

PRELIMINARY & FINAL PLAT - MAJOR SITE PLAN

PREPARED FOR
CAMELOT AT ERNSTON ROAD
 SITUATED IN
BLOCK 366.01 LOT 1 & BLOCK 347.01 LOT 3.01
 BOROUGH OF SAYREVILLE, MIDDLESEX COUNTY, NEW JERSEY

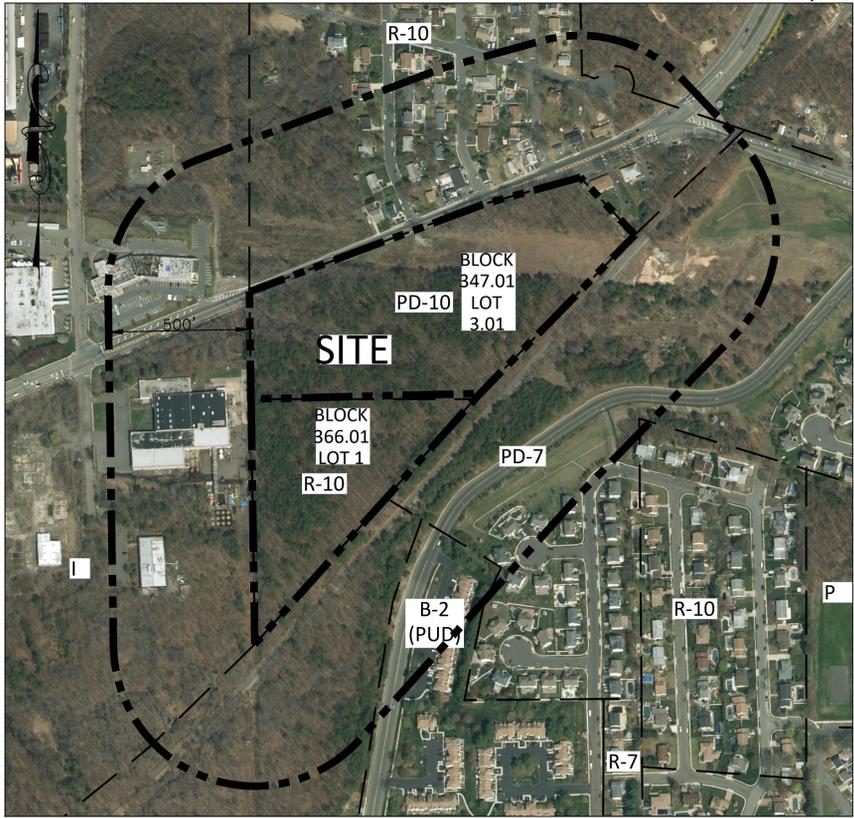
Exhibit: **A-11**

WILLIAM T. WENTZLEN, P.E., P.P., C.M.E.
 PROFESSIONAL ENGINEER
 NJ LICENSE NO. 27799

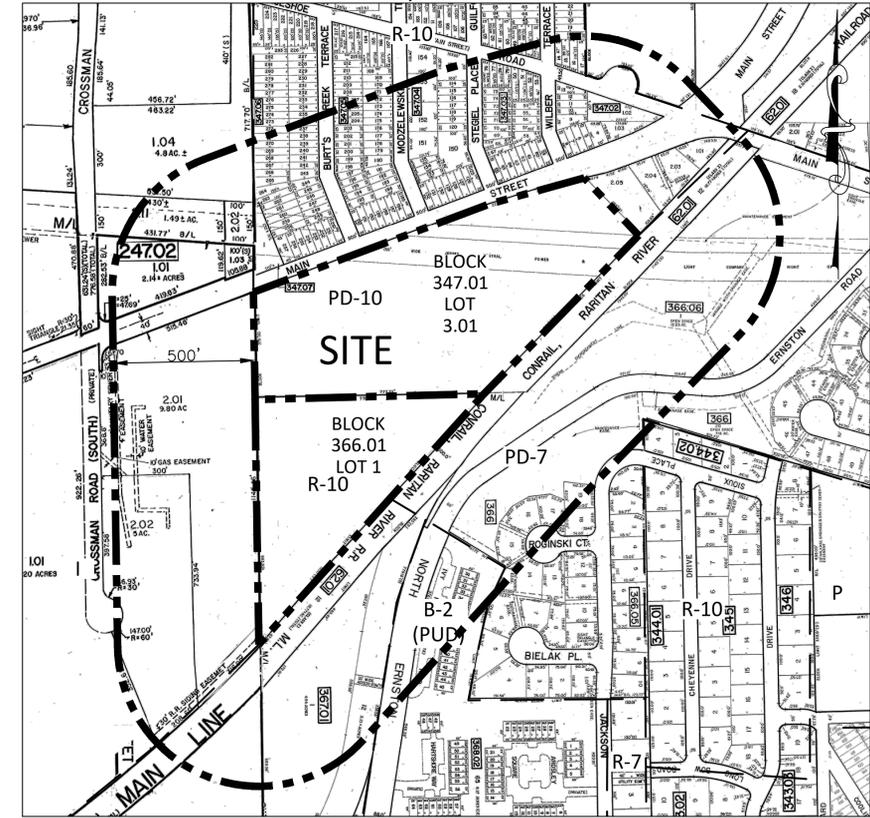
CERTIFICATE OF AUTHORIZATION #246A28239800

PROPERTY OWNERS
WITHIN 200'
 BOROUGH OF SAYREVILLE

BLOCK	LOT	NAME & ADDRESS
62.01	12	CONSOLIDATED RAIL CORPORATION 3 COMMERCIAL PLACE NORFOLK, VA 23510
246;247.02	2.02, 1.03	JERSEY CENTRAL POWER AND LIGHT COMPANY TAX DEPARTMENT 800 CABIN HILL DRIVE GREENSBURG, PA 15601
246;247.02	2.11; 1.01	VINREALTY, LLC, 6 ASHLEY TERRACE TOWAC, NJ 07082
251	2.01	NL VENTURES X CROSSMAN, LLC 4131 N. CENTRAL EXPRESSWAY DALLAS, TX 75204
252	2	LORRAINE MUNNIA MOCCO 345 TENTH STREET JERSEY CITY, NJ 07302
347.01	2.03	MARIA GRIAZKY 11 KEENAN STREET PARLIN, NJ 08859
347.01	2.04	MARIA GRIAZKY 11 KEENAN STREET PARLIN, NJ 08859
347.01	2.05	INNA BOTSCHAGOW & PAUL SLANSKI 956 MAIN STREET SAYREVILLE, NJ 08872
347.02	1.02	CAROL STEGEL 951 MAIN STREET SAYREVILLE, NJ 08872
347.02	1.03	CAROL STEGEL 951 MAIN STREET SAYREVILLE, NJ 08872
347.02	4-6	KOFI NTI ASARE 947 MAIN STREET SAYREVILLE, NJ 08872
347.02	7&8	JESS COHEN 31 HEATHROW LANE OLD BRIDGE, NJ 08857
347.02	9	BRUNO SZATKOWSKI, JR. & ANNE SZATKOWSKI 17 HORSESHOE ROAD SAYREVILLE, NJ 08872
347.03	57&58	VICTOR & ELIZABETH DUBININ 16 WILBER TERRACE SAYREVILLE, NJ 08872
347.03	59&60	WAYNE J. WOODS, SR. 941 MAIN STREET SAYREVILLE, NJ 08872
347.03	61-63	STEPHEN JOSEPH BASZAK 935 MAIN STREET SAYREVILLE, NJ 08872
347.03	64-66	BARRY & LORENA STERN 927 MAIN STREET SAYREVILLE, NJ 08872
347.03	67-69	BRAIN P. SOMMERS & KRISTEN A. DORE 5 STEGEL PLACE SAYREVILLE, NJ 08872
347.04	125&126	STEGEL GARAGE, INC. 9 SMITH LANE NEPTUNE, NJ 07753
347.04	127&128	SHS AUTO, LLC & ANDREW STEGEL - ESTATE 9 SMITH LANE NEPTUNE, NJ 07753



KEY MAP
 SCALE: 1"=300'±



KEY MAP
 SCALE: 1"=300'±

PROPERTY OWNERS
WITHIN 200' CONT.
 BOROUGH OF SAYREVILLE

BLOCK	LOT	NAME & ADDRESS
347.04	129&130	JOHN E. STEGEL, III 915 MAIN STREET SAYREVILLE, NJ 08872
347.04	131&132	EDWARD & PATRICIA BOCCASSINI 17 MODZELEWSKI TERRACE SAYREVILLE, NJ 08872
347.04	133-135	EDWARD BOCCASSINI 17 MODZELEWSKI TERRACE SAYREVILLE, NJ 08872
347.04	150	RODERIUS W. VENNEN & BERNYS PEREZ 14 STEGEL PLACE SAYREVILLE, NJ 08872
347.05	182-184	RICHARD W. BROWN, JR. 20 MODZELEWSKI TERRACE SAYREVILLE, NJ 08872
347.05	185&186	JOSE & MARIA FONSECA 24 MODZELEWSKI TERRACE SAYREVILLE, NJ 08872
347.05	187&188	CATHERINE FOWLER & JOAQUIN J. FOWLER 908 MAIN STREET SAYREVILLE, NJ 08872
347.05	189-195	LULA MAE MODZELEWSKI - ESTATE C/O ANTINA MODZELEWSKI BOSCHITSCH 18 LAUREL AVENUE, PO BOX 591 KINGSTON, NJ 08528
347.06	247-260	LAUREN SARGEANT-SIMON 55 HORSESHOE ROAD SAYREVILLE, NJ 08872
347.07	1	JERSEY CENTRAL POWER AND LIGHT COMPANY TAX DEPARTMENT 800 CABIN HILL DRIVE GREENSBURG, PA 15601
366	20	PATRIOT HILLS ESTATES HOMEOWNERS C/O RCP MANAGEMENT 2 COMMERCE DRIVE, #101 CRANFURY, NJ 08528
367.01	1	CAMELOT AT ERNSTON ROAD, LLC 433 RIVER ROAD HIGHLAND PARK, NJ 08904
367.01	12	CONSOLIDATED RAIL CORPORATION 3 COMMERCIAL PLACE NORFOLK, VA 23510
RIGHT-OF-WAY:		JERSEY CENTRAL POWER AND LIGHT COMPANY TAX DEPARTMENT 800 CABIN HILL DRIVE GREENSBURG, PA 15601
EASEMENT:		BOROUGH OF SAYREVILLE 167 MAIN STREET SAYREVILLE, NJ 08872



436 W. COMMODORE BLVD., SUITE #2
 JACKSON, NJ 08527
 TEL: (732) 431-1440 FAX: (732) 987-5078

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ZONING REQUIREMENTS - AH-2 AFFORDABLE HOUSING 2 ZONE (CAMELOT 2)

	REQUIRED	EXISTING	PROVIDED
MIN. LOT AREA	20 ACRES	20.799 ACRES	20.799 ACRES
MINIMUM SETBACK:			
FROM MAIN STREET	30.0'	N/A	39.0' (BUILDING 6)
ALL OTHER PERIMETER LOT LINES	20.0'	N/A	20.0' (BUILDING 6)
MINIMUM DISTANCE BETWEEN BUILDINGS			
FRONT TO FRONT	60.0'	N/A	N/A
FRONT TO REAR OR END	72.0'	N/A	N/A
REAR TO REAR OR END	72.0'	N/A	N/A
END TO END	25.0'	N/A	25.0' (BUILDINGS 1/2) 25.0' (BUILDINGS 3/4)
MINIMUM PARKING SETBACK			
MINIMUM DISTANCE TO OFF-STREET PARKING FROM BUILDING	15.0'	N/A	15.0'
MINIMUM DISTANCE TO OFF-STREET PARKING FROM BLOCK 347.01, LOT 2.05	20.0'	N/A	25.3'
MINIMUM DISTANCE FROM BUILDINGS LESS THEN 35' IN HEIGHT TO OFF-STREET PARKING SPACES	12.0'	N/A	15.0'
MINIMUM DISTANCE FROM BUILDINGS GREATER THEN OR EQUAL TO 35' IN HEIGHT TO OFF-STREET PARKING SPACES	15.0'		15.0'
MINIMUM DRIVEWAY LENGTH ADJACENT TO GARAGE	20.0'	N/A	20.0'
MAXIMUM BUILDING HEIGHT	4 STORIES / 56 FEET	N/A	56'
MAXIMUM BUILDING COVERAGE	25.0%	N/A	6.4%
MAXIMUM IMPERVIOUS COVERAGE	65.0%	N/A	23.5%

PROPOSED APARTMENTS

1 BEDROOM APARTMENTS-	54
2 BEDROOM APARTMENTS-	86
3 BEDROOM APARTMENTS-	2
TOTAL=	142 UNITS

LOT COVERAGE - AREA OF DEVELOPMENT

EXISTING BUILDING COVERAGE	0 S.F.
EXISTING IMPERVIOUS COVERAGE	0 S.F.
PROPOSED BUILDING COVERAGE	57,796.0 S.F.
PROPOSED IMPERVIOUS COVERAGE	213,220.71 S.F.

PARKING - GARDEN APARTMENTS (PER RSIS)

REQUIRED (54) 1 BEDROOM APARTMENTS - (54 X 1.8 SPACES/UNIT = 97.2 SPACES)	
(86) 2 BEDROOM APARTMENTS - (86 X 2.0 SPACES/UNIT = 172 SPACES)	
(2) 3 BEDROOM APARTMENTS - (2 X 2.1 SPACES/UNIT = 4.2 SPACES)	
TOTAL REQUIRED=	273.4 SPACES
PROVIDED 59 GARAGE	
59 DRIVEWAY	
186 SURFACE PARKING	
304 SPACES	

SHEET	DESCRIPTION
1	COVER SHEET
2	OVERALL EXISTING CONDITIONS PLAN
3	OVERALL SITE PLAN
4	SITE PLAN
5	SITE PLAN
6	OVERALL GRADING PLAN
7	GRADING PLAN
8	GRADING PLAN
9	OVERALL UTILITY PLAN
10	UTILITY PLAN
11	UTILITY PLAN
12	LANDSCAPE PLAN
13	LANDSCAPE PLAN
14	LIGHTING PLAN
15	LANDSCAPE AND LIGHTING DETAILS
16	TREE PRESERVATION PLAN
17	PROFILE SHEET
18	PROFILE SHEET
19	PROFILE SHEET
20	PROFILE SHEET
21	SOIL EROSION AND SEDIMENT CONTROL PLAN
22	SOIL EROSION AND SEDIMENT CONTROL NOTES
23	SOIL EROSION AND SEDIMENT CONTROL NOTES
24	DETAILS SHEET
25	DETAILS SHEET
26	DETAILS SHEET
27	DETAILS SHEET

GENERAL NOTES

- THE PROPERTY IS KNOWN AS BLOCK 366.01, LOT 1 AND BLOCK 347.01, LOT 1 AS SHOWN ON THE BOROUGH OF SAYREVILLE TAX MAP SHEET NUMBERS 100 & 101, DATED AUGUST 1989.
- SITE DATUM UTILIZED IS ESTABLISHED FROM THE NORTH AMERICAN VERTICAL DATUM 1988. (NAVD 1988)
- THE PROPERTY IS LOCATED OUTSIDE OF ANY FLOOD ZONE ACCORDING TO FIRM MAP 34023001526, FIRM RELEASE DATE, 01/31/2014.
- AREA: BLOCK 366.01 LOT 1: 326,256.33 S.F. (7.489 ACRES)
 BLOCK 347.01 LOT 3.01: 579,784.87 (13.310 ACRES)
 TOTAL: 906,041.20 (20.799 ACRES)
- EXISTING USE: UNIMPROVED LAND
- PROPOSED USE: 6 MULTIFAMILY APARTMENTS BUILDINGS - 142 APARTMENTS
- OWNER/APPLICANT: K-LAND NO. 70, LLC
 433 RIVER ROAD
 HIGHLAND PARK, NJ 08904
- PUBLIC WATER AND SEWER IS SUPPLIED TO THE SURROUNDING SITES, IT IS THEREFORE ASSUMED THAT THERE WILL BE NO IMPACT TO WELL OR SEPTIC SYSTEMS AS A RESULT OF THE CONSTRUCTION OF THIS PROJECT. FURTHER THERE ARE NO PROPOSED WELLS OR SEPTIC SYSTEMS.

FINAL APPROVAL

I CONSENT TO THE FILING OF THIS SITE PLAN WITH THE BOROUGH OF SAYREVILLE

(OWNER) _____ (DATE) _____

SITE PLAN APPROVED BY THE BOROUGH OF SAYREVILLE PLANNING BOARD (PRELIMINARY) _____ (FINAL) _____

(PLANNING BOARD CHAIRMAN) _____ (DATE) _____

(PLANNING BOARD SECRETARY) _____ (DATE) _____

I HAVE REVIEWED THIS SITE PLAN AND CERTIFY THAT IT MEETS ALL CODES AND ORDINANCES UNDER MY JURISDICTION

(BOROUGH ENGINEER) _____ (DATE) _____

REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	DATE
	09/17/2020
REVISIONS	DATE
DATE: 09/12/2019	RMP
SCALE: 1"=500'	SK
AE FILE NAME: COVER	CHKD
AE FILE NUMBER: 117	WTW
	RELVD

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COVER SHEET

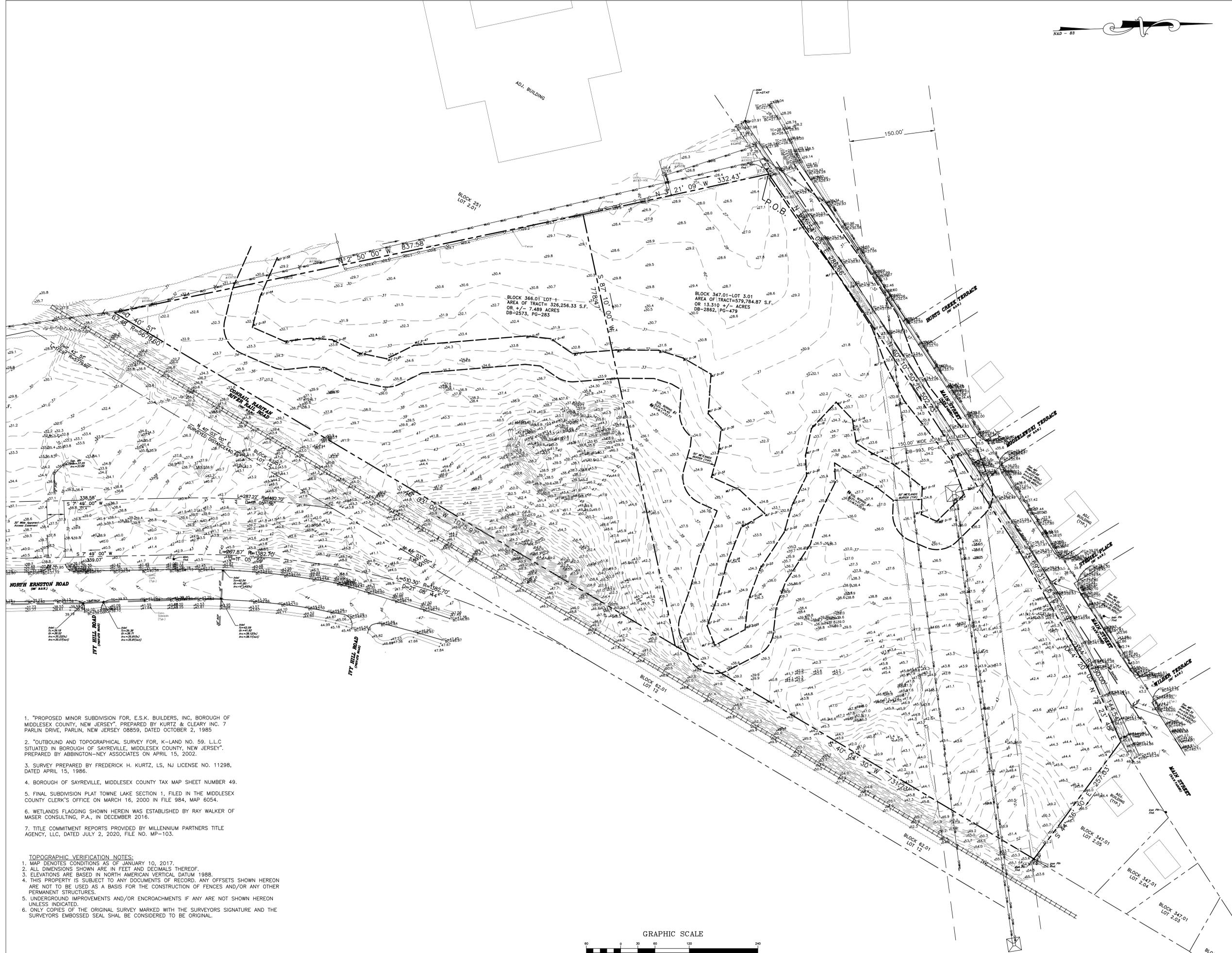
PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

**BLOCK 366.01 LOT 1
 BLOCK 347.01 LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**

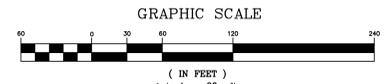
**TAX MAP SHEET 101
 DATED AUGUST 1989**



1. "PROPOSED MINOR SUBDIVISION FOR, E.S.K. BUILDERS, INC., BOROUGH OF MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY KURTZ & CLEARY INC. 7 PARLIN DRIVE, PARLIN, NEW JERSEY 08859, DATED OCTOBER 2, 1985
2. "OUTBOUND AND TOPOGRAPHICAL SURVEY FOR, K-LAND NO. 59, L.L.C. SITUATED IN BOROUGH OF SAYREVILLE, MIDDLESEX COUNTY, NEW JERSEY", PREPARED BY ABBINGTON-NEY ASSOCIATES ON APRIL 15, 2002.
3. SURVEY PREPARED BY FREDERICK H. KURTZ, LS, NJ LICENSE NO. 11298, DATED APRIL 15, 1986.
4. BOROUGH OF SAYREVILLE, MIDDLESEX COUNTY TAX MAP SHEET NUMBER 49.
5. FINAL SUBDIVISION PLAT TOWNE LAKE SECTION 1, FILED IN THE MIDDLESEX COUNTY CLERK'S OFFICE ON MARCH 16, 2000 IN FILE 984, MAP 6054.
6. WETLANDS FLAGGING SHOWN HEREIN WAS ESTABLISHED BY RAY WALKER OF MASER CONSULTING, P.A., IN DECEMBER 2016.
7. TITLE COMMITMENT REPORTS PROVIDED BY MILLENNIUM PARTNERS TITLE AGENCY, LLC, DATED JULY 2, 2020, FILE NO. MP-103.

- TOPOGRAPHIC VERIFICATION NOTES:**
1. MAP DENOTES CONDITIONS AS OF JANUARY 10, 2017.
 2. ALL DIMENSIONS SHOWN ARE IN FEET AND DECIMALS THEREOF.
 3. ELEVATIONS ARE BASED IN NORTH AMERICAN VERTICAL DATUM 1988.
 4. THIS PROPERTY IS SUBJECT TO ANY DOCUMENTS OF RECORD. ANY OFFSETS SHOWN HEREON ARE NOT TO BE USED AS A BASIS FOR THE CONSTRUCTION OF FENCES AND/OR ANY OTHER PERMANENT STRUCTURES.
 5. UNDERGROUND IMPROVEMENTS AND/OR ENCROACHMENTS IF ANY ARE NOT SHOWN HEREON UNLESS INDICATED.
 6. ONLY COPIES OF THE ORIGINAL SURVEY MARKED WITH THE SURVEYORS SIGNATURE AND THE SURVEYORS EMBOSSED SEAL SHALL BE CONSIDERED TO BE ORIGINAL.

