH & PARRELLO ASSOCIATES

NJDEP STREAMS MAP
PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 8

PROPOSED PARKING GARAGE



PROPOSED CANCER CENTER

PROPOSED TEMPORARY PARKING LOT

FRENCH & PARRELLO ASSOCIATES

NJDEP GEOLOGY MAP
PENN MEDICINE PRINCETON HEALTH

Township of Plainsboro
Middlesex County, New Jersey

SCALE:	DATE:	JOB No.:	DRAWING
AS SHOWN	DECEMBER 2022	06C028T.003	FIGURE 9

Cloud Gehshan
Design

400 Market Street, Suite 300
Philadelphia, PA 19106

215 829 9414
cloudgehshan.com

Penn Medicine

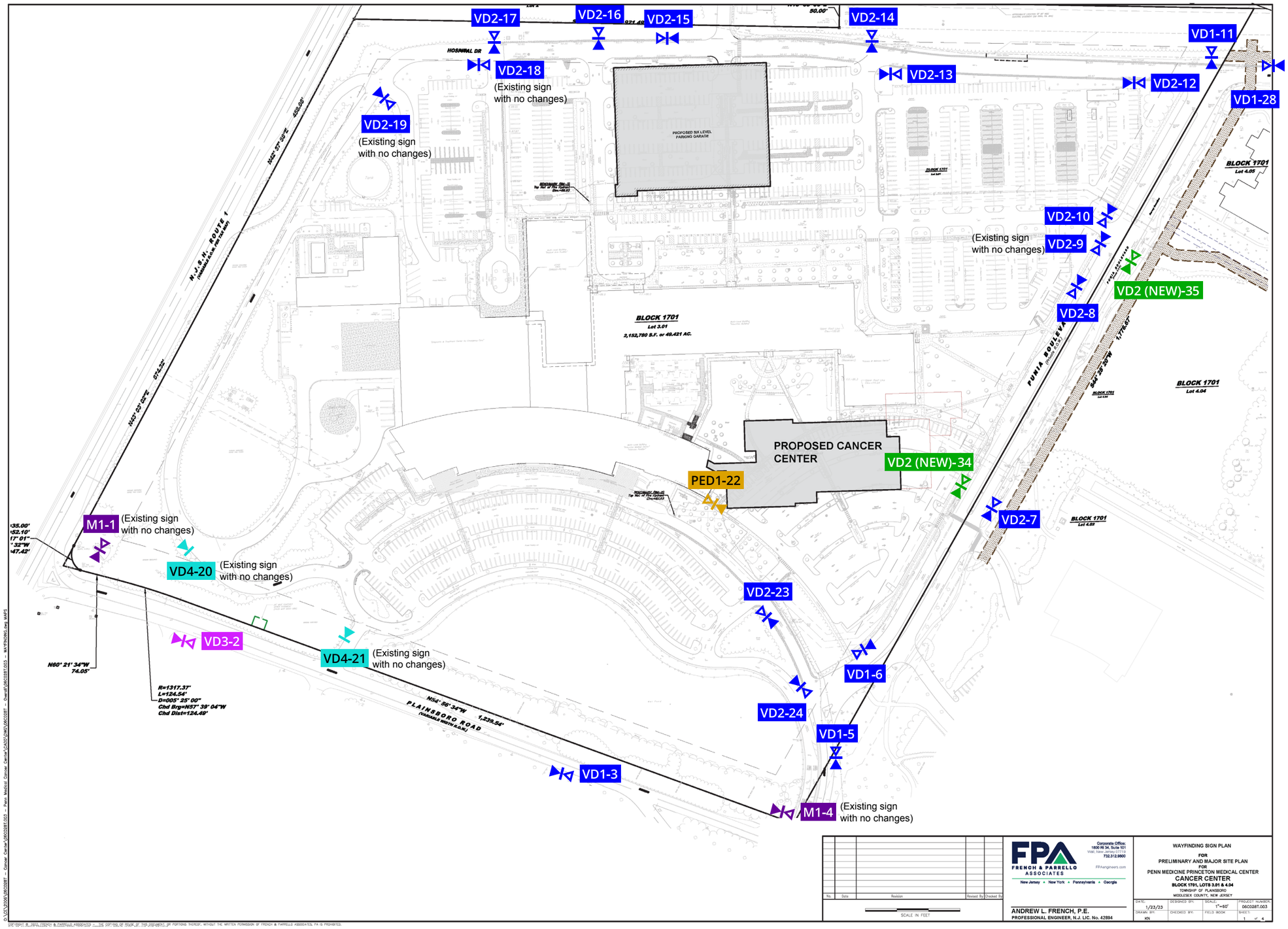
Penn Medicine Princeton Health Cancer Center