I DECLARE THAT, TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND BELIEF, THIS MAP OR PLAN MADE ON 12/06/2016 BY ME OR UNDER MY DIRECT SUPERVISION IS IN ACCORDANCE WITH THE RULES AND REGULATIONS PROMULGATED BY THE STATE BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS.



ALL DOCUMENTS PREPARED BY ABBINGTON ENGINEERING, LLC ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY ABBINGTON ENGINEERING, LLC FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO ABBINGTON ENGINEERING, LLC AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS ABBINGTON ENGINEERING, LLC FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

ANTHONY MALTESE, P.E., P.L.S., P.P.C.M.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 42579

CERTIFICATE OF AUTHORIZATION #24GA2839800



ABBINGTON ENGINEERING, L.L.C.
922 NJ-33, SUITE 3
FREEHOLD, NJ 07728
TEL: (732) 431-1440 FAX: (732) 987-5078

**ENGINEERING
SITE PLANNING
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CERTIFIED TO:
MILLENNIUM PARTNERS TITLE AGENCY, LLC
FIDELITY NATIONAL TITLE INSURANCE COMPANY
K-LAND NO. 70, LLC

REVISED TITLE COMMITMENT AND ADDED CERTIFICATIONS	07/13/2020
REVISED PER WETLANDS LINE PER NJDEP COMMENTS	07/26/2018
REVISIONS	DATE
DATE: 01/16/2017	RMP
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AE FILE NAME: 1034 OUTBOUND TOPO AE	CHECKED
AE FILE NUMBER: 117	AM
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TITLE SURVEY

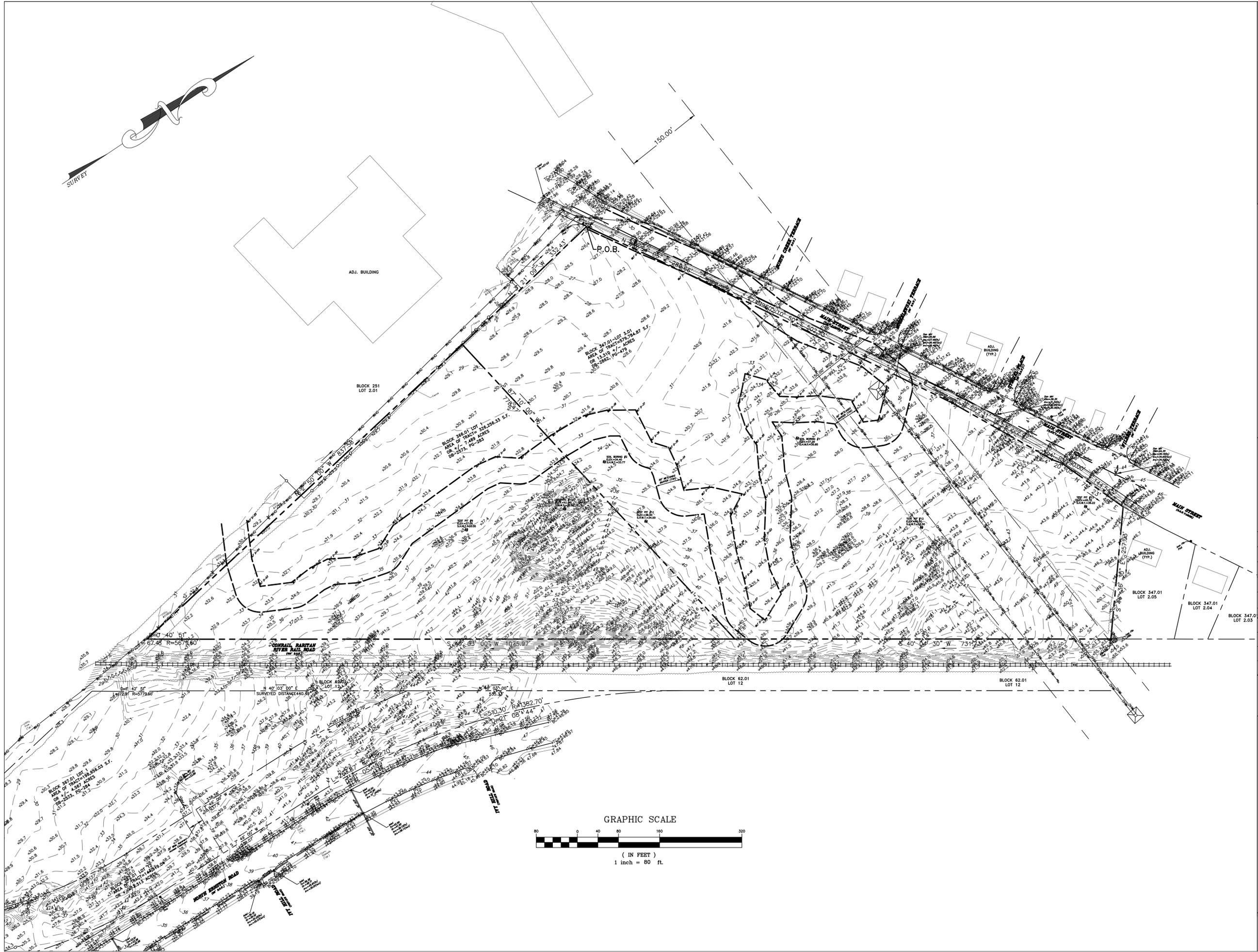
PREPARED FOR

ERNSTON ROAD

SITUATED IN

**BLOCK 347.01 - LOT 3.01
BLOCK 366.01 - LOT 1
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY**

**TAX MAP SHEET 100
DATED AUGUST 1989**



ANTHONY MALTESE, P.E., P.L.S., P.P.
 PROFESSIONAL ENGINEER
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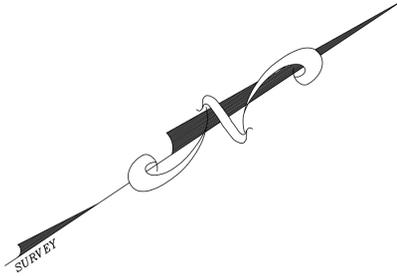
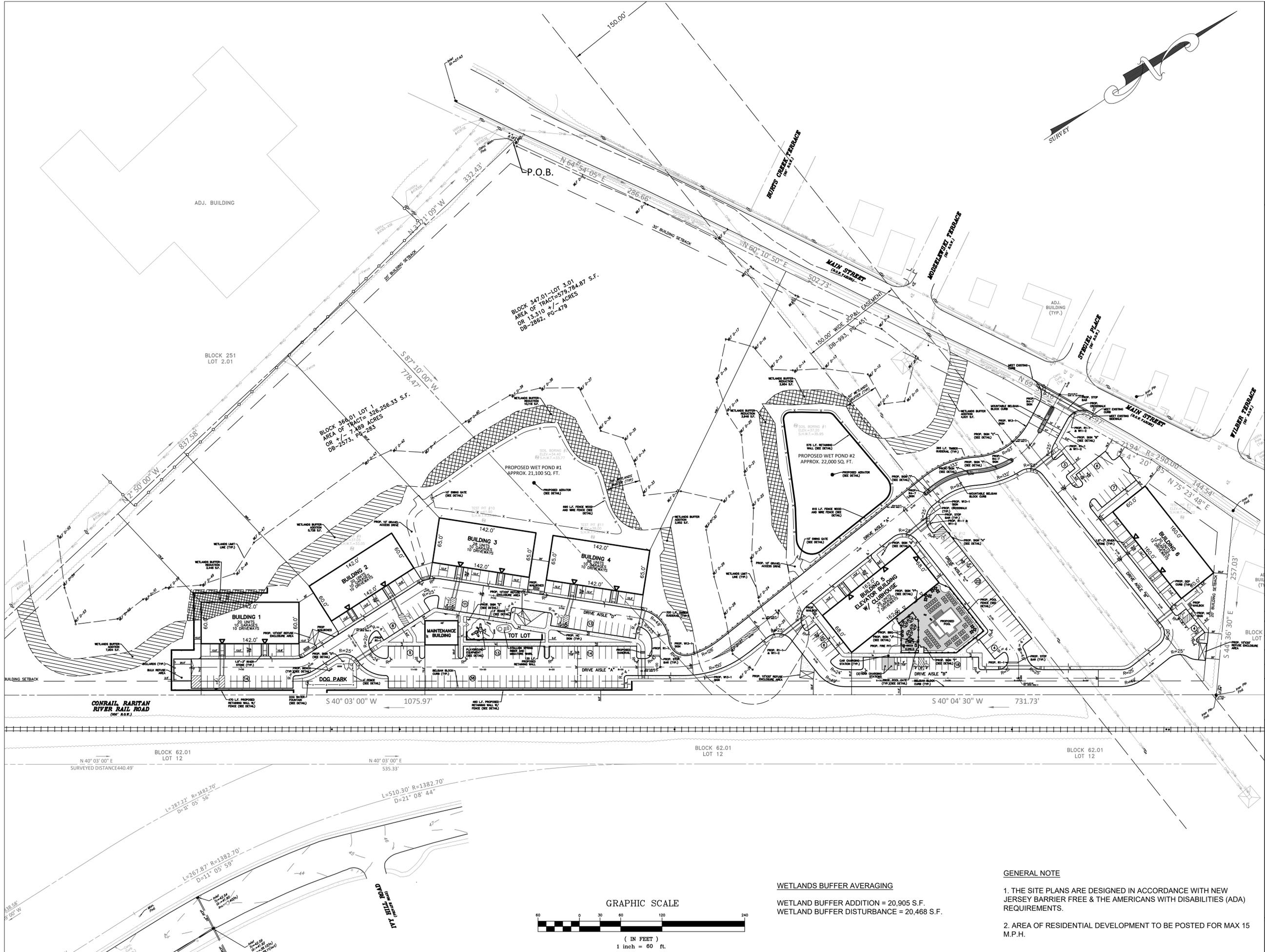
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REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	DATE
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DATE: 09/12/2019	RMP
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AE FILE NUMBER: 067	WTW
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**OVERALL EXISTING
 CONDITIONS PLAN**

PREPARED FOR
**CAMELOT AT ERNSTON
 ROAD**
 SITUATED IN
**BLOCK 366.01 LOT 1
 BLOCK 347.01 LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**



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REVISIONS	DATE
DATE: 09/12/2019	RMP
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AE FILE NAME: SITE PLAN	CKED
AE FILE NUMBER: 117	WTW
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**OVERALL
 SITE PLAN**

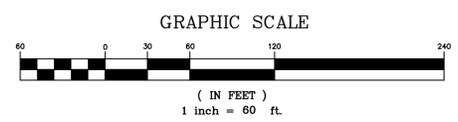
PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

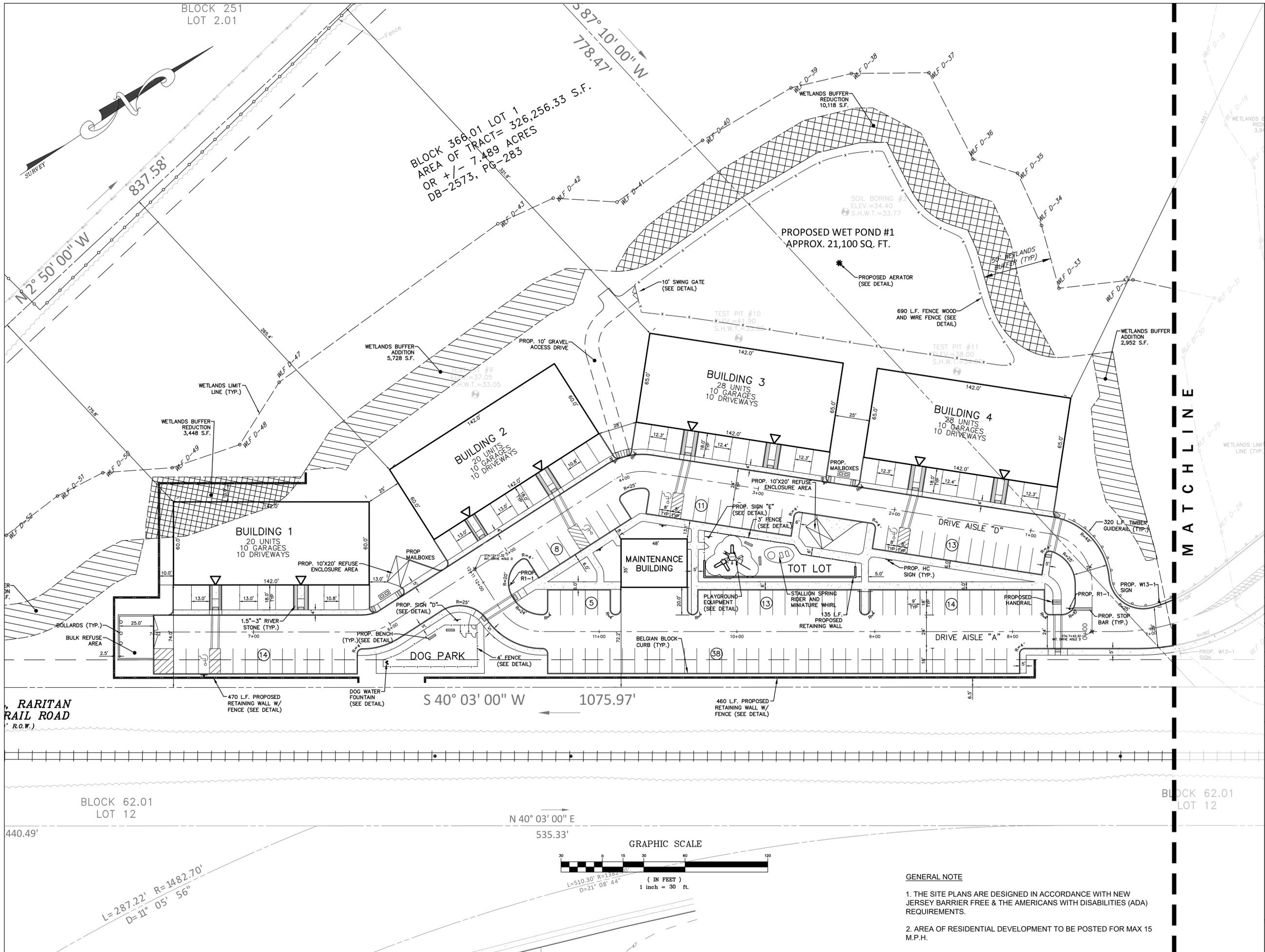
**BLOCK 366.01 - LOT 1
 BLOCK 347.01 - LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**

WETLANDS BUFFER AVERAGING
 WETLAND BUFFER ADDITION = 20,905 S.F.
 WETLAND BUFFER DISTURBANCE = 20,468 S.F.



GENERAL NOTE

1. THE SITE PLANS ARE DESIGNED IN ACCORDANCE WITH NEW JERSEY BARRIER FREE & THE AMERICANS WITH DISABILITIES (ADA) REQUIREMENTS.
2. AREA OF RESIDENTIAL DEVELOPMENT TO BE POSTED FOR MAX 15 M.P.H.



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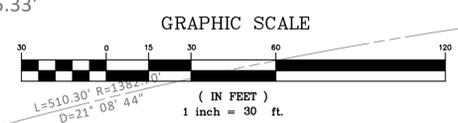
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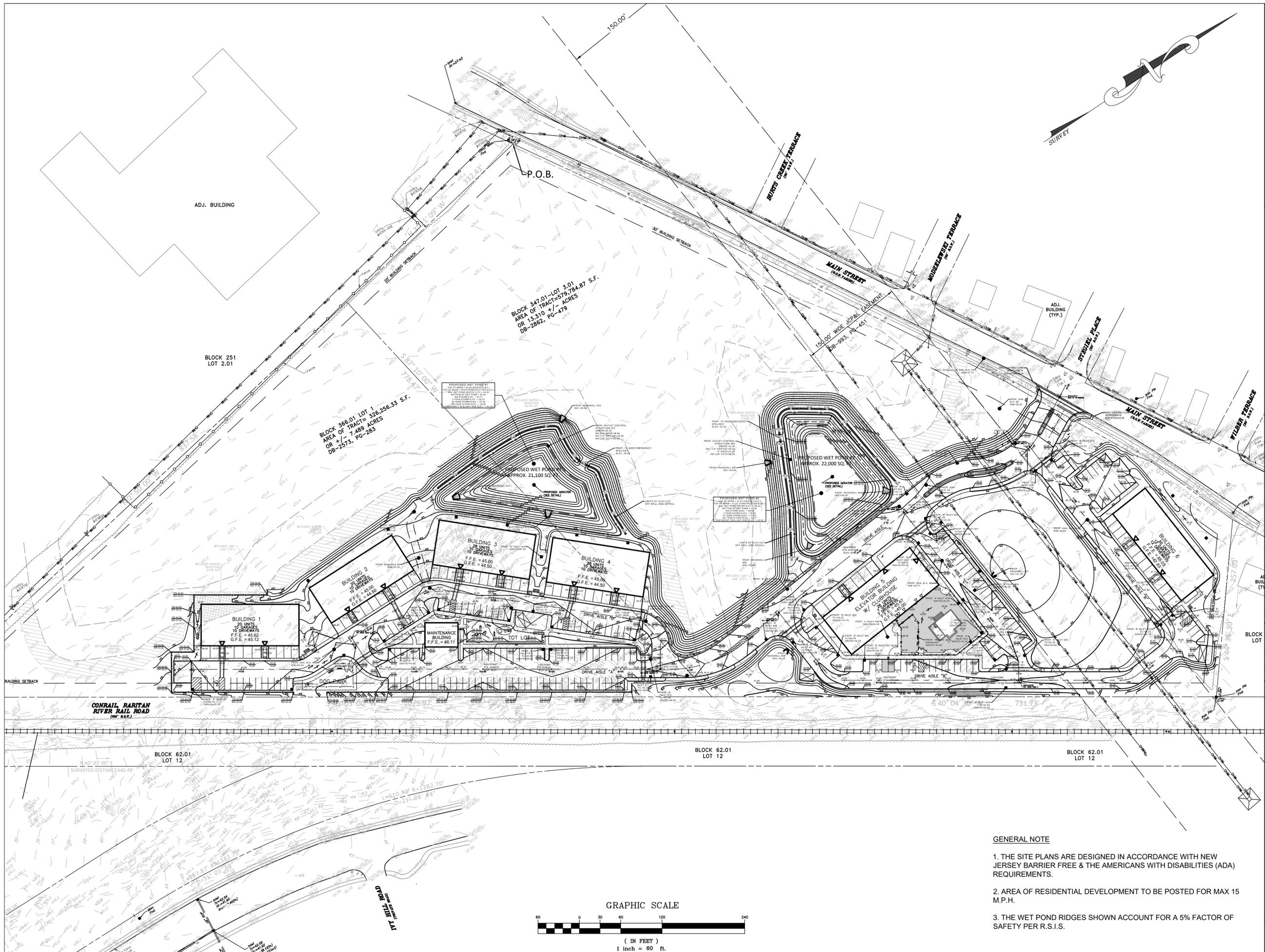
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REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	09/17/2020
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AE FILE NUMBER: 117	RELEASED

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MIDDLESEX COUNTY
NEW JERSEY



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REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	DATE
REVISIONS	DATE
DATE: 09/12/2019	RMP
SCALE: 1"=60'	SK
AE FILE NAME: GRADING PLAN	OWED
AE FILE NUMBER: 117	WTW
	RELEASED

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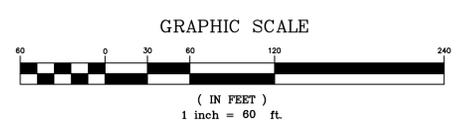
**OVERALL
 GRADING PLAN**

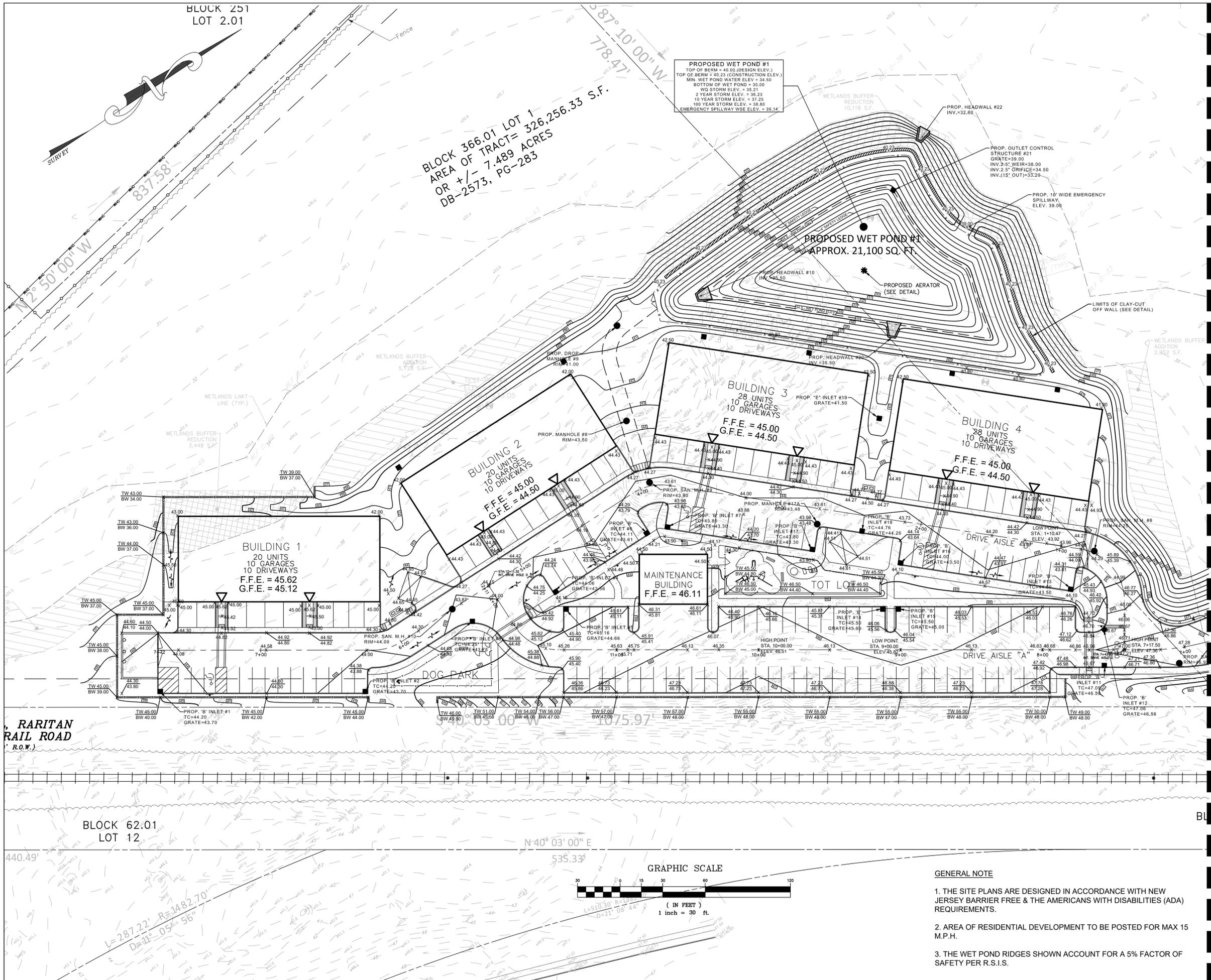
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 MIDDLESEX COUNTY
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2. AREA OF RESIDENTIAL DEVELOPMENT TO BE POSTED FOR MAX 15 M.P.H.
3. THE WET POND RIDGES SHOWN ACCOUNT FOR A 5% FACTOR OF SAFETY PER R.S.I.S.