Exterior Wayfinding
(Programming)
April 14, 2023

Sign Location Plan – Exterior Directional Signs

P23-03 DRC 05/18/23

Penn Medicine



Signage Improvements:

The sign messages are revised to help direct patients/visitors to the new parking garage, and improve wayfinding for major destinations.

We are listing the destinations in alphabetical order as recommended by wayfinding best practices. The “Emergency” message is shown larger and as the first listing for quick identification.

The temporary “Punia Parking Lot” is a destination that will be removed pending permit allowance.

FPA FRENCH & PARRELLO ASSOCIATES — New Jersey · New York · Pennsylvania · Georgia
Corporate Office: 1600 Rt 34, Suite 101, Wall, New Jersey 07719, 732.312.9900, FPAengineers.com
ANDREW L. FRENCH, P.E., PROFESSIONAL ENGINEER, N.J. LIC. No. 42894

WAYFINDING SIGN PLAN
FOR
PRELIMINARY AND MAJOR SITE PLAN
FOR
PENN MEDICINE PRINCETON MEDICAL CENTER
CANCER CENTER
BLOCK 1701, LOTS 3.01 & 4.04
TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY

DATE	DESIGNED BY	SCALE	PROJECT NUMBER
1/23/23		1"=60'	06C028T.003
DRAWN BY	CHECKED BY	FIELD BOOK	SHEET
KN			1 of 4

Client/Project	Project No.	Date	Revisions	Scale	Page Number
Penn Medicine Princeton Health Cancer Ctr. Exterior Wayfinding	23UPM149006	4.14.23		As Noted	0.2

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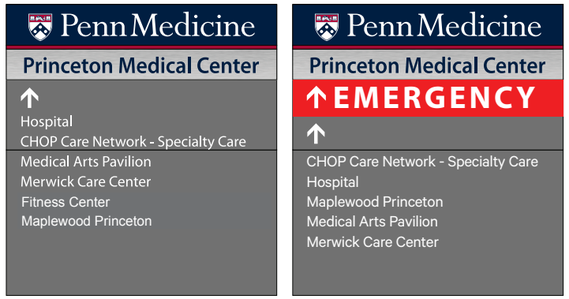
Exterior Directional Sign Messages – Existing and Revised Message for Phase 1

P23-03 DRC 05/18/23

Penn Medicine

PROGRAMMING

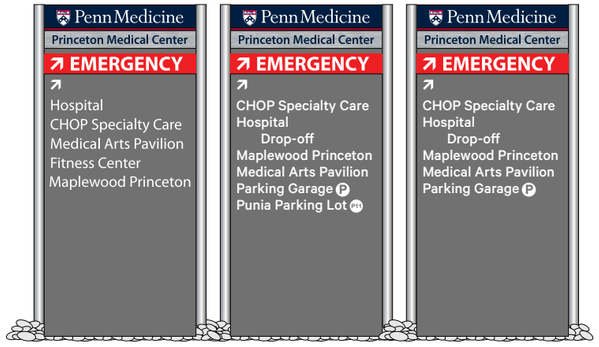
VD3-2



SIGN 2 SIDE A (Existing)

SIGN 2 SIDE A (Phase 1)

VD1-3



SIGN 3 SIDE A (Existing)

SIGN 3 SIDE A (Phase 1)

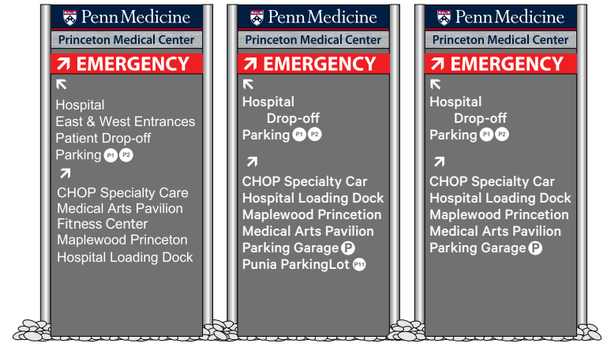
(After temporary "Punia Parking Lot" is removed)

VD1-5

SIGN 5 SIDE A (Existing)

SIGN 5 SIDE A (Phase 1)

VD1-6

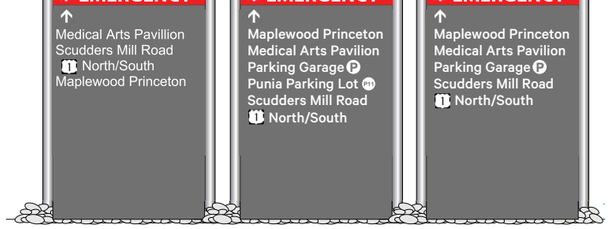


SIGN 6 SIDE A (Existing)

SIGN 6 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

VD2-7

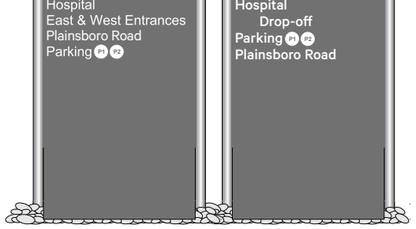


SIGN 7 SIDE A (Existing)

SIGN 7 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

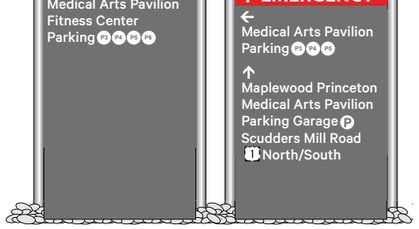
VD2-8



SIGN 8 SIDE A (Existing)

SIGN 8 SIDE A (Phase 1)

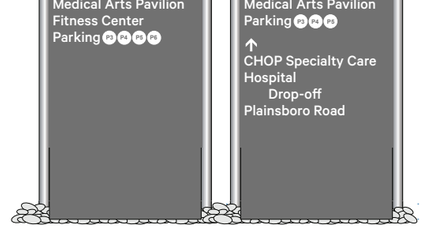
VD2-10



SIGN 10 SIDE A (Existing)

SIGN 10 SIDE A (Phase 1)

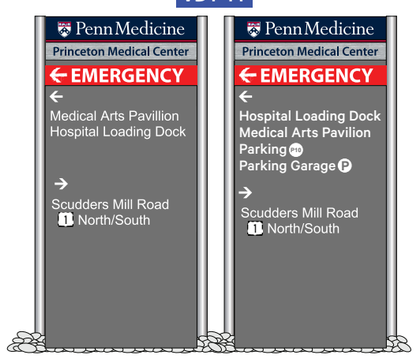
VD2-10



SIGN 10 SIDE B (Existing)

SIGN 10 SIDE B (Phase 1)

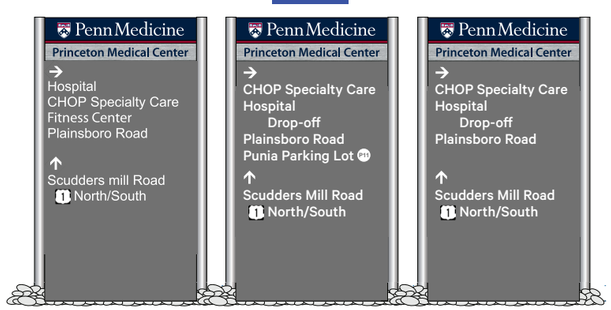
VD1-11



SIGN 11 SIDE A (Existing)