WILLIAM T. WENTZLEN, P.E., P.P., C.M.E.
 PROFESSIONAL ENGINEER
 NJ LICENSE No. 27799

CERTIFICATE OF AUTHORIZATION #24GA2823900



436 W. COMMODORE BLVD., SUITE #2
 JACKSON, NJ 08527
 TEL: (732) 431-1440 FAX: (732) 987-5078

ENGINEERING
SITE PLANNING
ENVIRONMENTAL
LANDSCAPE ARCHITECTURE

www.abbingtonengineering.com

MATCHLINE

REVISIONS	DATE
REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	09/17/2020
DATE: 09/12/2019	RMP
SCALE: 1"=30'	SK
AE FILE NAME: GRADING PLAN	WTW
AE FILE NUMBER: 117	RELEASED

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GRADING PLAN

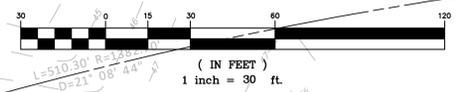
PREPARED FOR
CAMELOT AT ERNSTON ROAD
 SITUATED IN

BLOCK 366.01 - LOT 1
BLOCK 347.01 - LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY

GENERAL NOTE

1. THE SITE PLANS ARE DESIGNED IN ACCORDANCE WITH NEW JERSEY BARRIER FREE & THE AMERICANS WITH DISABILITIES (ADA) REQUIREMENTS.
2. AREA OF RESIDENTIAL DEVELOPMENT TO BE POSTED FOR MAX 15 M.P.H.
3. THE WET POND RIDGES SHOWN ACCOUNT FOR A 5% FACTOR OF SAFETY PER R.S.I.S.

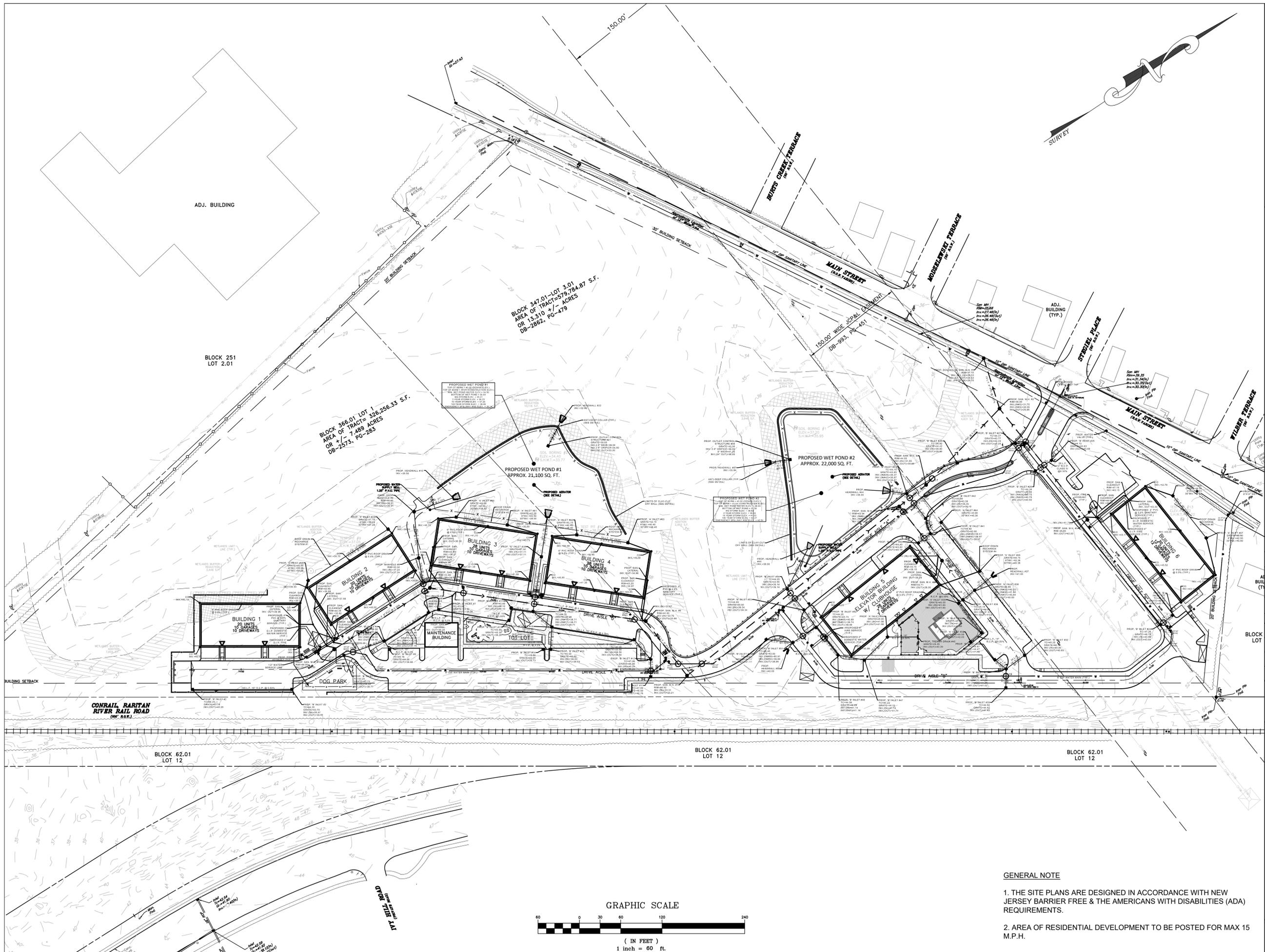
GRAPHIC SCALE



RARITAN RAIL ROAD (R.O.W.)

BLOCK 62.01
 LOT 12

BLOCK 62.01
 LOT 12



WILLIAM T. WENTZLEN, P.E., P.P., C.M.E.
 PROFESSIONAL ENGINEER
 NJ LICENSE No. 27799

CERTIFICATE OF AUTHORIZATION #24G28239800



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	OKED
	WTW
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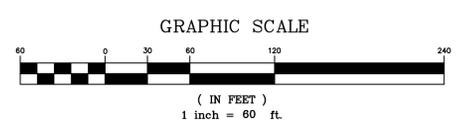
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**OVERALL
 UTILITY PLAN**

PREPARED FOR
CAMELOT AT ERNSTON ROAD
 SITUATED IN
**BLOCK 366.01 - LOT 1
 BLOCK 347.01 - LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**

GENERAL NOTE

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2. AREA OF RESIDENTIAL DEVELOPMENT TO BE POSTED FOR MAX 15 M.P.H.



BLOCK 251
LOT 2.01

BLOCK 366.01 LOT 1
AREA OF TRACT= 326,256.33 S.F.
OR +/- 7.489 ACRES
DB-2573, PG-283

PROPOSED WET POND #1
TOP OF BERM = 40.00 (DESIGN ELEV.)
TOP OF BERM = 40.23 (CONSTRUCTION ELEV.)
MIN. WET POND WATER ELEV = 34.50
BOTTOM OF WET POND = 30.00
WG STORM ELEV. = 35.21
2 YEAR STORM ELEV. = 36.23
10 YEAR STORM ELEV. = 37.25
100 YEAR STORM ELEV. = 38.80
EMERGENCY SPILLWAY WSE ELEV. = 39.14

PROPOSED WET POND #1
APPROX. 21,100 SQ. FT.

PROPOSED WET
TOP OF BERM = 43.30 (DESIGN ELEV.)
TOP OF BERM = 43.34 (CONSTRUCTION ELEV.)
MIN. WET POND WATER ELEV = 38.00
BOTTOM OF WET POND = 33.00
WG STORM ELEV. = 38.71
2 YEAR STORM ELEV. = 39.73
10 YEAR STORM ELEV. = 40.75
100 YEAR STORM ELEV. = 42.30
EMERGENCY SPILLWAY WSE ELEV. = 42.60

WILLIAM T. WENTZIEN, P.E., P.P., C.M.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 27799

CERTIFICATE OF AUTHORIZATION #24GA28239800



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JACKSON, NJ 08527
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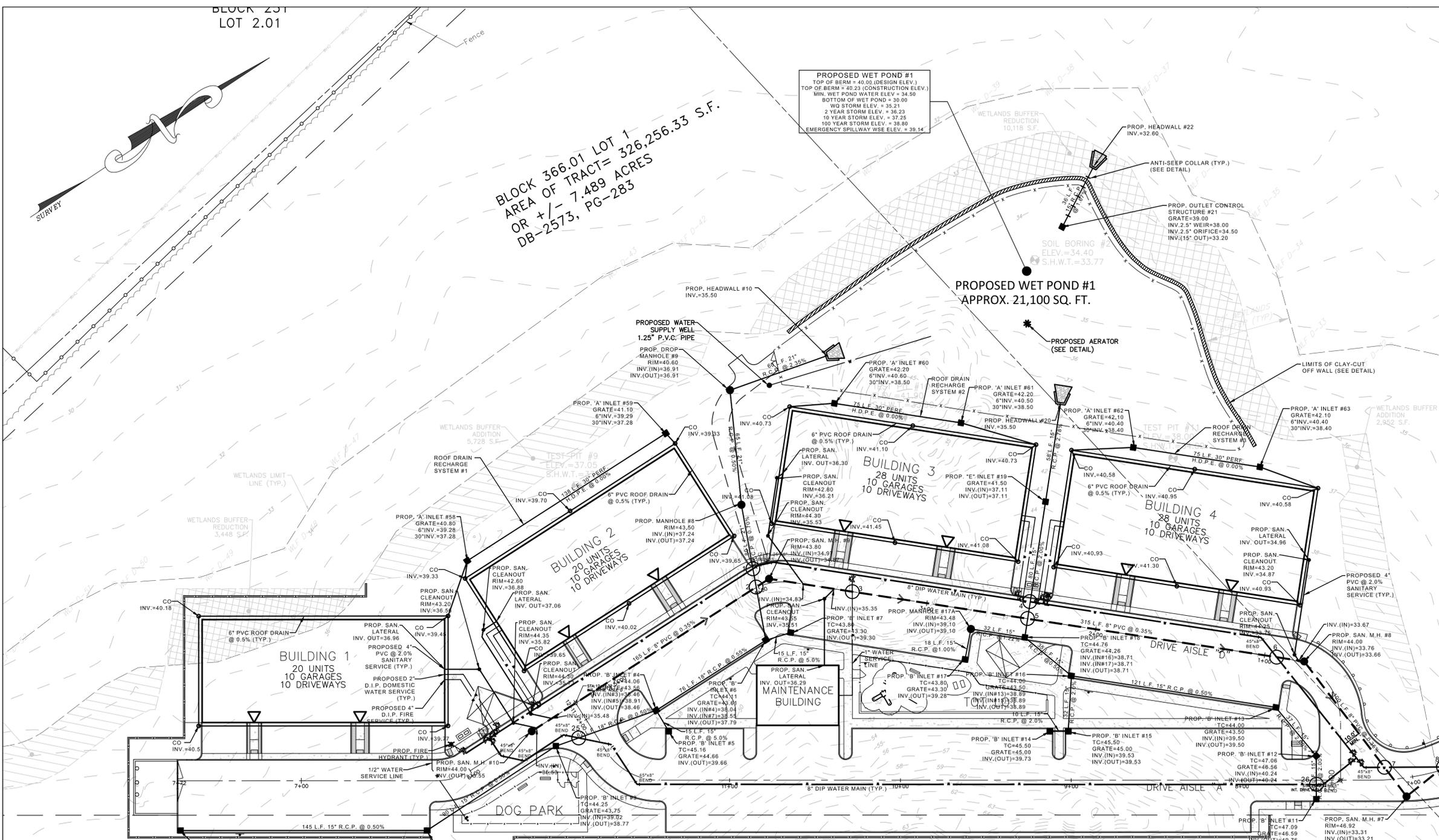
UTILITY PLAN

PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

BLOCK 366.01 - LOT 1
BLOCK 347.01 - LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY

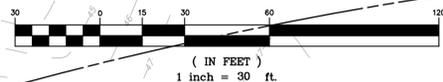


RARITAN
HILL ROAD
R.O.W.

BLOCK 62.01
LOT 12

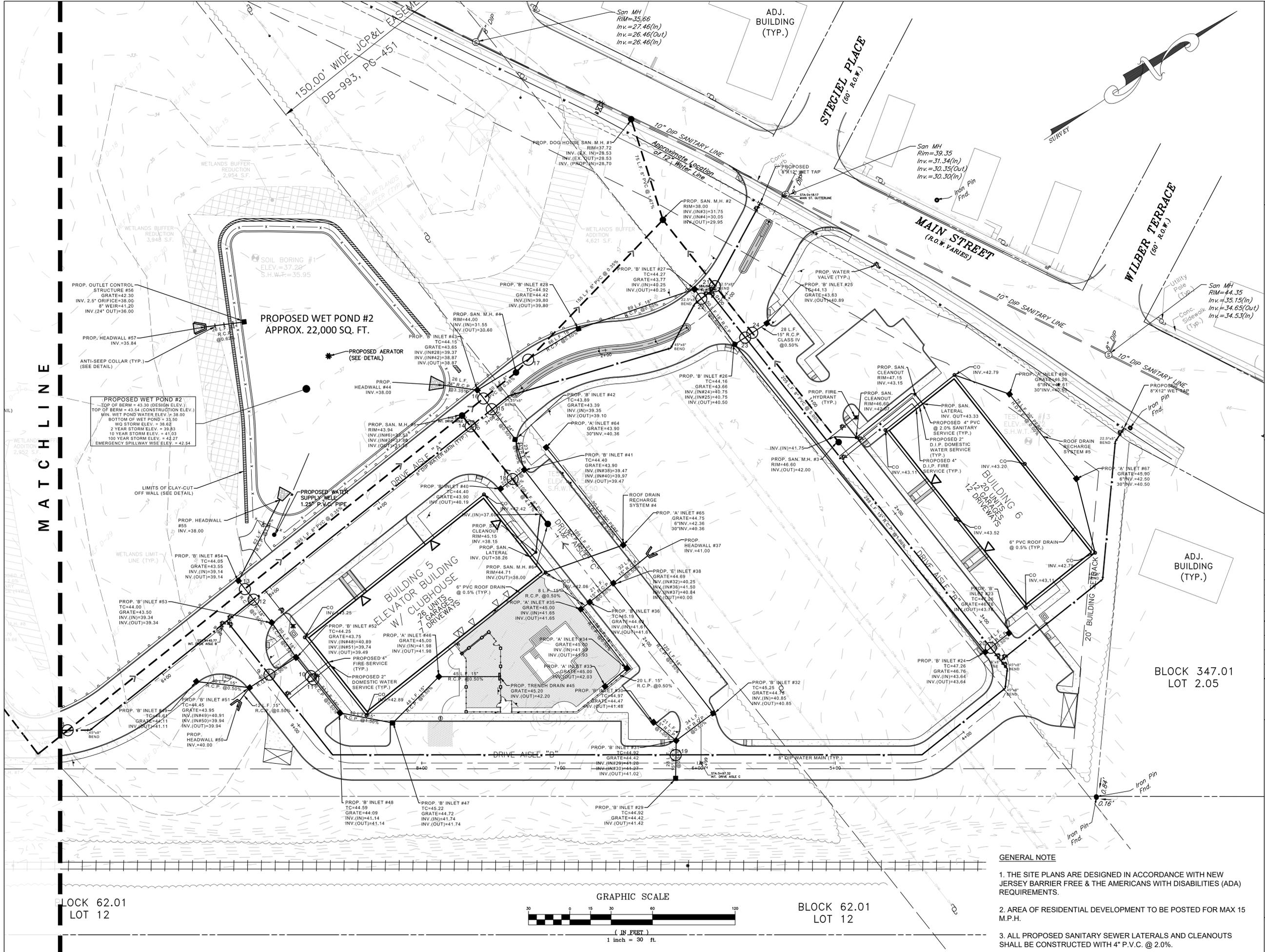
BLOCK 62.01
LOT 12

GRAPHIC SCALE



GENERAL NOTE

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2. AREA OF RESIDENTIAL DEVELOPMENT TO BE POSTED FOR MAX 15 M.P.H.
3. ALL PROPOSED SANITARY SEWER LATERALS AND CLEANOUTS SHALL BE CONSTRUCTED WITH 4" P.V.C. @ 2.0%.



WILLIAM T. WENTZEN, P.E., P.P., C.M.E.
 PROFESSIONAL ENGINEER
 NJ LICENSE NO. 27799

CERTIFICATE OF AUTHORIZATION #246A28239800

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 JACKSON, NJ 08527
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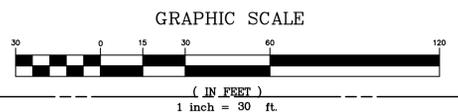
UTILITY PLAN

PREPARED FOR
CAMELOT AT ERNSTON ROAD

SITUATED IN
**BLOCK 366.01 - LOT 1
 BLOCK 347.01 - LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**

SHEET 11 OF 27

- GENERAL NOTE**
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BLOCK 62.01
 LOT 12

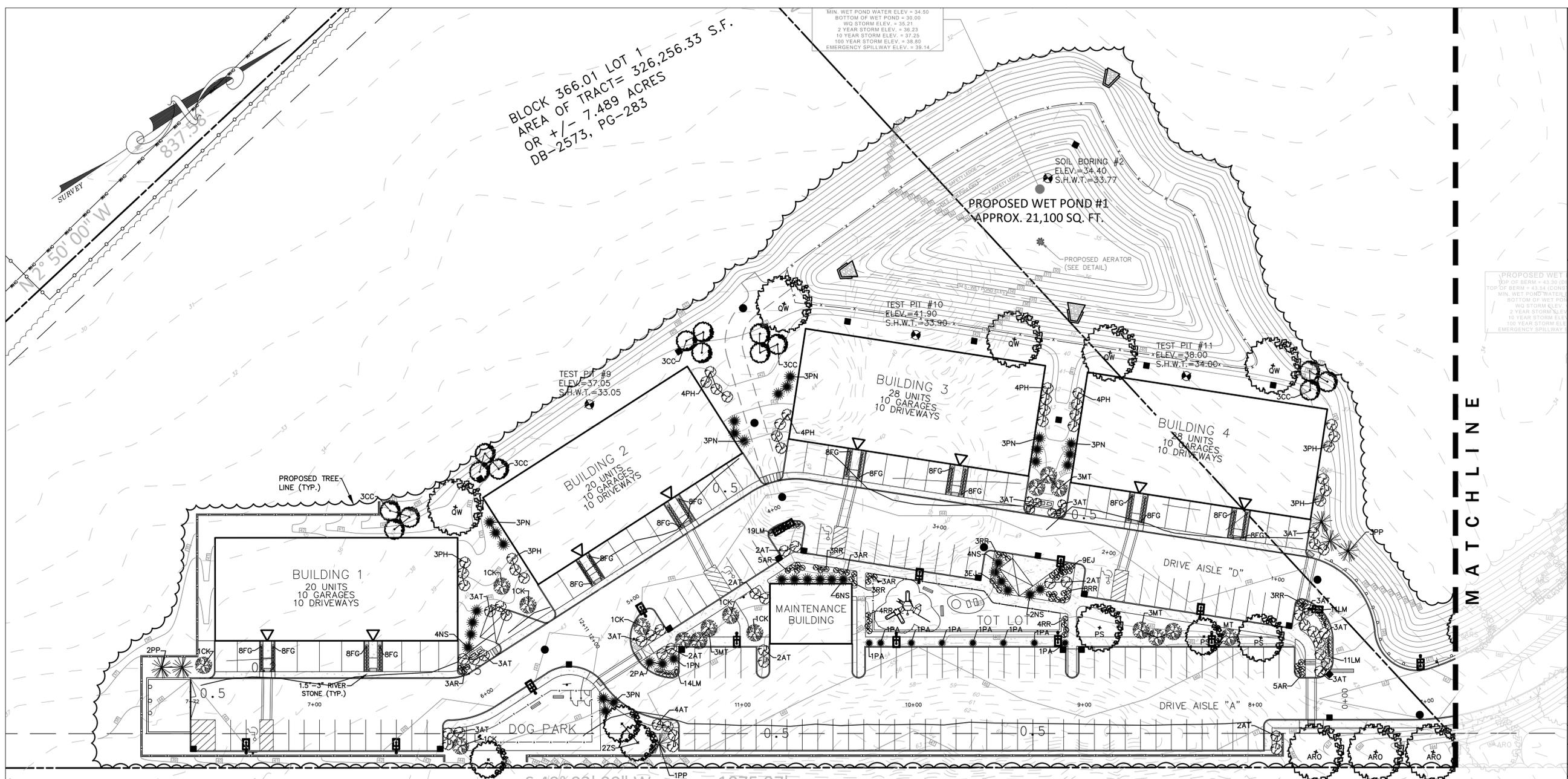
BLOCK 62.01
 LOT 12

BLOCK 347.01
 LOT 2.05

BLOCK 366.01 LOT 1
 AREA OF TRACT= 326,256.33 S.F.
 OR +/- 7.489 ACRES
 DB-2573, PG-283

MIN. WET POND WATER ELEV. = 34.50
 BOTTOM OF WET POND = 30.00
 WG STORM ELEV. = 35.21
 2 YEAR STORM ELEV. = 36.23
 10 YEAR STORM ELEV. = 37.25
 100 YEAR STORM ELEV. = 38.80
 EMERGENCY SPILLWAY ELEV. = 39.14

PROPOSED WET POND
 TOP OF BERM = 43.54 (CON)
 MIN. WET POND WATER ELEV. = 34.50
 BOTTOM OF WET POND = 30.00
 WG STORM ELEV. = 35.21
 2 YEAR STORM ELEV. = 36.23
 10 YEAR STORM ELEV. = 37.25
 100 YEAR STORM ELEV. = 38.80
 EMERGENCY SPILLWAY ELEV. = 39.14



STEPHEN R. KISELICK, C.L.A.
 CERTIFIED LANDSCAPE ARCHITECT
 NJ LICENSE NO. AS00422

CERTIFICATE OF AUTHORIZATION #24GA28239800



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 JACKSON, NJ 08527
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AE FILE NAME: LANDSCAPE PLAN	WTW
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RARITAN RAIL ROAD

KEY	QTY	BOTANICAL NAME	COMMON NAME	INSTALLED HEIGHT	CALIPER	ROOT	COMMENTS
Shade Trees							
ARS	12	<i>Acer rubrum 'Franksred'</i>	Red Sunset Red Maple	6' - 8'	3"	B&B	Limbed up to 7'
ARO	9	<i>Acer rubrum 'October Glory'</i>	October Glory Maple	6' - 8'	3"	B&B	
QW	5	<i>Quercus phellos</i>	Willow Oak	12' - 14'	3"	B&B	Limbed up to 7', Spring Planting only
ZS	18	<i>Zelkova serrata 'Village Green'</i>	Village Green Japanese Zelkova	12' - 14'	3"	B&B	Limbed up to 7', Spring Planting only
Ornamental Trees							
CC	20	<i>Cercis canadensis</i>	Eastern Redbud	6' - 8'	3"	B&B	Multi-stem
CK	7	<i>Cornus kousa</i>	Kousa Dogwood	6' - 8'	3"	B&B	
LI	6	<i>Lagerstroemia indica x fauriei, zuni</i>	Zuni Crape Myrtle	6' - 8'	3"	B&B	
LG	6	<i>Lagerstroemia 'Gamad I'</i>	Cherry Dazzle Dwarf Crape Myrtle	6' - 8'	3"	B&B	
PS	7	<i>Prunus Sargentii Columnaris</i>	Columnar Sargent Cherry	6' - 8'	3"	B&B	
MT	15	<i>Magnolia soulangiana 'Black Tulip'</i>	Black Tulip Magnolia	6' - 8'	3"	B&B	
Evergreen Trees							
NS	27	<i>Ilex x 'Nellie R. Stevens'</i>	Nellie R. Stevens Holly	6' - 8'		B&B	
PN	31	<i>Pinus Nigra</i>	Austrian Pine	6' - 8'		B&B	
PB	27	<i>Pinus Parviflora Blueangle</i>	Blue Angel White Pine	6' - 8'		B&B	
PE	14	<i>Picea pungens 'Baby Blue Eyes'</i>	Baby Blue Eyes Spruce	6' - 8'		B&B	
PP	14	<i>Picea pungens</i>	Colorado Blue Spruce	6' - 8'		B&B	
Shrubs							
AR	78	<i>Abelia x 'Rose Creek'</i>	Rose Creek Abelia	24" - 30"		CAN	
AT	91	<i>Azalea 'Tama No Hada'</i>	Tama No Hada Azalea	18" - 24"		CAN	
EJ	90	<i>Euonymus japonicus 'Silver King'</i>	Silver King Euonymus	30" - 36"		B&B	
FG	x	<i>Festuca glauca 'Elijah Blue'</i>	Elijah Blue Fescue	12"		CAN	
MC	26	<i>Muhlenbergia Capillaris</i>	Pink Muhly	18" - 24"		CAN	
PH	43	<i>Photinia x fraseri</i>	Fraser's Photinia	24" - 30"		CAN	
PA	18	<i>Pennisetum alopecuroides 'Hameln'</i>	Dwarf Fountain Grass	24" - 36"		CAN	
PL	6	<i>Prunus laurocerasus 'Majestic Jade'</i>	Majestic Jade English Laurel	4' - 5'		B&B	
RR	57	<i>Rosa red raz</i>	Knock Out Shrub Rose	24" - 36"		CAN	
Groundcover							
LM	233	<i>Liriope muscari 'Big Blue'</i>	Majestic Lily Turf 'Big Blue'	12"		Pint	Plant 15" OC

LEGEND

- DECIDUOUS TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- SHRUBS
- BASIN PLANTING SEED MIX
- STREET LIGHT

PARKING SHADE TREE CALCULATIONS

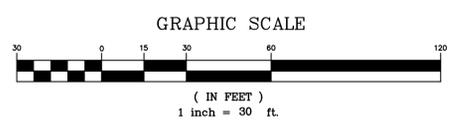
PER AH-1 ZONE DISTRICT DESIGN STANDARDS, A MINIMUM OF ONE (1) SHADE TREE PER TEN (10) SURFACE PARKING SPACES SHALL BE PROVIDED.

186 SURFACE PARKING SPACES

186 / 10 = 18.6 > 19

19 SHADE TREES ARE REQUIRED

44 SHADE TREES ARE PROPOSED



BLOCK 62.01
 LOT 12

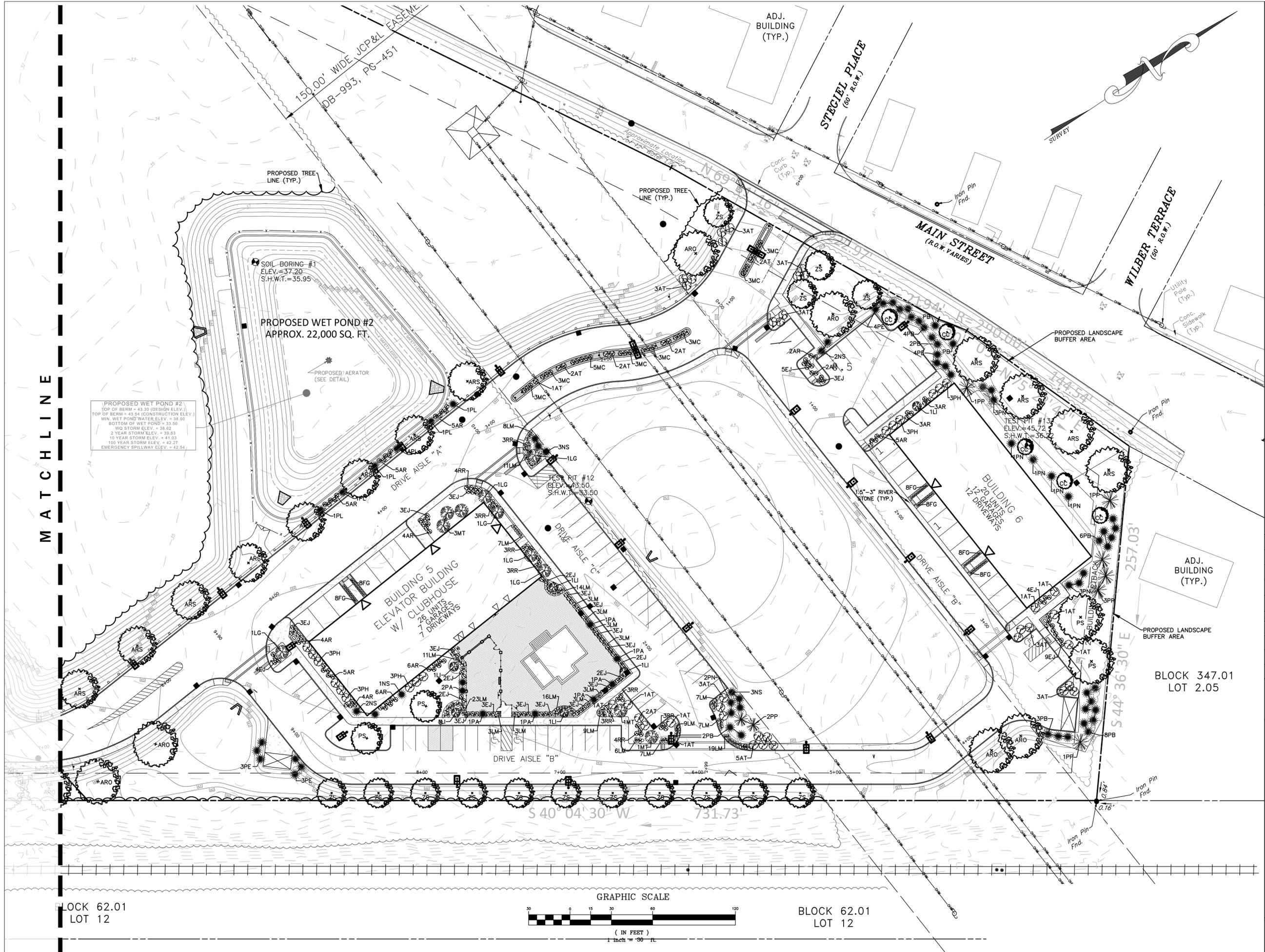
LANDSCAPE PLAN

PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

**BLOCK 366.01 - LOT 1
 BLOCK 347.01 - LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**



STEPHEN R. KISELICK, C.L.A.
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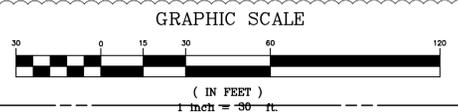
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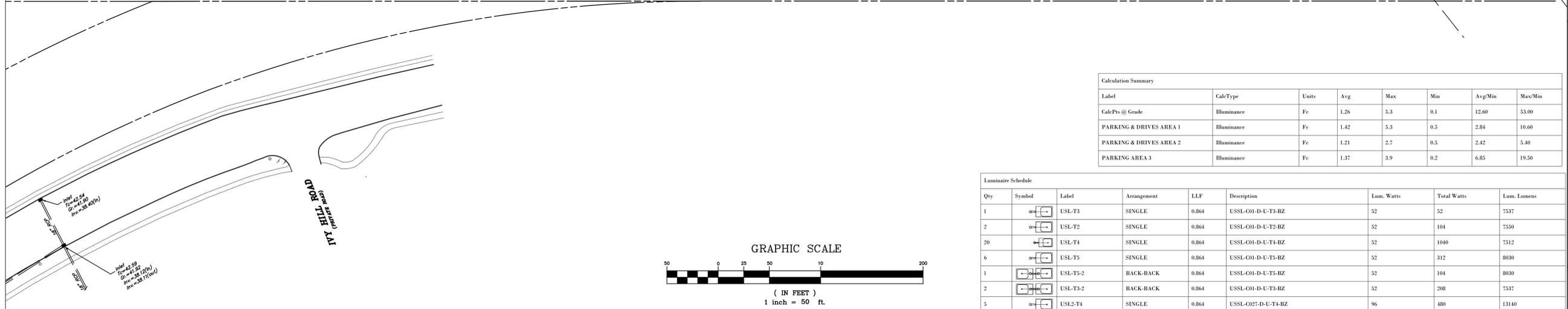
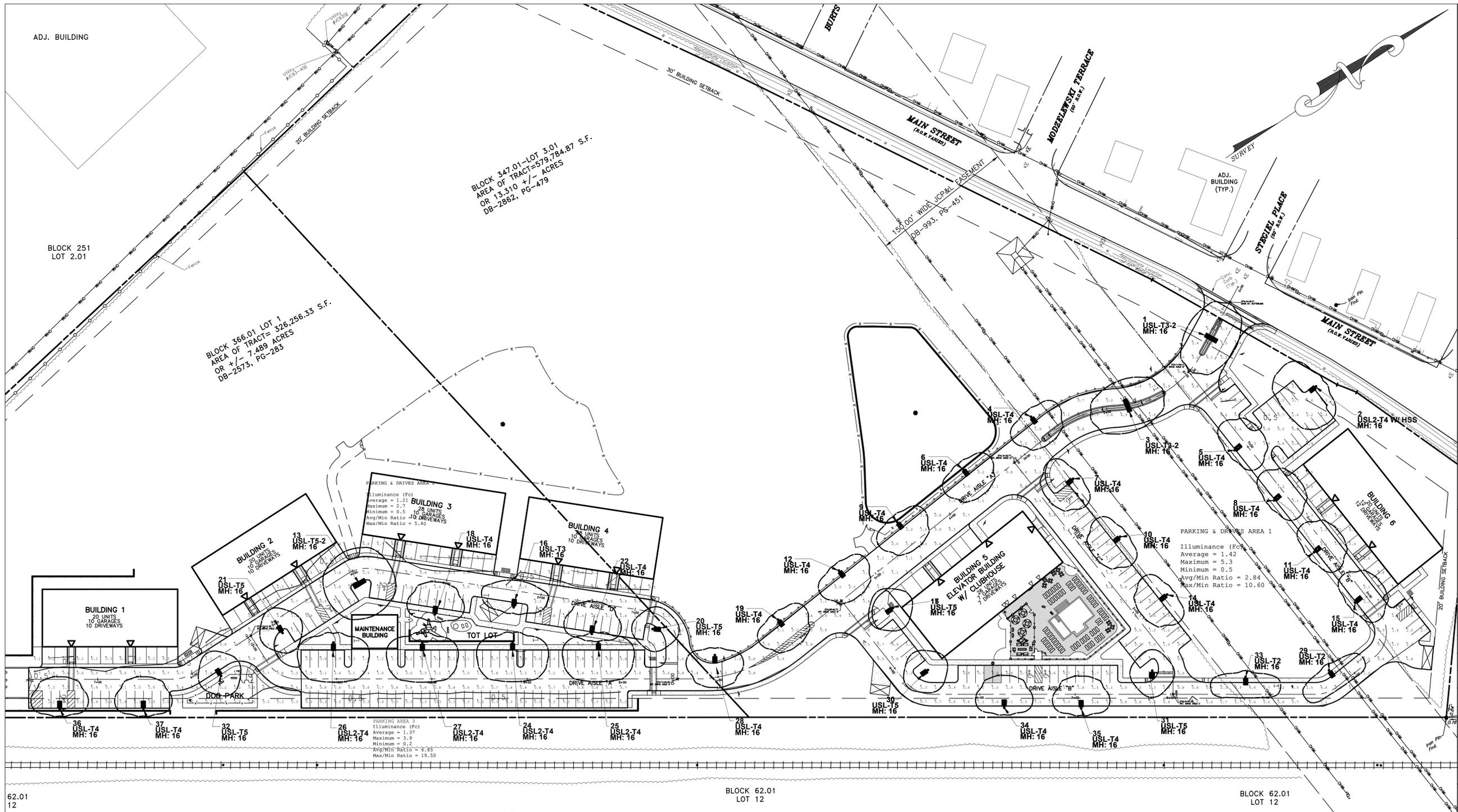
LANDSCAPE PLAN
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CAMELOT AT ERNSTON ROAD
 SITUATED IN
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 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY

MATCHLINE

BLOCK 62.01
 LOT 12



BLOCK 62.01
 LOT 12



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SCALE: 1"=50'	SK
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AE FILE NUMBER: 117	WTW
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LIGHTING PLAN

PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

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 BLOCK 347.01 - LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY**

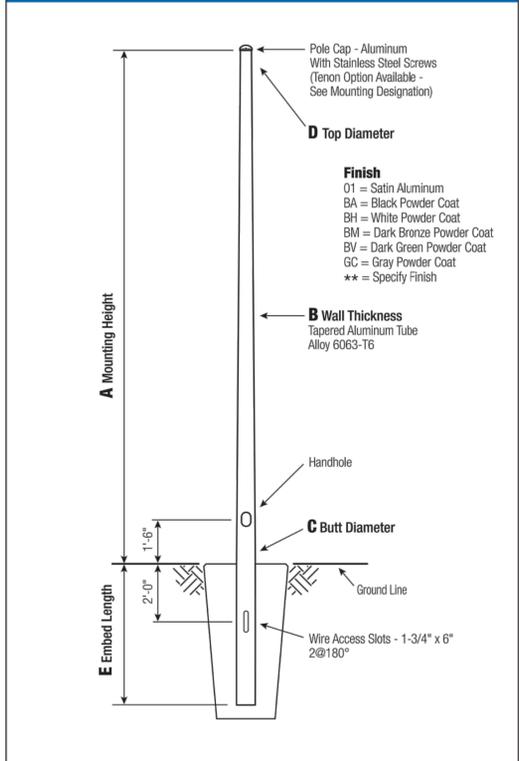
Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts @ Grade	Illuminance	Fc	1.26	5.3	0.1	12.60	53.00
PARKING & DRIVES AREA 1	Illuminance	Fc	1.42	5.3	0.5	2.84	10.60
PARKING & DRIVES AREA 2	Illuminance	Fc	1.21	2.7	0.5	2.42	5.40
PARKING AREA 3	Illuminance	Fc	1.37	3.9	0.2	6.85	19.50

Luminaire Schedule

Qty	Symbol	Label	Arrangement	LLF	Description	Lum. Watts	Total Watts	Lum. Lumens
1	○	USL-T3	SINGLE	0.864	USSL-C01-D-U-T3-BZ	52	52	7537
2	○	USL-T2	SINGLE	0.864	USSL-C01-D-U-T2-BZ	52	104	7550
20	○	USL-T4	SINGLE	0.864	USSL-C01-D-U-T4-BZ	52	1040	7512
6	○	USL-T5	SINGLE	0.864	USSL-C01-D-U-T5-BZ	52	312	8030
1	□	USL-T5-2	BACK-BACK	0.864	USSL-C01-D-U-T5-BZ	52	104	8030
2	□	USL-T3-2	BACK-BACK	0.864	USSL-C01-D-U-T3-BZ	52	208	7537
5	○	USL2-T4	SINGLE	0.864	USSL-C027-D-U-T4-BZ	96	480	13140

RTA Round Tapered Aluminum Pole No Arm — Direct Buried



Satin Aluminum or Powder Coated Finish per Customer Specification.

A	B	C	Butt Dia.	Total Lm.	Wattage	Max. Lm. EPA	120	130	O.D.	Cat. Number	Catalog Number
16	0.125"	5	60	8.0	6.0	5.4	4.2	3.2	87907-0316X	RTA16BSAE-**	

C	D	E
Butt Dia.	Top Dia.	Embed
5	3	3'

C and D Dimensions in Inches

LIGHT POLE
NTS

DESCRIPTION
 The USSSL LED area, site luminaire combines optical performance, energy efficiency and long term reliability in an advanced, patent pending modern design. Utilizing the latest LED technology, the USSSL luminaire delivers unparalleled uniformity resulting in greater pole spacing. A versatile mount standard arm facilitates ease of installation for both retrofit and new installations. With energy savings greater than 62%, the USSSL fixture replaces 150-450W metal halide fixtures in general area lighting applications such as parking lots, walkways, roadways and building areas.

CONSTRUCTION FEATURES
Construction
 Construction is comprised of a heavy-duty, single-piece die-cast aluminum housing. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. The die-cast aluminum door is tethered to provide easy access to the driver if replacement is required. A one-piece silicone gasket seals the door to the fixture housing. The optics is mounted on a versatile, aluminum plate that dissipates heat from the LEDs resulting in longer life of the fixture. The fixture is IP66 and 3G vibration rated (ANSI C136.31) to insure strength of construction and longevity in the selected application.

Electrical
 LED drivers are available as a peer-to-peer wireless network of luminaire-integral sensors that operate in accordance with programmable profiles. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication.

Mounting
 Standard pole mount arm is bolted directly to the pole and the fixture slides onto the arm and locks in place with a bolt facilitating quick and easy installation. The versatile, patent pending, standard mount arm accommodates multiple drill patterns ranging from 4-7/8" to 1-1/2". Removal of the door on the standard mounting arm enables wiring of the fixture without having to access the driver compartment. A knock-out on the standard mounting arm enables round pole mounting. Wall mount and mast arm mounting options are available. Mast arm adapter fits 2-3/8" O.D. tenon.

optional LumaWatt Pro system is best described as a peer-to-peer wireless network of luminaire-integral sensors that operate in accordance with programmable profiles. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication.

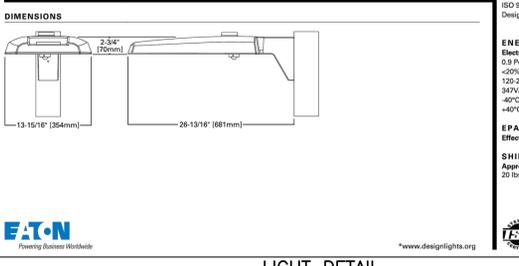
USSSL
 AREA / SITE / ROADWAY LUMINAIRE

Optics
 Precision molded, high efficiency optics are precisely designed to shape the distribution, maximizing efficiency and application spacing. Available in Type II, III, IV and V distributions with lumen packages ranging from 6,100 to 18,900 nominal lumens. Light engine configurations consist of 1 or 2 high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to 150,000 hours at 25°C per IESNA TM-21). For the ultimate level of spill light control, an optional house side shield accessory can be field or factory installed.

Controls
 The USSSL luminaire control options are designed to be simple and cost-effective ASHRAE and California Title 24 compliant solutions. The ANSI C136.41 compliant NEMA 3-PIN twistlock photocell receptacle and NEMA 7-PIN twistlock photocell receptacles are available as options.

Finish
 Housing and cast parts finished in five-stage super TIG polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard color is bronze. Additional colors available in white, grey, black, dark platinum and graphite metallic.

Warranty
 Five-year warranty.



LIGHT DETAIL
NTS

LIGHT FIXTURE TO BE EATON USSSL LED AREA/SITE LIGHTING OR APPROVED EQUIV.

Pole

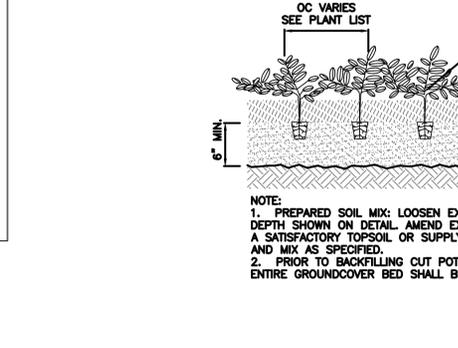
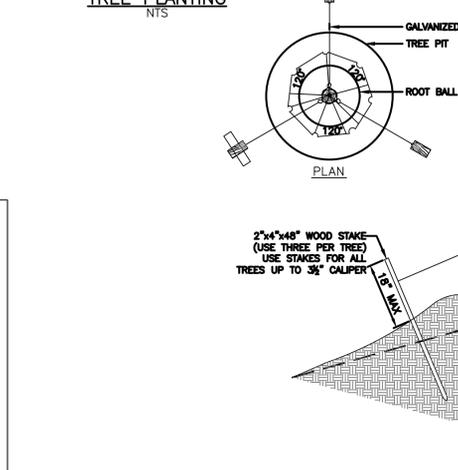
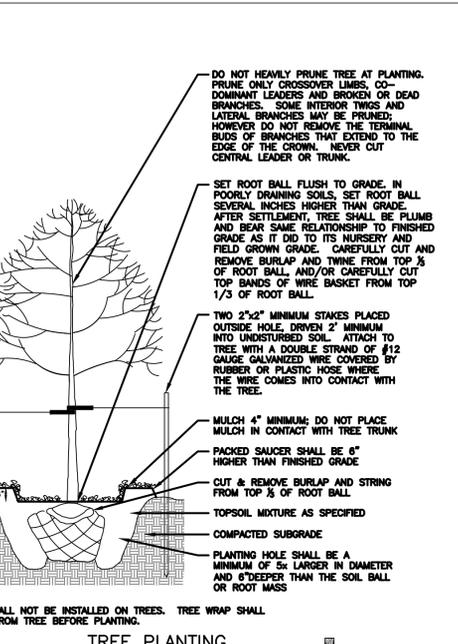
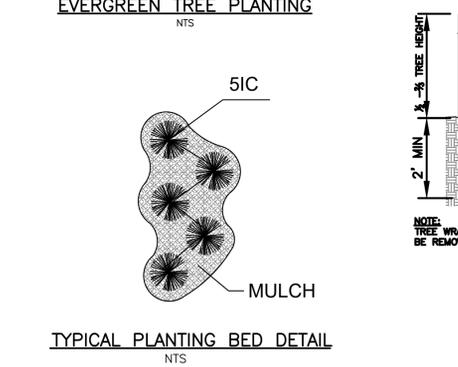
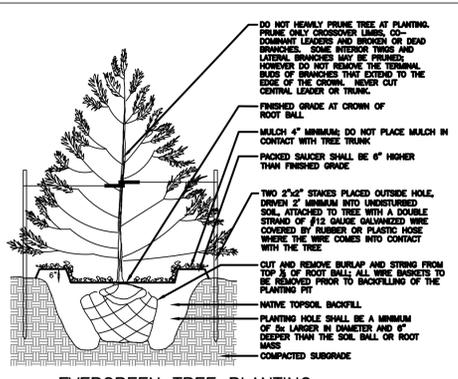
The pole shaft will be constructed of seamless extruded tube of 6063 Aluminum Alloy per the requirements of ASTM B221. The shaft assembly shall be full-length heat treated to produce a T6 temper.

Handhole
 2-1/2" x 5" Handhole with curved Lap Style Aluminum Door and two (2) SS Self-Tapping Attaching Screws. A Grounding Provision is provided as part of the handhole.



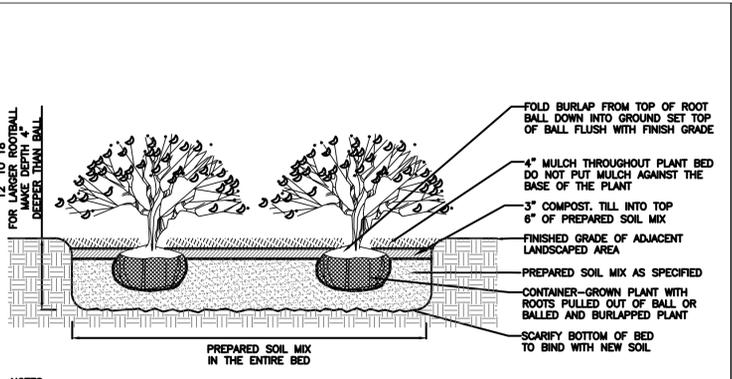
Vibration Damper
 When determined necessary by Hapco, a Vibration Damper will be factory-installed inside the pole shaft. Customer specification of the damper is available.

Mounting Designation
 Side Drill Mount - For Side Drill Mount applications specify luminaire type, quantity and orientation. A luminaire drilling template must be supplied at time of order.