SIGN 11 SIDE A (Phase 1)

VD2-12



SIGN 12 SIDE A (Existing)

SIGN 12 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

VD2-13

SIGN 13 SIDE A (Existing)

SIGN 13 SIDE A (Phase 1)

VD2-13

SIGN 13 SIDE B (Existing)

SIGN 13 SIDE B (Phase 1)

(After temporary "Punia Parking Lot" is removed)

Client/Project	Project No.	Date	Revisions	Scale	Page Number
Penn Medicine Princeton Health Cancer Ctr. Exterior Wayfinding	23UPM149006	4.14.23		As Noted	0.3

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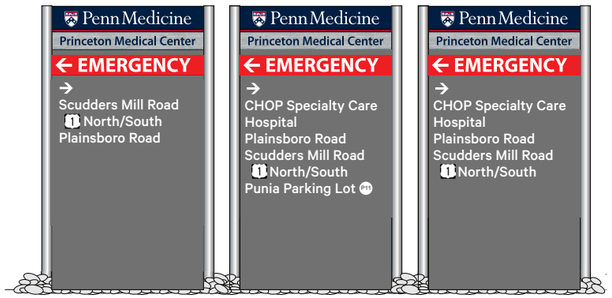
Exterior Directional Sign Messages – Existing and Revised Message for Phase 1

P23-03 DRC 05/18/23

Penn Medicine

PROGRAMMING

VD2-14

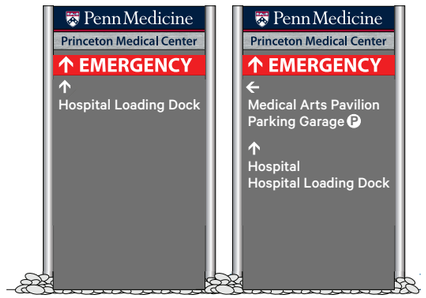


SIGN 14 SIDE A (Existing)

SIGN 14 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

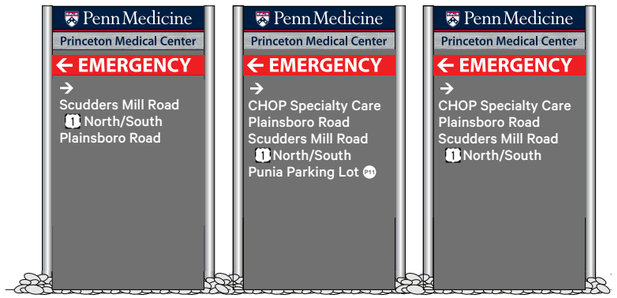
VD2-15



SIGN 15 SIDE A (Existing)

SIGN 15 SIDE A (Phase 1)

VD2-16

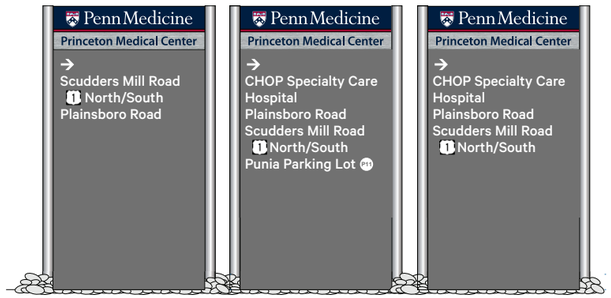


SIGN 16 SIDE A (Existing)

SIGN 16 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

VD2-17

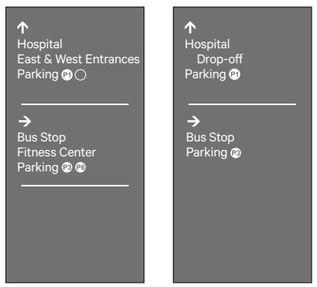


SIGN 17 SIDE A (Existing)

SIGN 17 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

PED1-22



SIGN 22 SIDE A (Existing)