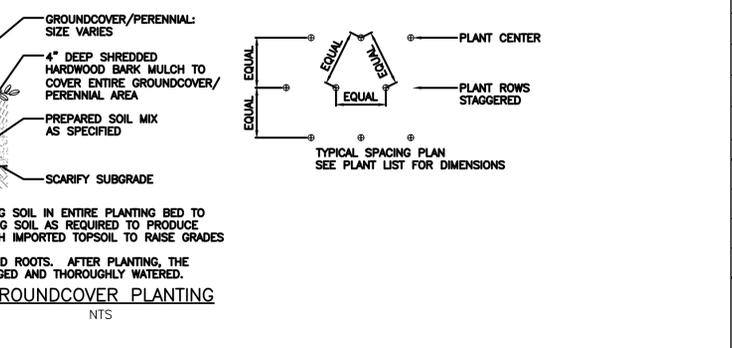
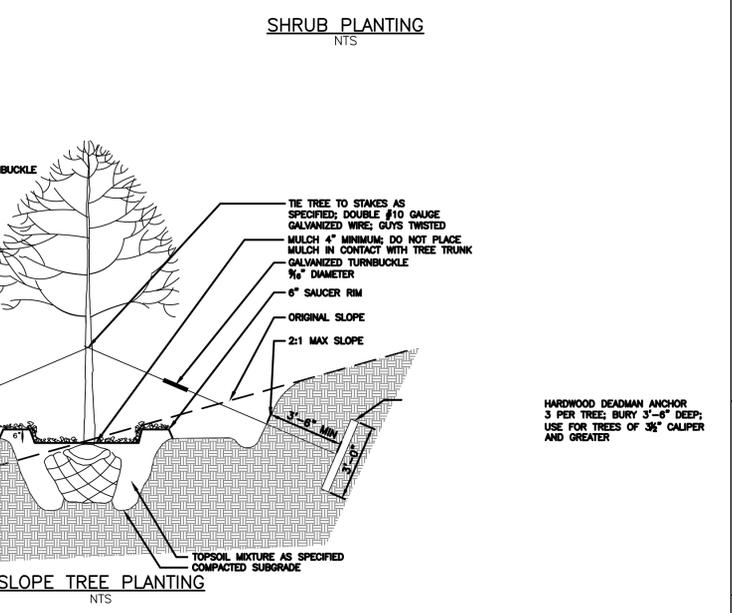


LANDSCAPING NOTES:

- THE LOCATION OF ALL PLANTS SHOWN ON THE LANDSCAPE PLAN IS APPROXIMATE. THE FINAL LOCATION OF ALL PLANTS AND BED LINES SHALL BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF A REPRESENTATIVE OF THE PROPERTY OWNER.
- SHREDDED BARK MULCH SHALL BE APPLIED TO ALL PLANTING BEDS AND GROUNDCOVER AREAS TO A 4 INCH DEPTH AND SHALL BE KEPT 2 INCHES FROM TREE TRUNKS AND SHRUBS.
- PLANTS SHALL BE WATERED ON THE SAME DAY OF INSTALLATION. THEREAFTER, REGULAR WATERING SHALL BE PROVIDED TO ENSURE THE ESTABLISHMENT AND GROWTH OF ALL PLANTS. WATERING AND PLANT ESTABLISHMENT SHALL BE THE RESPONSIBILITY OF LANDSCAPE CONTRACTOR.
- WIRE BASKETS ARE TO BE REMOVED FROM ALL PLANT MATERIAL PRIOR TO BACKFILLING THE PLANTING PIT.
- GUARANTEE: ALL TREES, SHRUBS, GROUNDCOVERS AND LAWNS SHALL BE GUARANTEED FOR A MINIMUM OF TWO (2) YEARS FROM THE RELEASE OF THE PERFORMANCE BOND. ALL PLANTS, LAWNS AND GROUNDCOVER AREAS, NOT IN A HEALTHY GROWING CONDITION SHALL BE REMOVED AND REPLACED WITH PLANTING OF LIKE KIND AND SIZE BEFORE THE CLOSE OF THE NEXT PLANTING SEASON BY THE LANDSCAPE CONTRACTOR AT NO CHARGE TO THE OWNER.
- ALL DISTURBED AREAS, UNLESS INDICATED OTHERWISE ON THE LANDSCAPE PLAN, SHALL BE PLANTED AS LAWN.
- CONTRACTOR SHALL PARTIALLY FILL WITH WATER A REPRESENTATIVE NUMBER OF PITS IN EACH AREA OF THE PROJECT PRIOR TO PLANTING TO DETERMINE IF THERE IS ADEQUATE PERCOLATION. IF PIT DOESN'T PERCOLATE, MEASURES MUST BE TAKEN TO ASSURE PROPER DRAINAGE BEFORE PLANTING.
- CONTRACTOR SHALL REMOVE STAKING, GUYING, AND WRAP AT END OF GUARANTEE PERIOD. ALL PLANTING MUST BE GUARANTEED FOR TWO (2) YEARS FROM THE RELEASE OF THE PERFORMANCE BOND.
- ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERY STOCK, AMERICAN ASSOCIATION OF NURSERYMEN, 1250 I STREET, N.W., SUITE 500, WASHINGTON, D.C. 20005.
- ALL MATERIAL IN THE PLANT LIST ABOVE WAS AVAILABLE AT THE TIME OF THE PREPARATION OF THE LANDSCAPE PLAN. SHOULD A PLANT BE UNAVAILABLE AT THE TIME OF INSTALLATION, ALL SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE TOWNSHIP ENGINEER.
- IN THE EVENT THAT PLANT QUANTITY DISCREPANCIES OR MATERIAL OMISSIONS OCCUR IN THE PLANTING SCHEDULE, THE PLAN SHALL SUPERSEDE.
- ANY EXISTING VEGETATION TO BE REMOVED FROM THE SITE SHALL BE DISPOSED OF IN A MANNER THAT IS APPLICABLE WITH LOCAL, COUNTY AND STATE REQUIREMENTS. ALL AREAS AROUND EXISTING VEGETATION TO REMAIN SHALL BE CLEARED FREE OF ALL WEEDS AND DEBRIS AND MULCHED WITH 4" SHREDDED BARK, KEPT 2" INCHES AWAY FROM TREE TRUNKS.
- BEDLINES SHALL HAVE A CLEAN, SHARP EDGE CUT WITH A SPADE.
- NO TREE SHALL BE LOCATED CLOSER THAN 15'-0" FROM ANY LIGHT FIXTURE. NO TREE SHALL BE LOCATED CLOSER THAN 3'-0" FROM ANY STREET CURBLINE, SIDEWALK OR DRIVEWAY.
- ROOT BARRIER IS TO BE INSTALLED AT ALL TREES WITH TEN FEET FROM PROPOSED STREET CURBLINE, SIDEWALK OR DRIVEWAY.
- ALL PLANTING STOCK TO BE OBTAINED FROM SOURCES IN NEW JERSEY AND HAVE SIMILAR NURSERY SOIL CONDITIONS.
- TREES SHALL ONLY BE STAKED WHERE WARRANTED BY SITE CONDITIONS WITH TWO STAKES TO A MINIMUM OF TWO FEET INTO THE GROUND BELOW FINISHED GRADE. STAKES WHEN DRIVEN MUST BE ONE HALF TO TWO-THIRDS THE HEIGHT OF THE TREE MEASURED FROM GROUND LEVEL. STAKES SHALL BE AT LEAST 2 INCHES IN DIAMETER. STAKES SHALL BE ATTACHED TO THE TREES WITH 12 GAUGE GALVANIZED WIRE COVERED WITH RUBBER OR PLASTIC HOSE WHERE WIRE IS LIKELY TO COME IN CONTACT WITH TREE TRUNK. AN ALTERNATE MAY BE ANY COMMERCIALLY AVAILABLE MATERIALS DESIGNED FOR STAKING TREES WITH THE APPROVAL OF THE BOROUGH ENGINEER. THE LOOP ON CONTACT WITH THE TREE SHALL BE LOOSE ENOUGH TO PERMIT GROWTH AND PREVENT GIRDLING FOR 2 YEARS, BUT SHALL BE TIGHTLY BOUND TO THE STAKE TO PREVENT SLIPPING. AFTER (1) ONE YEAR, ALL TREES THAT DO NOT REQUIRE OBVIOUS STRAIGHTENING SHALL HAVE TREE SUPPORTS AND TREE STAKES REMOVED.
- WITHIN THE SIGHT TRIANGLES, NO GRADING, PLANTING, OR STRUCTURE SHALL BE ERRECTED OR MAINTAINED MORE THAN 18-INCHES OR LESS THAN 10- FEET ABOVE THE CENTERLINE GRADE, EXCEPT STREET SIGNS AND TRAFFIC REGULATION SIGNS.



NOTES:
 1. PREPARED SOIL MIX: LOOSEN EXISTING SOIL IN ENTIRE PLANTING BED TO DEPTH SHOWN ON DETAIL. AMEND EXISTING SOIL AS REQUIRED TO PRODUCE A SATISFACTORY TOPSOIL OR SUPPLY WITH IMPORTED TOPSOIL TO RAISE GRADES AND MIX AS SPECIFIED
 2. ALL TREE BEDS SHALL PERCOLATE. NOTIFY ARCHITECT IF SUBSOIL CONDITIONS PREVENT WATER PERCOLATION.
 3. SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IT DID TO ITS NURSERY FIELD GROWING GRADE.
 4. FOR CONTAINER-GROWN SHRUBS, USE FINGER OR SMALL HAND TOOL TO PULL THE ROOTS OUT OF THE OUTER LAYER OF SOIL. THEN CUT OR PULL APART ANY ROOTS THAT CIRCULATE THE PERIMETER OF THE CONTAINER.



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STEPHEN R. KISELICK, C.L.A.
 CERTIFIED LANDSCAPE ARCHITECT
 NJ LICENSE NO. AS00422

CERTIFICATE OF AUTHORIZATION #24GA28239800

AE
NTS

436 W. COMMODORE BLVD., SUITE #2
 JACKSON, NJ 08527
 TEL: (732) 431-1440 FAX: (732) 987-5078

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REVISIONS	DATE
REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	09/17/2020
DATE: 09/12/2019	RMP
SCALE: N.T.S.	SK
AE FILE NAME: LIGHTING	WTW
AE FILE NUMBER: 117	REVISED

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LANDSCAPE AND LIGHTING DETAILS

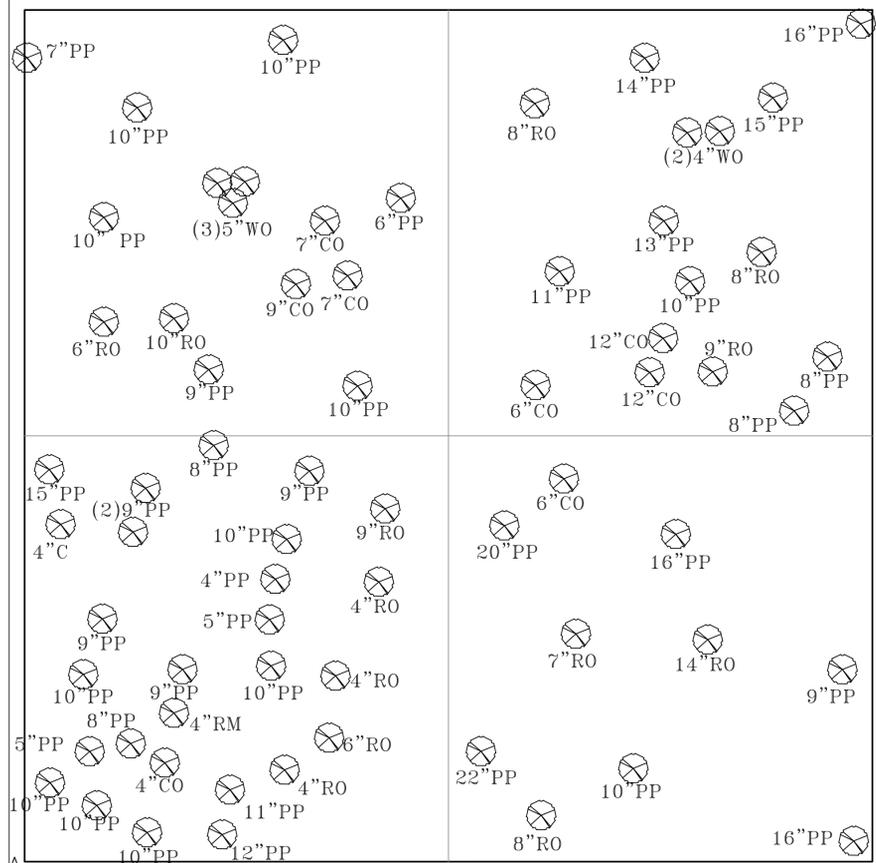
PREPARED FOR

CAMELOT AT ERNSTON ROAD

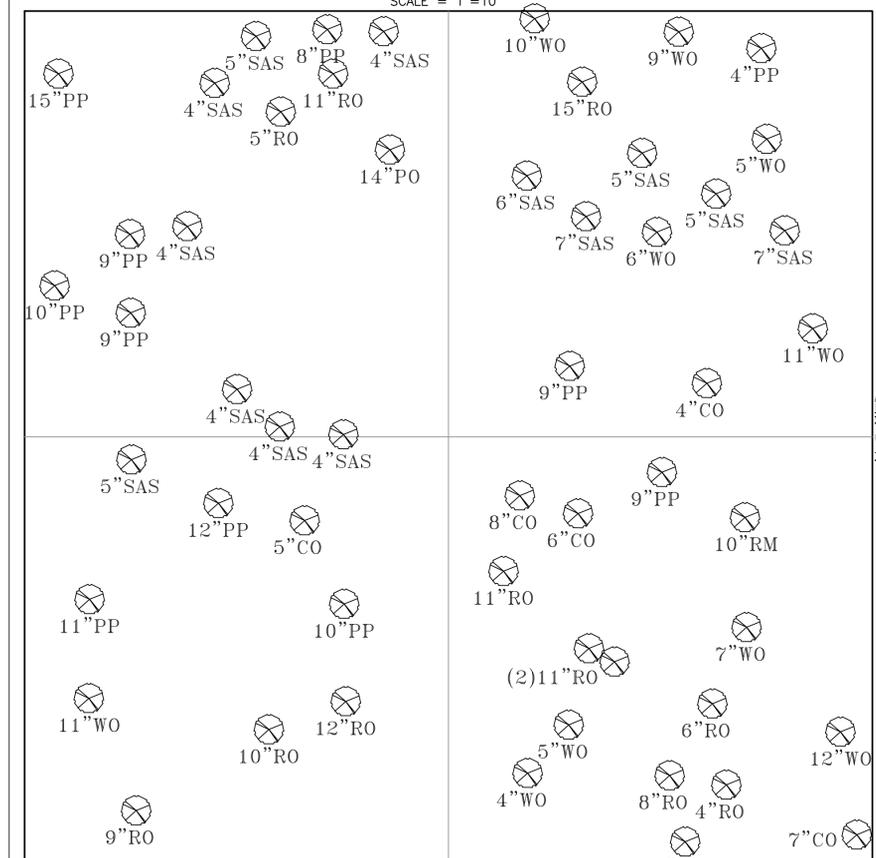
SITUATED IN

BLOCK 366.01 - LOT 1
 BLOCK 347.01 - LOT 3.01
 BOROUGH OF SAYREVILLE
 MIDDLESEX COUNTY
 NEW JERSEY

SHEET **15** OF **27**

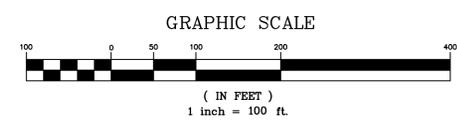
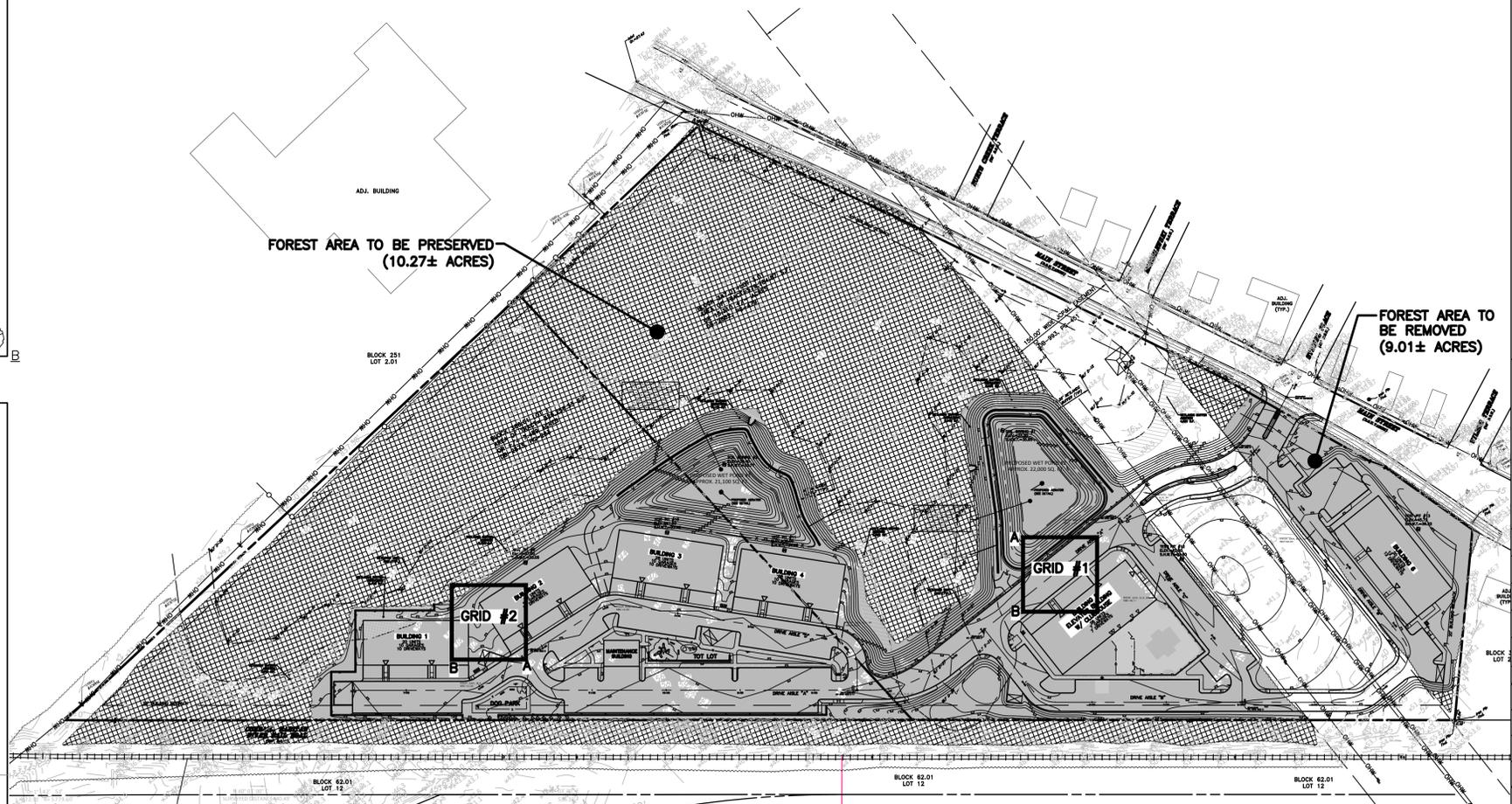


GRID #1
100' X 100'
SCALE = 1"=10'



GRID #2
100' X 100'
SCALE = 1"=10'

TREE LEGEND
C = CHERRY TREE
CO = CHESTNUT OAK
PO = PIN OAK
PP = PITCH PINE
RM = RED MAPLE
RO = RED OAK
WO = WHITE OAK



AS PER A SETTLEMENT AGREEMENT WITH THE TOWNSHIP, SECTION 5.3 OBLIGATION TO REFRAIN FROM IMPOSING COST GENERATIVE FEATURES.

THE PLANNING BOARD RECOGNIZES THAT AS INCLUSIONARY DEVELOPMENTS, WITHIN THE MEANING OF THE MOUNT LAUREL DOCTRINE, SITE I AND SITE II ARE ENTITLED TO CERTAIN RELIEF FROM OTHERWISE APPLICABLE BOROUGH ORDINANCES AND/OR REGULATIONS. THAT MEANS THAT K-LAND MAY APPLY FOR A WAIVER OR BULK VARIANCE FROM ANY STANDARD IMPOSED BY THE BOROUGH'S LAND USE AND DEVELOPMENT ORDINANCE, AS APPLICABLE, AND A DE MINIMUS EXCEPTION FROM THE RESIDENTIAL SITE IMPROVEMENT STANDARDS ("RSIS"), AND THAT THE STANDARDS SET FORTH IN THE MLUL SHALL DETERMINE IF K-LAND IS ENTITLED TO THIS RELIEF IF THE STANDARD IS COST-GENERATIVE AS DEFINED BY THE LAW. FURTHER, BEYOND VARIANCE AND/OR WAIVER RELIEF TO WHICH K-LAND MAY BE ENTITLED TO, THE PARTIES ACKNOWLEDGE THAT THE DEVELOPMENT OF SITE I AND SITE II SHALL BE EXEMPT FROM THE PROVISIONS OF CHAPTER 30, TREE CONSERVATION AND REFORESTATION, OF THE BOROUGH'S ZONING CODE.

STEPHEN R. KISELICK, C.L.A.
CERTIFIED LANDSCAPE ARCHITECT
NJ LICENSE NO. AS00422
CERTIFICATE OF AUTHORIZATION #24GA28239800



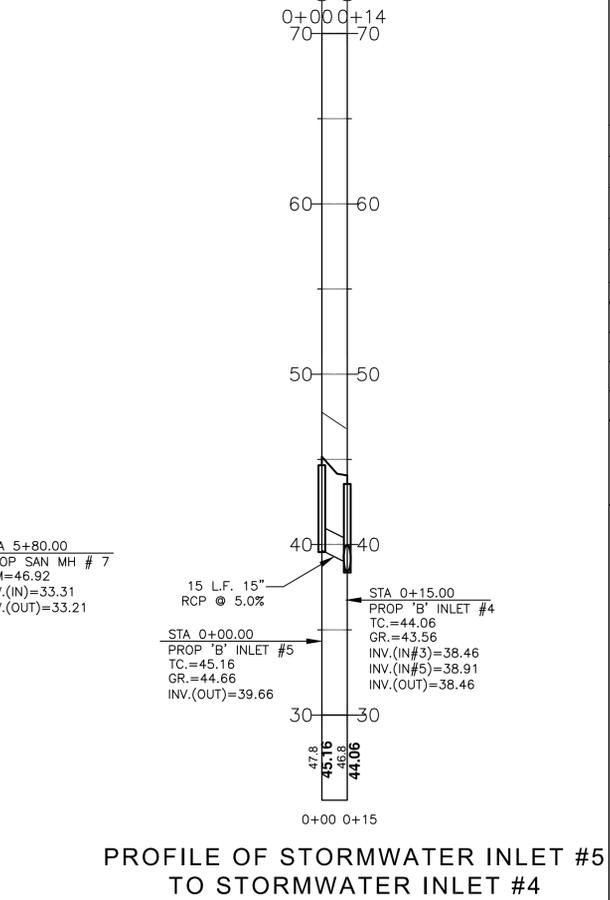
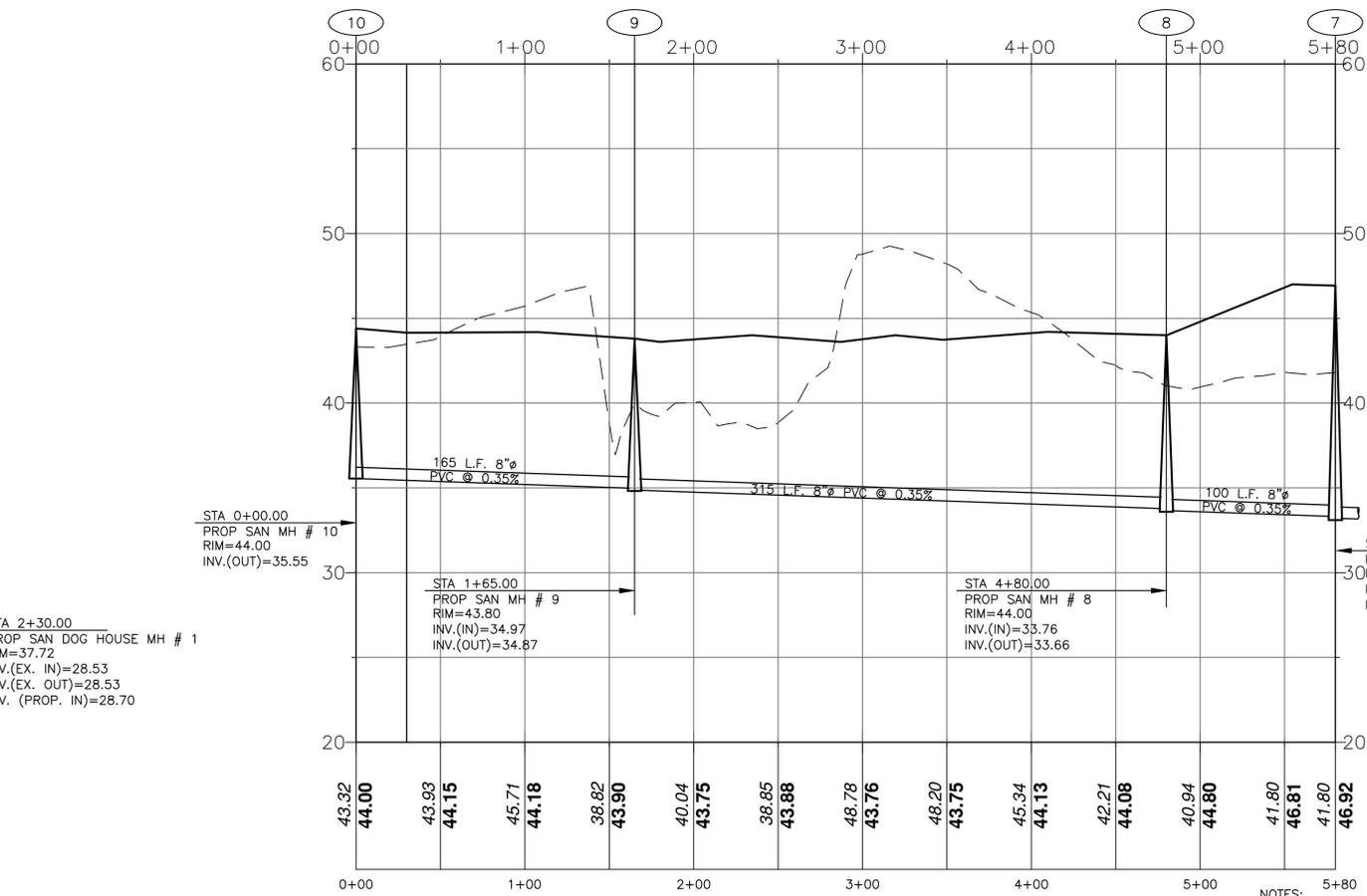
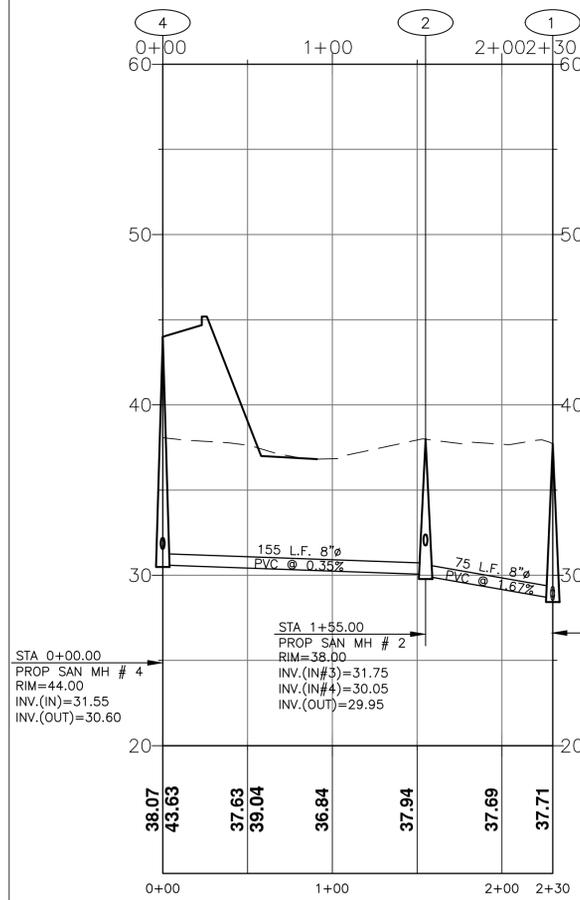
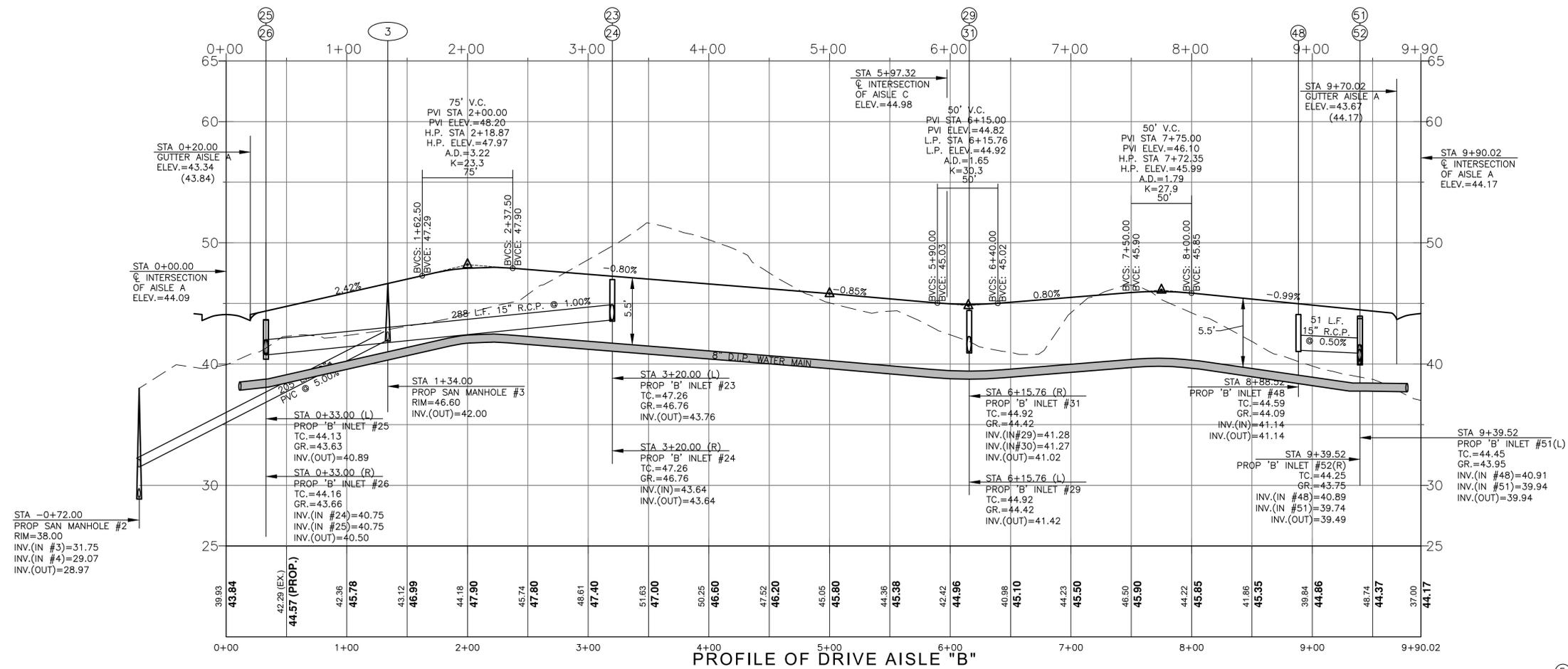
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TEL: (732) 431-1440 FAX: (732) 987-5078

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REVISIONS	DATE
DATE: 09/12/2019	RMP
SCALE: 1"=100'	SK
AE FILE NAME: TREE PRESERVATION PLAN	OWED
AE FILE NUMBER: 117	WTW
	RELAYS

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TREE PRESERVATION PLAN
PREPARED FOR
CAMELOT AT ERNSTON ROAD
SITUATED IN
**BLOCK 366.01 - LOT 1
BLOCK 347.01 - LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY**



NOTES:

- CONTRACTOR SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18 INCHES BETWEEN SANITARY SEWER MAINS AND WATER MAINS.
- CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4 FEET OF COVER FOR ALL SANITARY SEWER MAINS.

SCALE: 1" = 50' HOR.
1" = 5' VERT.

WILLIAM T. WENTZLEN, P.E., P.P., C.M.E.
 PROFESSIONAL ENGINEER
 NJ LICENSE NO. 27799

CERTIFICATE OF AUTHORIZATION #246A28239800

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 JACKSON, NJ 08527
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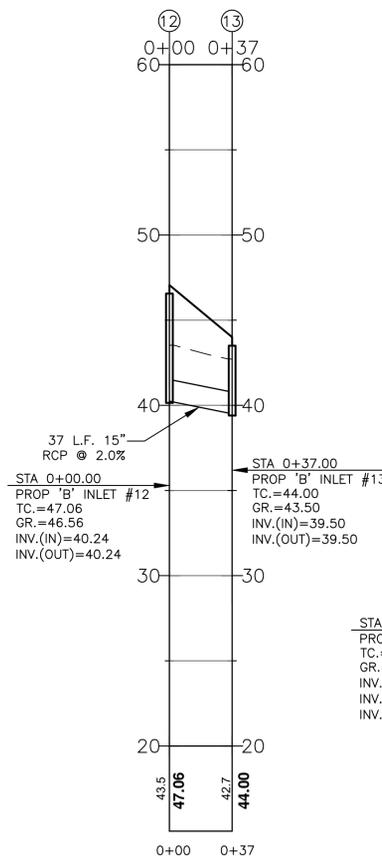
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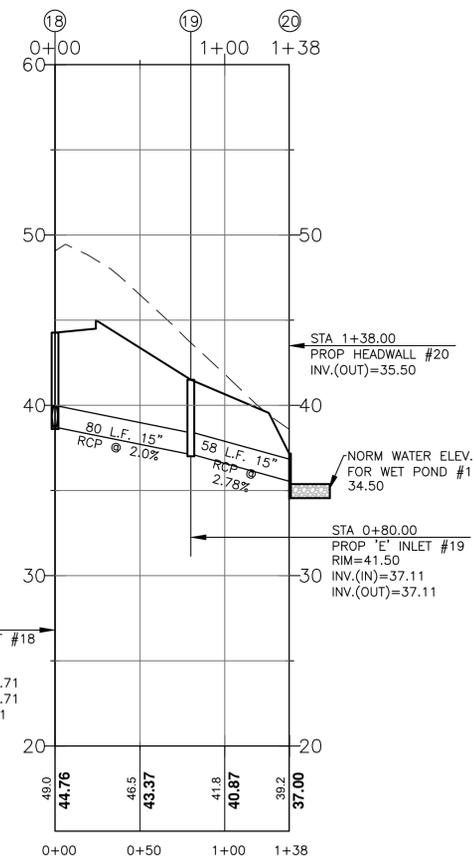
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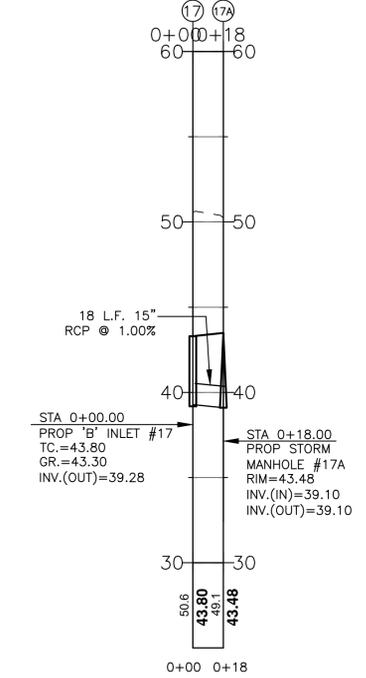
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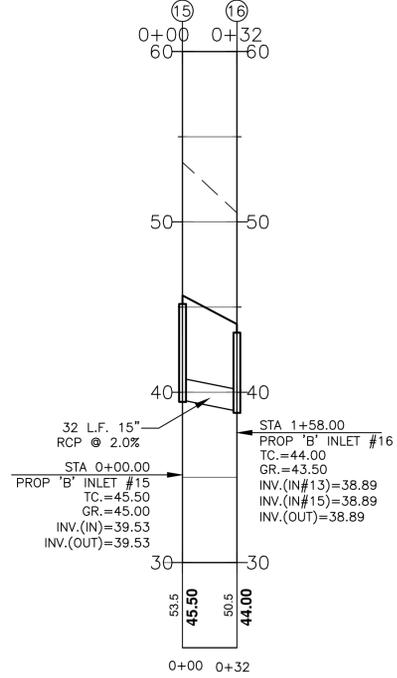
PROFILE OF STORMWATER INLET #12 TO STORMWATER INLET #13



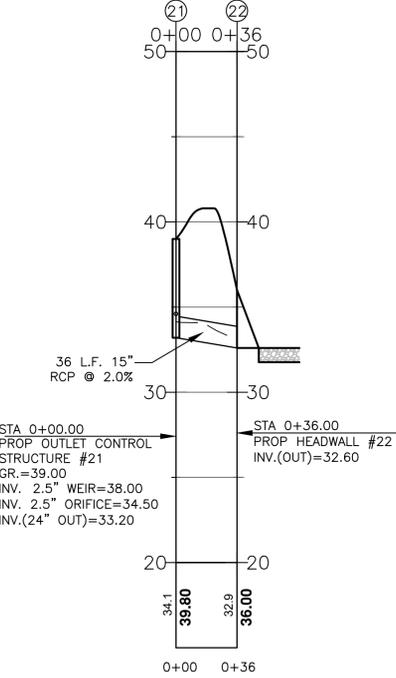
PROFILE OF STORMWATER INLET #18 TO HEADWALL #20



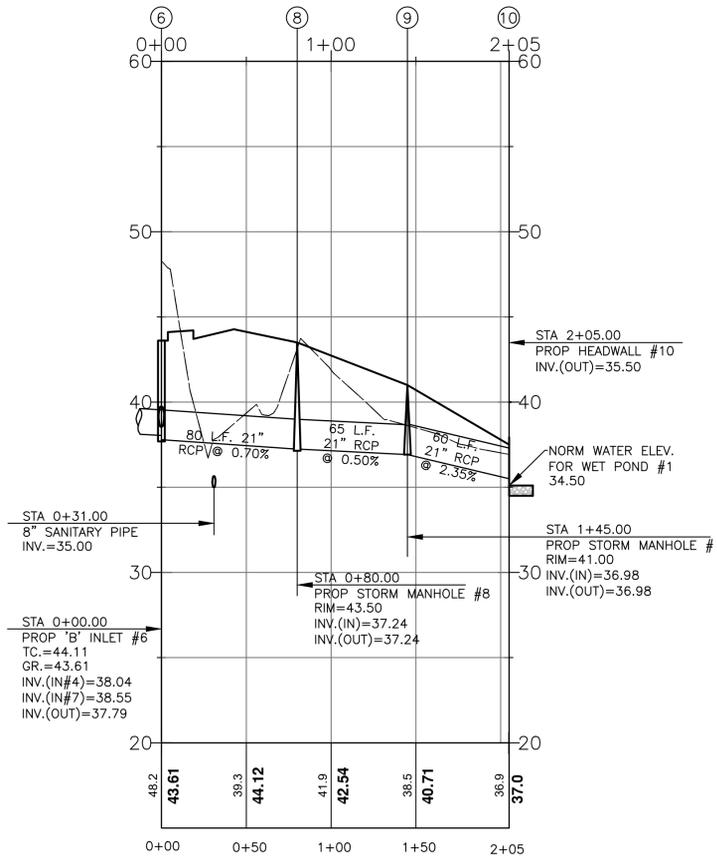
PROFILE OF STORMWATER INLET #17 TO STORMWATER MANHOLE #17A



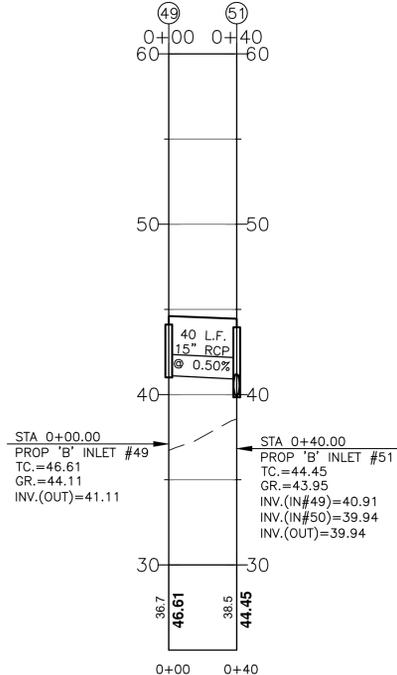
PROFILE OF STORMWATER INLET #15 TO STORMWATER INLET #16



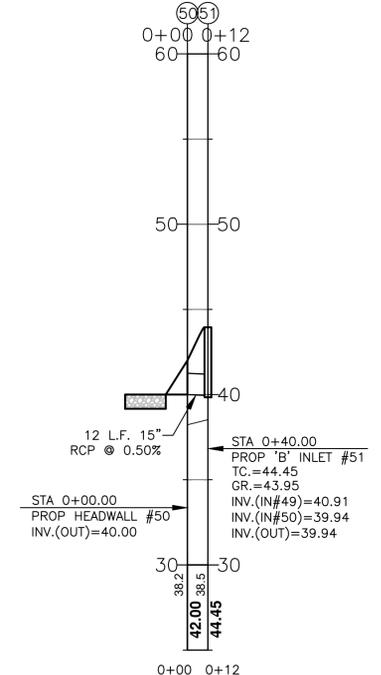
PROFILE OF OUTLET CONTROL STRUCTURE #21 TO HEADWALL #22



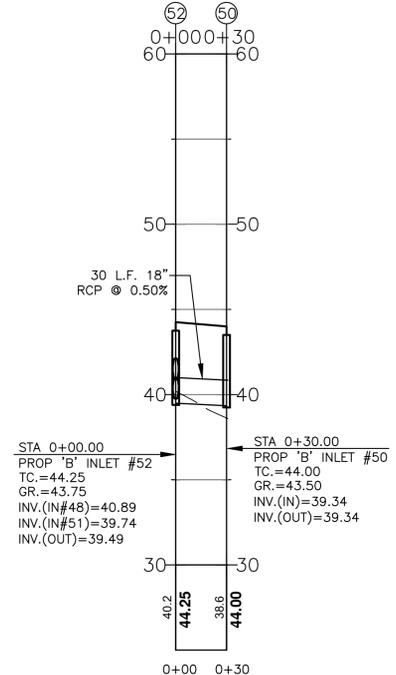
PROFILE OF STORMWATER INLET #6 TO STORMWATER HEADWALL #10



PROFILE OF STORMWATER INLET #49 TO STORMWATER INLET #51



PROFILE OF STORMWATER INLET #50 TO STORMWATER INLET #51



PROFILE OF STORMWATER INLET #52 TO STORMWATER INLET #50

SCALE: 1" = 50' HOR.
1" = 5' VERT.

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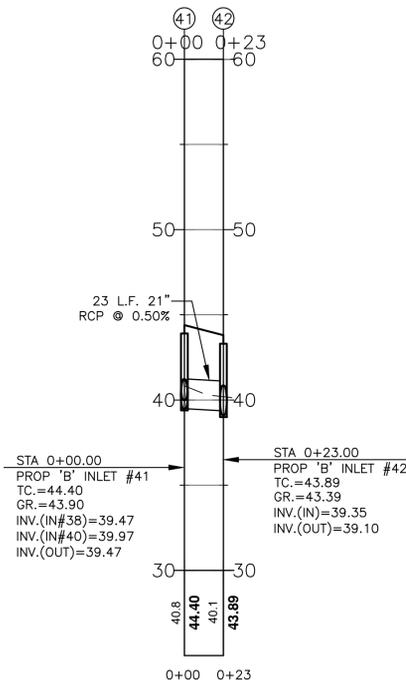
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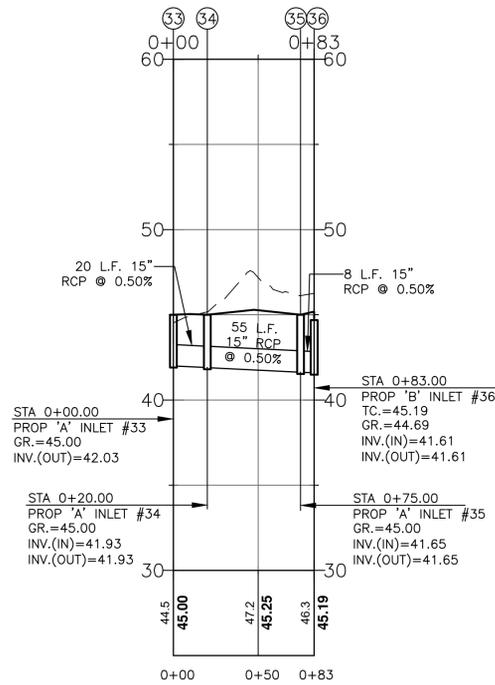
CAMELOT AT ERNSTON ROAD

SITUATED IN

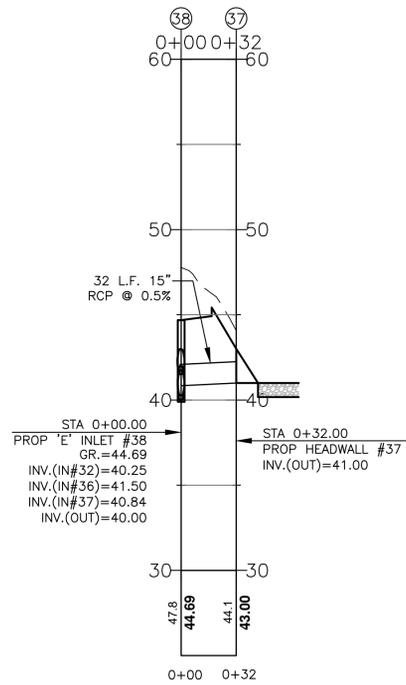
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MIDDLESEX COUNTY
NEW JERSEY



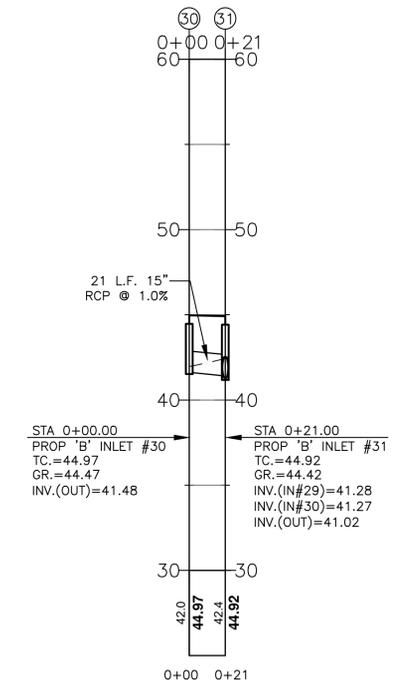
PROFILE OF STORMWATER INLET #41 TO STORMWATER INLET #42