PED1-22

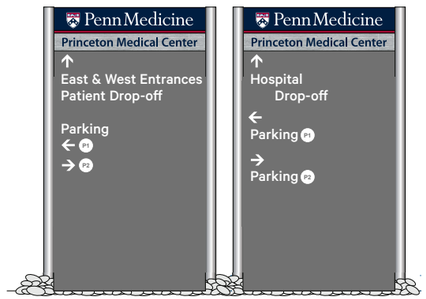
SIGN 22 SIDE A (Phase 1)

PED1-22

SIGN 22 SIDE B (Existing)

SIGN 22 SIDE B (Phase 1)

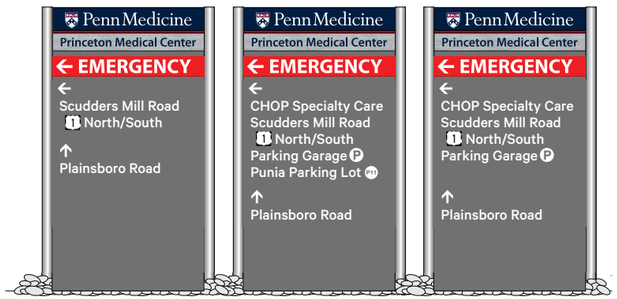
VD2-23



SIGN 23 SIDE A (Existing)

SIGN 23 SIDE A (Phase 1)

VD2-24

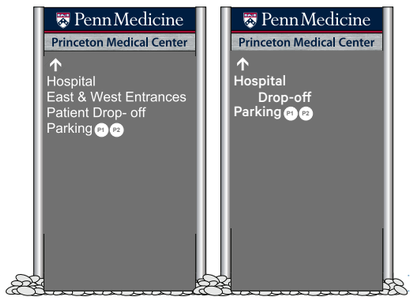


SIGN 24 SIDE A (Existing)

SIGN 24 SIDE A (Phase 1)

(After temporary "Punia Parking Lot" is removed)

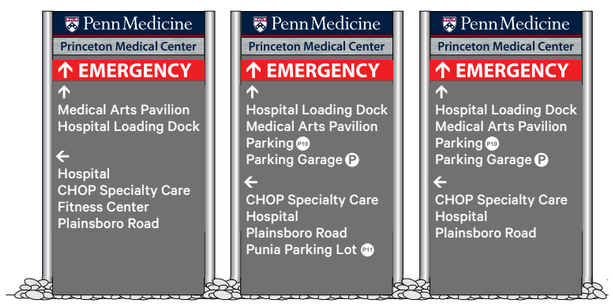
VD2-24



SIGN 24 SIDE B (Existing)

SIGN 24 SIDE B (Phase 1)

VD1-28

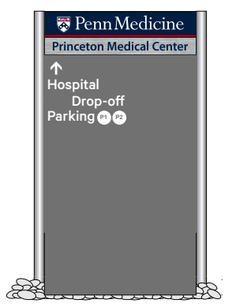


SIGN 28 SIDE A (Existing)

SIGN 28 SIDE A (Phase 1)

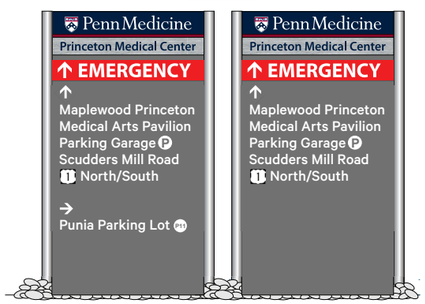
(After temporary "Punia Parking Lot" is removed)

VD2-34



SIGN 34 SIDE A (Phase 1, New)

VD2-35



SIGN 35 SIDE A (Phase 1, New)

(After temporary "Punia Parking Lot" is removed)

Client/Project	Project No.	Date	Revisions	Scale	Page Number
Penn Medicine Princeton Health Cancer Ctr. Exterior Wayfinding	23UPM149006	4.14.23		As Noted	0.4

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