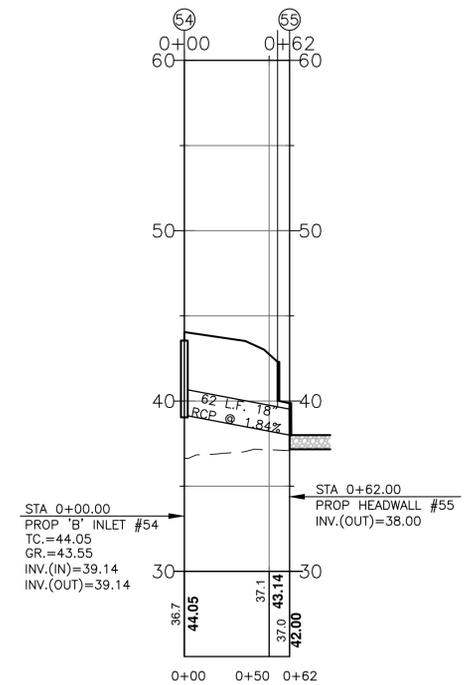
PROFILE OF STORMWATER INLET #33 TO STORMWATER INLET #36



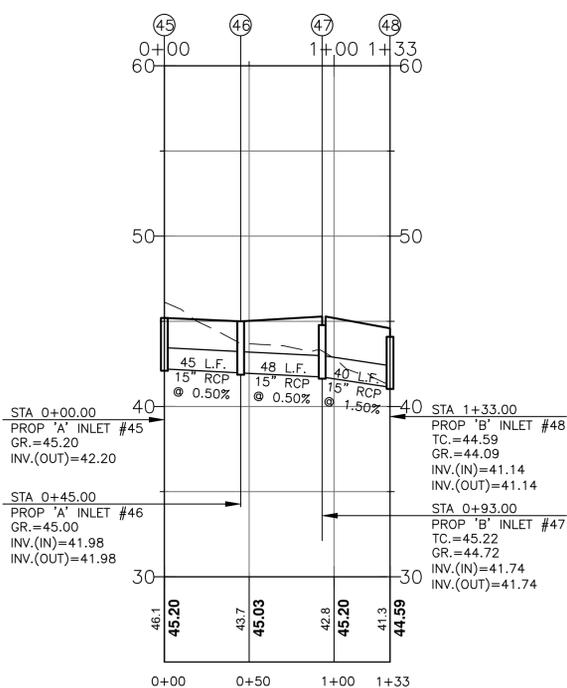
PROFILE OF STORMWATER INLET #38 TO HEADWALL #37



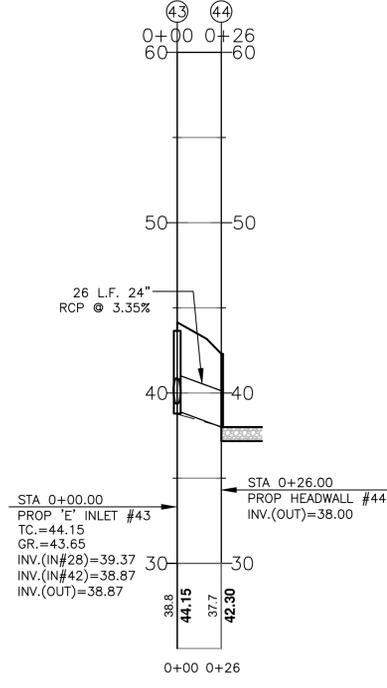
PROFILE OF STORMWATER INLET #30 TO STORMWATER INLET #31



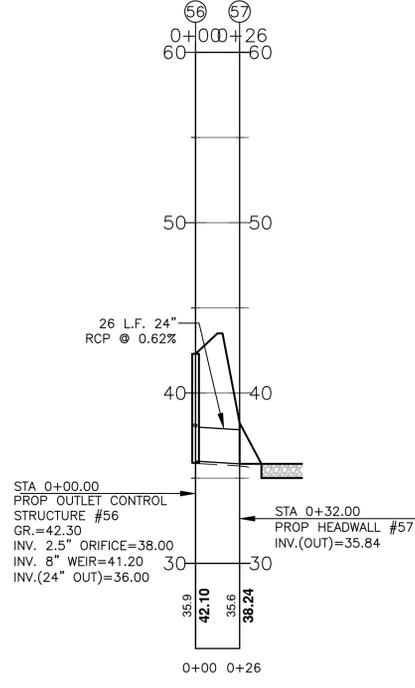
PROFILE OF STORMWATER INLET #54 TO HEADWALL #55



PROFILE OF STORMWATER INLET #45 TO STORMWATER INLET #48



PROFILE OF STORMWATER INLET #43 TO HEADWALL #44



PROFILE OF OUTLET CONTROL STRUCTURE #56 TO HEADWALL #57

PIPE CROSSING SCHEDULE					
CROSSING No.	TYPE OF CROSSING	BOTTOM OF TOP PIPE	TOP OF BOTTOM PIPE	CLEARANCE	RECOMMENDATION
1	STORM/WATER	37.26	35.76	1.50	
2	STORM/SANITARY	37.34	35.71	1.63	
3	WATER/SANITARY	39.12	35.41	3.71	
4	STORM/WATER	38.12	36.62	1.50	
5	STORM/SANITARY	38.30	35.04	3.26	
6	WATER/SANITARY	39.02	34.51	4.51	
7	WATER/SANITARY	42.46	34.09	8.37	
8	WATER/SANITARY	42.32	33.85	8.47	
9	STORM/WATER	39.66	38.16	1.50	
10	STORM/WATER	40.78	39.28	1.50	
11	STORM/WATER	40.79	39.29	1.50	
12	STORM/WATER	39.08	37.58	1.50	
13	STORM/SANITARY	38.97	33.25	5.72	
14	WATER/SANITARY	39.18	35.24	3.94	
15	STORM/WATER	38.78	37.28	1.50	
16	STORM/SANITARY	32.02	38.68	6.64	
17	STORM/SANITARY	31.26	39.37	8.11	
18	STORM/SANITARY	36.87	39.89	3.02	
19	STORM/WATER	41.14	39.64	1.50	
20	STORM/WATER	43.45	41.95	1.50	
21	WATER/SANITARY	38.76	35.56	3.20	
22	STORM/WATER	40.10	38.60	1.50	
23	STORM/WATER	40.60	39.10	1.50	
24	STORM/SANITARY	40.63	37.66	2.97	
25	STORM/WATER	38.48	36.98	1.50	
26	STORM/WATER	40.39	38.89	1.50	

SCALE: 1" = 50' HOR.
1" = 5' VERT.

- NOTES:
- CONTRACTOR SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18 INCHES BETWEEN SANITARY SEWER MAINS AND WATER MAINS.
 - CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4 FEET OF COVER FOR ALL SANITARY SEWER MAINS.

WILLIAM T. WENTZIE, P.E., P.P., C.M.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 27799

CERTIFICATE OF AUTHORIZATION #246A28239800



436 W. COMMODORE BLVD., SUITE #2
JACKSON, NJ 08527
TEL: (732) 431-1440 FAX: (732) 987-5078

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REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS 09/17/2020

REVISIONS DATE

DATE: 09/12/2019 RMP

SCALE: 1"=50' HORIZONTAL 1"=5' VERTICAL SK

AE FILE NAME: PROFILES CHDSD

AE FILE NUMBER: 117 WTW

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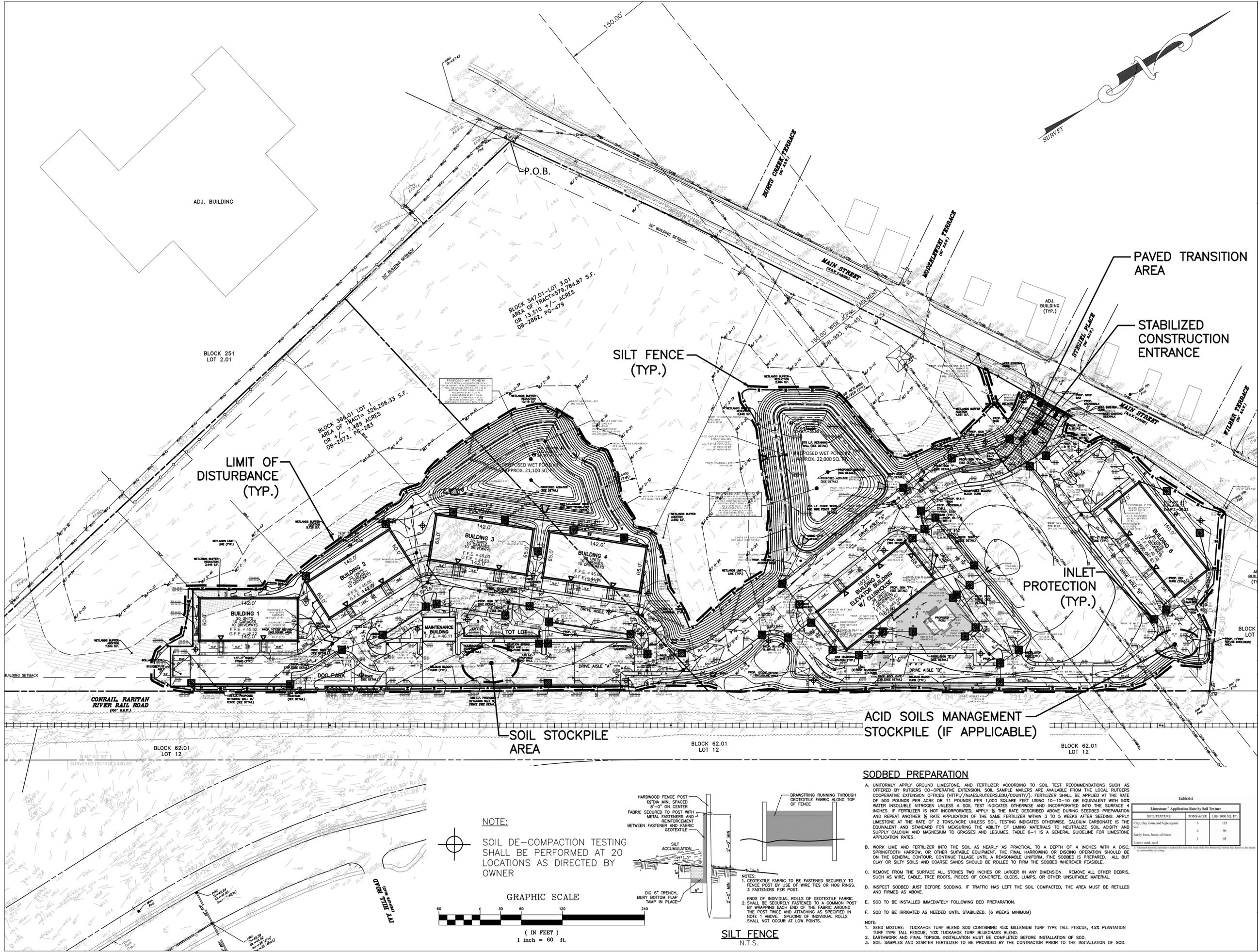
PROFILES

PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

BLOCK 366.01 LOT 1
BLOCK 347.01 LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY



WILLIAM T. WENTZIE, P.E., P.P., C.M.E.
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SOIL EROSION AND SEDIMENT CONTROL PLAN

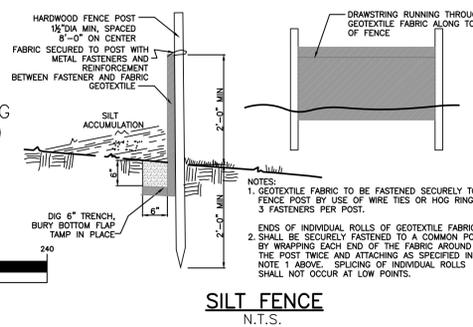
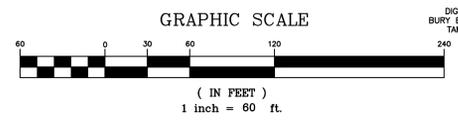
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SITUATED IN

BLOCK 366.01 - LOT 1
BLOCK 347.01 - LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY

NOTE:
 SOIL DE-COMPACTION TESTING SHALL BE PERFORMED AT 20 LOCATIONS AS DIRECTED BY OWNER



SODBED PREPARATION

- UNIFORMLY 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 CO-OPERATIVE EXTENSION OFFICES (HTTP://NAAES.RUTGERS.EDU/COUNTY/). FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET USING 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 1/2 THE RATE DESCRIBED ABOVE DURING SEEDBED PREPARATION AND REPEAT ANOTHER 1/2 RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING. APPLY LIMESTONE AT THE RATE OF 2 TONS/ACRE UNLESS SOIL TESTING INDICATES OTHERWISE. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES. TABLE 6-1 IS A GENERAL GUIDELINE FOR LIMESTONE APPLICATION RATES.
 - WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM, FINE SODDED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SODDED WHEREVER FEASIBLE.
 - REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS, OR OTHER UNSUITABLE MATERIAL.
 - INSPECT SODDED JUST BEFORE SODDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.
 - SOD TO BE INSTALLED IMMEDIATELY FOLLOWING BED PREPARATION.
 - SOD TO BE IRRIGATED AS NEEDED UNTIL STABILIZED. (6 WEEKS MINIMUM)
- NOTE:**
 1. SEED MIXTURE: TUCKAHOE TURF BLEND SOD CONTAINING 45% MILLENNIUM TURF TYPE TALL FESCUE, 45% PLANTATION TURF TYPE TALL FESCUE, 10% TUCKAHOE TURF BLUEGRASS BLEND.
 2. EARTHWORK AND FINAL TOPSOIL INSTALLATION MUST BE COMPLETED BEFORE INSTALLATION OF SOD.
 3. SOIL SAMPLES AND STARTER FERTILIZER TO BE PROVIDED BY THE CONTRACTOR PRIOR TO THE INSTALLATION OF SOD.

Table 6-1
 Limestone Application Rate by Soil Texture

SOIL TEXTURE	TONS/ACRE	LBS/1000 SQ. FT.
Clay, clay loam, and high organic soil	3	135
Sandy loam, loam, silt loam	2	90
Loamy sand, sand	1	45

SOIL EROSION AND SEDIMENT CONTROL NOTES

- THE BOROUGH OF SAYREVILLE SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY SOIL DISTURBING ACTIVITY.
- 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.
- 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 BOROUGH OF SAYREVILLE FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
- N.J.S.A. 4:24-39 ET. SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THE BOROUGH OF SAYREVILLE 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 BOROUGH 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.
- 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 1/2 TONS PER ACRE, ACCORDING TO THE STANDARD FOR STABILIZATION WITH MULCH ONLY.
- IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. SOIL STOCKPILES, STEEP SLOPES AND ROADWAY EXCAVATIONS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AND A MULCH ANCHOR, IN ACCORDANCE WITH STATE STANDARDS.
- 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.
- 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 ACCESS 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.
- ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS WILL BE REMOVED IMMEDIATELY.
- PERMANENT VEGETATION IS TO BE SEEDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING.
- 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.
- 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/ 1,000 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.
- CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
- 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.
- 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.
- STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STAGING AREAS 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.
- ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL NOTE #6.
- THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BELOW STORM WATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

STANDARD FOR TOPSOILING

DEFINITION:
TOPSOILING DETAILED THE DISTRIBUTION OF SUITABLE SOIL ON AREAS TO BE VEGETATED.

PURPOSE:
TO IMPROVE THE SOIL MEDIM FOR PLANT ESTABLISHMENT AND MAINTENANCE.

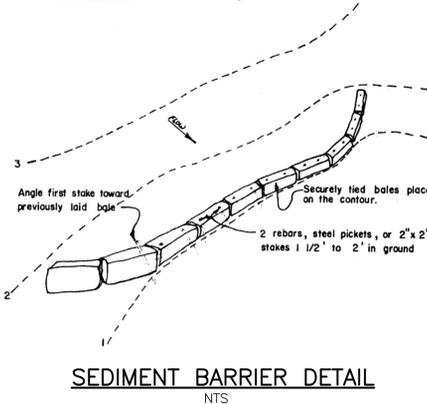
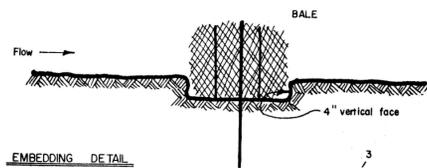
WATER QUALITY ENHANCEMENT:
GROWTH AND ESTABLISHMENT OF A VIGOROUS VEGETATIVE COVER IS FACILITATED BY TOPSOIL. PREVENTATIVE SOIL LOSS BY WIND, RAIN, OFFSITE AND INTO STREAMS AND OTHER STORMWATER CONVEYANCES.

WHERE APPLICABLE:
TOPSOIL SHALL BE USED WHERE SOILS ARE TO BE DISTURBED AND WILL BE RE-VEGETATIVE.

METHODS AND MATERIALS:

- MATERIALS:**
 - TOPSOIL SHALL BE FRABLE(1), LOAMY(2), FREE OF DEBRIS, OBJECTIONABLE WEEDS AND STONES, AND CONTAIN NO TOXIC SUBSTANCES OR ADVERSE CHEMICAL OR PHYSICAL CONDITION THAT MAY BE HARMFUL TO PLANT GROWTH. SOLUBLE SALTS SHOULD NOT BE EXCESSIVE. (CONDUCTIVITY LESS THAN 0.5 MILLIOMHS PER CENTIMETER. MORE THAN 0.5 MILLIOMHS MAY DESICcate SEEDLINGS AND ADVERSELY IMPACT GROWTH.) TOPSOIL HAULED IN FROM OFFSITE SHOULD HAVE A MINIMUM ORGANIC MATTER CONTENT OF 2.75 PERCENT. ORGANIC MATTER CONTENT MAY BE RAISED BY ADDITIVES.
 - TOPSOIL SUBSTITUTE IS A SOIL MATERIAL WHICH MAY HAVE BEEN AMENDED WITH SAND, SILT, CLAY, ORGANIC MATTER, FERTILIZER OR LIME AND HAS THE APPEARANCE OF TOPSOIL. TOPSOIL SUBSTITUTE MUST BE ESTABLISHING PERMANENT VEGETATION. ALL TOPSOIL SUBSTITUTE MATERIALS SHALL MEET THE REQUIREMENTS OF TOPSOIL NOTED ABOVE. SOIL TESTS SHALL BE PERFORMED TO DETERMINE THE COMPONENTS OF SAND, SILT, CLAY, ORGANIC MATTER, SOLUBLE SALTS AND pH LEVEL.
 - STRIPPING AND STOCKPILING:
 - FIELD EXPLORATION SHOULD BE MADE TO DETERMINE WHETHER QUANTITY AND OR QUALITY OF SURFACE SOIL JUSTIFIES STRIPPING.
 - STRIPPING SHOULD BE CONFINED TO THE IMMEDIATE CONSTRUCTION AREA.
 - WHERE FEASIBLE, LIME MAY BE APPLIED BEFORE STRIPPING AT A RATE DETERMINED BY SOIL TESTS TO BRING THE SOIL pH TO APPROXIMATELY 6.5. IN LIEU OF SOIL TESTS, SEE LIME RATE GUIDE IN SEEDING PREPARATION FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, PG. 4-1.
 - A 4-8 INCH STRIPPING DEPTH IS COMMON, BUT MAY VARY DEPENDING ON THE PARTICULAR SOIL.
 - STOCKPILES OF TOPSOIL SHOULD BE SITUATED SO AS NOT TO OBSTRUCT NATURAL DRAINAGE OR CAUSE OFFSITE ENVIRONMENTAL DAMAGE.
 - GRAVEL, CRUSHED STONE, OR SLAG 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. STOCKPILES SHOULD BE VEGETATED IN ACCORDANCE WITH STANDARDS PREVIOUSLY DESCRIBED HEREIN; SEE STANDARDS FOR PERMANENT (pg. 4-1) OR TEMPORARY (pg. 7-1) VEGETATIVE COVER FOR SOIL STABILIZATION. WEEDS SHOULD NOT BE ALLOWED TO GROW ON STOCKPILES.
- SITE PREPARATION:**
 - GRADE AT THE ONSET OF THE OPTIMAL SEEDING PERIOD SO AS TO MINIMIZE THE DURATION AND AREA OF EXPOSURE OF DISTURBED SOIL TO EROSION. IMMEDIATELY PROCEED TO ESTABLISH VEGETATIVE COVER IN ACCORDANCE WITH THE SPECIFIED SEED MIXTURE. TIME IS OF THE ESSENCE.
 - GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE. SEE THE STANDARD FOR LAND GRADING, PG. 19-1.
 - AS GUIDANCE FOR IDEAL CONDITIONS, SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENT, LIMESTONE, IF NEEDED, SHOULD BE APPLIED TO BRING SOIL TO A PH OF APPROXIMATELY 6.5 AND INCORPORATE INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES.
 - IMMEDIATELY PRIOR TO TOPSOILING, THE SURFACE SHOULD BE SCARIFIED 6" TOP 12" WHERE THERE HAS BEEN SOIL COMPACTING. THIS WILL HELP INSURE A GOOD BOND BETWEEN THE TOPSOIL AND SUBSOIL. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DAMAGE TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).
 - EMPLOY NEEDED EROSION CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENTATION BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.
- APPLYING TOPSOIL:**
 - TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE, i.e. LESS THAN FIELD CAPACITY. (SEE GLOSSARY)
 - A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS RECOMMENDED. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING A PH OF 5.0 OR MORE, IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOIL. (pg. 1-1)
 - PURSUANT TO THE REQUIREMENTS IN SECTION 7 OF THE STANDARD FOR PERMANENT VEGETATIVE STABILIZATION, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT PERMANENT VEGETATIVE COVER BECOMES ESTABLISHED ON AT LEAST 80% OF THE SOILS TO BE STABILIZED WITH VEGETATION. FAILURE TO ACHIEVE THE MINIMUM COVERAGE MAY REQUIRE ADDITIONAL WORK TO BE PERFORMED BY THE CONTRACTOR TO INCLUDE SOME OR ALL OF THE FOLLOWING: SUPPLEMENTAL SEEDING, RE-APPLICATION OF LIME AND FERTILIZERS, AND/OR THE ADDITION OF ORGANIC MATTER (I.E. COMPOST) AS A TOP DRESSING. SUCH ADDITIONAL MEASURES SHALL BE BASED ON SOIL TESTS SUCH AS THOSE OFFERED BY RUTGERS COOPERATIVE EXTENSION SERVICE OR OTHER APPROVED LABORATORY FACILITIES QUALIFIED TO TEST SOIL SAMPLES FOR AGRONOMIC PROPERTIES.

- FRABLE MEANS EASILY CRUMBLES IN THE FINGERS, AS DEFINED IN MOST SOIL TESTS.
- LOAMY MEANS TENDRE GRASSES CONSISTING OF COARSE LOAMY SANDS, SANDY LOAM, FINE AND VERY FINE SANDY LOAM, LOAM, SILT LOAM, CLAY LOAM, SANDY CLAY LOAM, AND SILTY CLAY LOAM TEXTURES AND HAVING LESS THAN 35% COARSE FRAGMENTS (PARTICLES LESS THAN 2MM IN SIZE) AS DEFINED IN THE GLOSSARY OF THE SOIL SCIENCE TERMS, 1996, SOIL SCIENCE SOCIETY OF AMERICA.



STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION:
ESTABLISHMENT OF PERMANENT VEGETATIVE COVER ON EXPOSED SOILS WHERE PERENNIAL VEGETATION IS NEEDED FOR LONG-TERM PROTECTION.

PURPOSE:
TO PERMANENTLY STABILIZE THE SOIL, ENSURING CONSERVATION OF SOIL AND WATER, AND TO ENHANCE THE ENVIRONMENT.

WATER QUALITY ENHANCEMENT:
SLOWS THE OVER LAND MOVEMENT OF STORMWATER RUNOFF, INCREASES INFILTRATION AND RETAINS SOIL AND NUTRIENTS ON SITE, PROTECTING STREAMS OR OTHER STORMWATER CONVEYANCES.

WHERE APPLICABLE:
ON EXPOSED SOILS THAT HAVE A POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS:

- SITE PREPARATION:**
 - 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 STANDARD FOR LAND GRADING.
 - IMMEDIATELY PRIOR TO SEEDING AND TOPSOIL APPLICATION, THE SUBSOIL SHALL BE EVALUATED FOR COMPACTION IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.
 - TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS 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.
 - INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES, SUCH AS DIVERSIONS, GRADE-STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
- SEEDBED PREPARATION:**
 - 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 SQUARE FEET 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-HALF THE RATE DESCRIBED ABOVE DURING SEEDBED PREPARATION AND REPEAT ANOTHER ONE-HALF RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING.
 - 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.
 - HIGH ACID PRODUCING 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 STANDARD FOR MANAGEMENT OF HIGH ACID-PRODUCING SOILS FOR SPECIFIC REQUIREMENTS.

3. SEEDING

- SELECT A MIXTURE FROM TABLE 4-3 OR USE A MIXTURE RECOMMENDED BY RUTGERS COOPERATIVE EXTENSION OR NATURAL RESOURCES CONSERVATION SERVICE IF APPROVED BY THE SOIL CONSERVATION DISTRICT. SEED GERMINATION SHALL HAVE BEEN TESTED WITHIN 12 MONTHS OF THE PLANTING DATE. NO SEED SHALL BE ACCEPTED WITH A GERMINATION TEST DATE MORE THAN 12 MONTHS OLD UNLESS RETESTED.
 - SEEDING RATES SPECIFIED ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. UP TO 50% REDUCTION IN RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO A REPORT OF COMPLIANCE INSPECTION. THESE RATES APPLY TO ALL METHODS OF SEEDING. ESTABLISHING PERMANENT VEGETATION MEANS 80% VEGETATIVE COVER WITH THE SPECIFIED SEED MIXTURE FOR THE SEEDED AREA AND MOWED ONCE.
 - WARM-SEASON MIXTURES ARE GRASSES AND LEGUMES WHICH MAXIMIZE GROWTH AT HIGH TEMPERATURES, GENERALLY 85O F AND ABOVE. SEE TABLE 4-3 MIXTURES 1 TO 7. PLANTING RATES FOR WARM-SEASON GRASSES SHALL BE THE AMOUNT OF PURE LIME SEED (PLS) AS DETERMINED BY GERMINATION TESTING RESULTS.
 - COOL-SEASON MIXTURES ARE GRASSES AND LEGUMES WHICH MAXIMIZE GROWTH AT TEMPERATURES BELOW 85OF. MANY GRASSES BECOME DORMANT AT 65OF. SEE TABLE 4-3, MIXTURES 8-20. ADJUSTMENT OF PLANTING RATES TO COMPENSATE FOR THE AMOUNT OF PLS IS NOT REQUIRED FOR COOL SEASON GRASSES.
- CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE-TEXTURED SOIL. AFTER SEEDING, FIRING 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.
- 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-FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. (ALSO SEE SECTION 4-MULCHING BELOW). 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 PROTECT 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 MULCHING.
- STRAW OR UNROTTED SMALL GRASS STRAW: MAY FREE OF SEEDS, TO BE APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER 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 THE PRESENCE OF WEED SEED.
 - APPLICATION - SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT AT LEAST 85% OF THE SOIL SURFACE IS COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 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:
 - PEG AND TWINE. DRIVE 8 TO 10 INCH WOOD 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.
 - MULCH NETTINGS - STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
 - CRIMPER (MULCH ANCHORING COUNTER 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 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
 - LIQUID MULCH-BINDERS - MAY BE USED TO ANCHOR SALT HAY, HAY OR STRAW MULCH.
 - APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND MAY CATCH THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. THE REMAINDER OF THE AREA SHOULD BE UNIFORM IN APPEARANCE.
 - USE ONE OF THE FOLLOWING:
 - ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER-BASED, HYDROPHILIC MATERIALS WHEN MIXED WITH WATER FORMULATES A GEL, AND WHEN APPLIED TO MULCH UNDER SATURATING CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOXIC EFFECT OR IMPEDG GROWTH OF TURF GRASS. USE AT RATES AND WEATHER CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH TO THE SOIL. THESE RATES APPLY TO ALL PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.
 - SYNTHETIC BINDERS - HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND, FOLLOWING APPLICATION OF MULCH, DRYING AND CURING, SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. BINDER SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

- 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. 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.
- PELLETIZED MULCH - COMPRESSED AND EXTRUDED 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, FORM A MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75 LBS/1,000 SQUARE FEET AND ACTIVATED 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. SEEDED AREAS WHERE WOOD-SEED FREE MULCH IS DESIRED, OR ON SITES WHERE STRAW MULCH AND TACKIFYING AGENT ARE NOT PRACTICAL OR DESIRABLE, APPLYING 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.

- IRRIGATION (WHERE FEASIBLE)

IF SOIL MOISTURE IS DEFICIENT SUPPLY NEW SEEDING 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.
- TOPDRESSING

SINCE SOIL ORGANIC MATTER CONTENT AND SLOW RELEASE NITROGEN FERTILIZER (WATER INSOLUBLE) ARE PRESCRIBED IN SECTION 2A - SEEDBED PREPARATION IN THIS STANDARD, NO FOLLOW-UP OF TOPDRESSING IS MANDATORY. AN EXCEPTION MAY BE MADE WHERE GROSS NITROGEN DEFICIENCY EXISTS IN THE SOIL TO THE EXTENT THAT TURF FAILURE MAY DEVELOP. IN THAT INSTANCE, TOPDRESS WITH 10-10-10 OR EQUIVALENT AT 300 POUNDS PER ACRE OR 7 POUNDS PER 1,000 SQUARE FEET EVERY 3 TO 5 WEEKS UNTIL THE GROSS NITROGEN DEFICIENCY IN THE TURF IS AMELIORATED.
- ESTABLISHING PERMANENT VEGETATIVE STABILIZATION

THE QUALITY OF PERMANENT VEGETATION RESTS WITH THE CONTRACTOR. THE TIMING OF SEEDING, PREPARING THE SEEDBED, APPLYING NUTRIENTS, MULCH AND OTHER MANAGEMENT ARE ESSENTIAL. THE SEED APPLICATION RATES IN TABLE 4-3 ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. UP TO 50% REDUCTION IN APPLICATION RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO REQUESTING A REPORT OF COMPLIANCE FROM THE DISTRICT. THESE RATES APPLY TO ALL METHODS OF SEEDING. ESTABLISHING PERMANENT VEGETATION MEANS 80% VEGETATIVE COVER (OF THE SEEDED SPECIES) AND MOWED ONCE. NOTE THIS DESIGNATION OF MOWED ONCE DOES NOT GUARANTEE THE PERMANENCY OF THE TURF SHOULD OTHER MAINTENANCE FACTORS BE NEGLECTED OR OTHERWISE MISMANAGED.

STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION CONTINUED

PERMANENT VEGETATIVE MIXTURES, PLANTING RATES AND PLANTING DATES ¹									
SEED MIXTURE ²	PLANTING RATE ³	PLANTING DATES						MAINTENANCE LEVEL ⁴	REMARKS
		O = Optimal Planting period A = Acceptable Planting period							
		PLANT HARDINESS ZONES (see Figure 4-1)							
		Zone 5b, 6a		Zone 6b	Zone 7a, 7b				
		6/1-7/31	7/1-10/1	3/1-4/30	5/1-8/14	8/15-10/1	2/1-4/30	5/1-8/14	10/1-10/31
11. Hard Fescue and/or Cheating fescue and/or Strong creeping red fescue Perennial ryegrass Ky. bluegrass (broad)	175 45 45	4 1 1	A A ⁵ A ⁵	A ⁵ O O	A A ⁵ O	A A ⁵ O	A A ⁵ O	A ⁵ O O	A-C General lawn/recreation.

TABLE 4-3 FOOTNOTES:

- SEE APPENDIX B FOR DESCRIPTIONS OF TURF GRASS MIXTURES AND CULTIVARS. THE ACTUAL AMOUNT OF WARM-SEASON GRASS MIXTURE USED IN TABLE 3 (SEED MIX 1-7) SHALL BE ADJUSTED TO REFLECT THE AMOUNT OF PLS AS DETERMINED BY GERMINATION TESTING RESULTS. NO ADJUSTMENT IS REQUIRED FOR COOL-SEASON GRASSES (SEED MIXTURES 8-20).
- SEEDING MIXTURES AND/OR RATES NOT LISTED ABOVE MAY BE USED IF RECOMMENDED BY THE LOCAL SOIL CONSERVATION DISTRICT. NATURAL RESOURCES CONSERVATION SERVICE; RECOMMENDATIONS OF RUTGERS COOPERATIVE EXTENSION MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT. LEGUMES (WHITE CLOVER, FLATPEA, LESPEDEZA) SHOULD BE MIXED WITH PROPER INNOCULANT PRIOR TO PLANTING.
- SEEDING RATES SPECIFIED ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. UP TO 50% REDUCTION IN RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO A REPORT OF COMPLIANCE INSPECTION. THESE RATES APPLY TO ALL METHODS OF SEEDING. ESTABLISHING PERMANENT VEGETATION MEANS 80% VEGETATIVE COVERAGE OF THE SEEDED AREA AND MOWED ONCE. GRASS SEED MIXTURE CHECKED BY THE STATE SEED ANALYST, NEW JERSEY DEPARTMENT OF AGRICULTURE, TRENTON, NEW JERSEY, WILL ASSURE THE PURCHASER THAT THE MIXTURE OBTAINED IS THE MIXTURE ORDERED, PURSUANT TO THE N.J. STATE SEED LAW, N.J.S.A. 4:8-17.13 ET. SEQ.
 - O = OPTIMAL PLANTING PERIOD A = ACCEPTABLE PLANTING PERIOD
- MAINTENANCE LEVEL:
 - A: INTENSIVE MOWING, (2-4 DAYS), FERTILIZATION, LIME, PEST CONTROL AND IRRIGATION (EXAMPLES - HIGH-MAINTENANCE LAWNS, COMMERCIAL AND RECREATION AREAS, PUBLIC FACILITIES).
 - B: FREQUENT MOWING, (4-7 DAYS), OCCASIONAL FERTILIZATION, LIME AND WEED CONTROL (EXAMPLES - HOME LAWNS, COMMERCIAL SITES, SCHOOL SITES).
 - C: PERIODIC MOWING (7-14 DAYS), OCCASIONAL FERTILIZATION AND LIME (EXAMPLES - HOME LAWNS, PARKS).
 - D: INFREQUENT OR NO MOWING, FERTILIZATION AND LIME THE FIRST YEAR OF ESTABLISHMENT (EXAMPLES - ROADSIDES, RECREATION AREAS, PUBLIC OPEN SPACES)
- SUMMER SEEDING: SEEDING SHOULD BE CONDUCTED WHEN THE SITE IS IRRIGATED, MIXES INCLUDING WHITE CLOVER REQUIRE THAT AT LEAST SIX WEEKS OF GROWING SEASON REMAIN AFTER SEEDING TO ENSURE ESTABLISHMENT BEFORE FREEZING CONDITIONS.

STANDARD FOR STORM SEWER INLET PROTECTION

DEFINITION:
A TEMPORARY BARRIER AND SETTLING FACILITY INSTALLED AT A STORM SEWER INLET.

PURPOSE:
THE PURPOSE OF STORM SEWER INLET PROTECTION IS TO INTERCEPT AND RETAIN SEDIMENT, THUS PREVENTING THE ENTRANCE OF SEDIMENT INTO THE STORM SEWER SYSTEM.

CONDITIONS WHERE PRACTICE APPLIES:

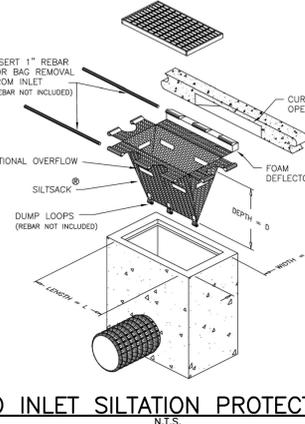
- CONTRIBUTING DRAINAGE AREA IS 3 ACRES OR LESS.
- A STORM SEWER OR THE OUTLET CHANNEL OF A STORM SEWER NEEDS PROTECTION FROM SEDIMENT.
- TRAFFIC WILL NOT DESTROY OR CAUSE CONSTANT MAINTENANCE OF THE STORM SEWER INLET PROTECTION.
- A TRAFFIC HAZARD WILL NOT BE CREATED.
- A FLOODING PROBLEM WILL NOT BE CREATED.

WATER QUALITY ENHANCEMENT:
THE PRIMARY BENEFIT TO WATER QUALITY IS THE REMOVAL OF SEDIMENT FROM STORMWATER RUNOFF PRIOR TO ENTERING THE STORMSEWER SYSTEM. AS AN ADDED BENEFIT, OTHER FLOATABLE DEBRIS, SUCH AS VEGETATIVE MATTER AND LITTER MAY ALSO BE FILTERED OUT OF THE RUNOFF.

DESIGN CRITERIA:

- MUST SLOW THE STORM WATER, PROVIDE THE COARSE SEDIMENT PARTICLES A CHANCE TO SETTLE, AND PROVIDE AN AREA TO RETAIN THE PARTICLES THAT HAVE SETTLED.
 - ALL CASES, INLET PROTECTION SHOULD NOT COMPLETELY CLOSE OFF THE INLET. PROVISION MUST BE MADE TO ALLOW STORMWATER TO OVERFLOW OR BYPASS FILTER.
 - THE PROTECTION DEVICE WILL BE DESIGNED TO CAPTURE OR FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.
- OTHER METHODS THAT ACCOMPLISH THE PURPOSE OF STORM SEWER INLET PROTECTION MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.

INSPECTIONS SHALL BE FREQUENT. MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. THE BARRIER SHALL BE REMOVED WHEN THE AREA DRAINING TOWARD THE INLET HAS BEEN STABILIZED.



PROPOSED INLET SILTATION PROTECTION DETAIL

PROPOSED SEQUENCE OF DEVELOPMENT

THIS PROJECT SHALL CONSIST ESSENTIALLY OF THE CONSTRUCTION OF THE PROPOSED BUILDINGS, UTILITIES, ROADWAYS AND ALL SITE IMPROVEMENTS. THE CONSTRUCTION WILL PROCEED IN THE FOLLOWING MANNER.

- | ACTIVITY | START DATE | END DATE |
|--|------------|-----------------------|
| 1. INSTALLATION OF ALL SEDIMENT AND EROSION CONTROL DEVICES, INCLUDING CONSTRUCTION OF STABILIZING ENTRANCE PAD, INSTALLATION OF SILT FENCING, INSTALLATION OF INLET FILTERS AND CONDUIT OUTLET PROTECTION, PRIOR TO ANY MAJOR SOIL DISTURBANCES OR IN THEIR PROPER SEQUENCE AND MAINTENANCE UNTIL PERMANENT PROTECTION IS ESTABLISHED. | 1 WEEK | 1ST WEEK |
| 2. CLEAR AND REMOVE ALL EXISTING VEGETATION IN THOSE AREAS WHERE NECESSARY. ALL REMAINING VEGETATION TO BE PROPERLY PROTECTED AND TO REMAIN IN ITS NATURAL STATE. INSTALL TREE PROTECTION FENCING WHERE REQUIRED. | 2 WEEKS | 3RD WEEK |
| 3. PRELIMINARY GRADING OF ALL AREAS TO BE DEVELOPED. | 2 WEEKS | 5TH WEEK |
| 4. LAYOUT AND CONSTRUCTION OF STORM DRAINAGE SYSTEM, UTILITIES AND WET PONDS. SOIL COMPACTION TESTING AND/OR SUBSOIL COMPACTION REMEDIATION. TESTING AND/OR RESTORATION OF COMPACTED SOILS (THROUGH DEEP SCARIFICATION/TILLAGE-6" MINIMUM DEPTH) SHALL BE DONE PRIOR TO THE PLACEMENT OF TOPSOIL. BASIN MUST BE PROPERLY CONSTRUCTED AND PERMANENTLY STABILIZED, AND CONDUIT OUTLET PROTECTION INSTALLED, PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL. | 12 WEEKS | 17TH WEEK |
| 5. CONSTRUCTION OF PROPOSED BUILDINGS. | ONGOING | 17TH WEEK |
| 6. SUBBASE COURSE TO BE APPLIED IMMEDIATELY FOLLOWING PRELIMINARY GRADING AND INSTALLATION OF IMPROVEMENTS IN ORDER TO STABILIZE PAVEMENT AREAS. | 4 WEEKS | 21ST WEEK |
| 7. CONSTRUCTION OF ALL PROPOSED CURBS. | 3 WEEKS | 24TH WEEK |
| 8. FINE GRADING OF ALL PAVEMENT AREAS. | 1 WEEK | 25TH WEEK |
| 9. INSTALLATION OF ALL BASE MATERIAL FOR PAVEMENT AREAS. | 2 WEEKS | 27TH WEEK |
| 10. STABILIZATION OF THE SITE PERMANENT VEGETATIVE COVER AND LANDSCAPING. | 3 WEEKS | 30TH WEEK |
| 11. REMOVAL OF ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES. | 1 WEEK | AT PROJECT COMPLETION |

WILLIAM T. WENTZEN, P.E., P.P., C.M.E.
PROFESSIONAL ENGINEER
NJ LICENSE NO. 27799

CERTIFICATE OF AUTHORIZATION #24628239800



436 W. COMMODORE BLVD., SUITE #2
JACKSON, NJ 08527
TEL: (732) 431-1440 FAX: (732) 987-5078

STANDARD FOR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

- SITE PREPARATION
 - AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, PG. 19-1. (SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.)
 - 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.)
 - IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHEN THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).
- SEEDBED PREPARATION
 - APPLY QUALITY 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 1000 SQUARE FEET OR 10-20 TO 10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A TEST INDICATES OTHERWISE. APPLY LIMESTONE AT A RATE THAT IS DETERMINED BY SOIL TESTING. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES.
 - WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.
 - INSPECT SEEDBED JUST BEFORE SEEDING. IF TOXIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED IN ACCORDANCE WITH THE ABOVE.
 - SOILS HIGH IN SULFIDES OR HAVING A pH OF 4 OR LESS, REFER TO STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, PG. 1-1. (SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.)
- SEEDING
 - SELECT SEED FROM RECOMMENDATION IN TABLE 7-2.

TABLE 7-2
TEMPORARY VEGETATIVE STABILIZATION GRASSES, SEEDING RATES, DATES AND DEPTH

SEED SELECTION	SEEDING RATE (POUNDS)		OPTIMUM SEEDING DATE ₂ (BASED ON PLANT HARDINESS ZONE) ₃			OPTIMUM SEEDING DEPTH (INCHES) ₄
	PER ACRE	PER 1000 SQ. FT.	ZONE 5A	ZONE 6B	ZONE 7A	
COOL SEASON GRASSES						
1. PERENNIAL RYEGRASS	100	1.0	5/15-6/1-9/15	3/1-5/15	2/15-5/15	0.5
2. SPRING OATS	86	2.0	3/15-6/1-8/15	3/1-5/15	2/15-5/15	1.0
3. WINTER BARLEY	96	2.2	8/1-9/15	8/15-10/15	8/15-10/15	1.0
4. ANNUAL RYEGRASS	100	1.0	3/15-6/1-8/15	3/1-5/15	2/15-5/15	0.5
5. WINTER CEREAL RYE	112	2.8	8/1-11/15	8/1-11/15	8/1-12/15	1.0
WARM SEASON GRASSES						
6. PEARL MILLET	20	0.5	8/1-8/15	5/15-8/15	3/1-9/1	1.0
7. MILLET (GERMAN OR HUNGARIAN)	30	0.7	8/1-8/15	5/15-8/15	3/1-9/1	1.0

- SEEDING RATE FOR WARM SEASON GRASS, SELECTIONS 5-7 SHALL BE ADJUSTED TO REFLECT THE AMOUNT OF PURE LINE SEED (PLS) AS DETERMINED BY A GERMINATION TEST RESULT. NO ADJUSTMENTS IS REQUIRED FOR COOL SEASON GRASSES.
 - MAY BE PLANTED THROUGHOUT SUMMER IS SOIL MOISTURE IS ADEQUATE OR SEED AREA CAN BE IRRIGATED.
 - PLANT HARDINESS ZONE (SEE FIGURE 7-1, PG. 7-4)(SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.)
 - TWICE THE DEPTH FOR SANDY SOILS
- CONVENTIONAL SEEDING. APPLY SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDER OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL 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.
 - 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 FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. (ALSO SEE SECTION IV MULCHING) HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.
 - AFTER SEEDING, FIRING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. HYDROSEEDING MAY BE PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.
- 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 MULCHING REQUIREMENT.

 - STRAW OR HAY, UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER 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 THE 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 DISTRIBUTE 70 TO 80 POUNDS OF MULCH TO 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.
 - 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.
 - MULCH NETTINGS. STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
 - CRIMPER (MULCH ANCHORING 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 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
 - LIQUID MULCH-BINDERS. MAY BE USED TO ANCHOR HAY OR STRAW MULCH.
 - APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND MAY CATCH THE MULCH, IN VALLEYS AND AT CRESTS OF BANKS. THE REMAINDER OF THE AREA SHOULD BE UNIFORM IN APPEARANCE.
 - USE ONE OF THE FOLLOWING:
 - ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS WHEN MIXED WITH WATER FORMULATES A GEL, AND WHEN APPLIED TO MULCH UNDER SATISFACTORY DRYING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES 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.
 - 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 RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.
 - LIQUID MULCH-BINDERS. MAY BE USED TO ANCHOR HAY OR STRAW MULCH.
 - APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND MAY CATCH THE MULCH, IN VALLEYS AND AT CRESTS OF BANKS. THE REMAINDER OF THE AREA SHOULD BE UNIFORM IN APPEARANCE.
 - USE ONE OF THE FOLLOWING:
 - ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS WHEN MIXED WITH WATER FORMULATES A GEL, AND WHEN APPLIED TO MULCH UNDER SATISFACTORY DRYING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES 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.
 - 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 RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.
 - 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 PROJECT 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.
 - PELLETIZED MULCH. COMPRESSED AND EXTRUDED PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDBED AREA AND WATERED, FORM MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75 LBS./1,000 SQUARE FEET AND ACTIVATED 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. SEEDING AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFYING AGENT ARE NOT PRACTICAL OR DESIRABLE.

NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A RECOMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.

APPLYING 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.

STANDARD FOR STABILIZATION WITH MULCH ONLY (WHERE APPLICABLE)

- DEFINITION:
HIGH ACID-PRODUCING SOILS ARE SOILS WITH A PH OF 4.0 OR LESS OR CONTAIN IRON SULFIDE.
- PURPOSE:
TO PREVENT OR LIMIT EXPOSURE AREA, TIME, AND SPREADING BY EQUIPMENT OR RAINFALL ON- AND OFF-SITE AND TO MINIMIZE EROSION, SEDIMENTATION AND ACID LEACHATE-RELATED DAMAGES. HIGH ACID-PRODUCING SOIL MAY BE EXPOSED DURING EXCAVATION AND LAND GRADING ACTIVITIES, OR MAY BE INTRODUCED IN DREDGED SEDIMENT, SOILS AND SEDIMENT CONTAINING IRON SULFIDE, CHARACTERIZED BY PYRITE OR MARCASITE NUGGETS OR GREEN SANDS, ARE CHEMICALLY OXIDIZED WHEN EXPOSED TO AIR, PRODUCING SULFURIC ACID AND RESULT IN SOIL PH LEVELS FALLING TO PH 4.0 AND LOWER. MOST VEGETATION IS INCAPABLE OF GROWTH AT THIS PH LEVEL. ADJACENT LAND AND RECEIVING WATERS WILL BE NEGATIVELY IMPACTED BY THE ACID LEACHATE. CALCIUM-CONTAINING MATERIALS SUCH AS SIDEWALKS, CURBS AND OTHER STRUCTURES AND SOME METALLIC MATERIALS ARE ALSO SUSCEPTIBLE TO DEGRADATION. AGRICULTURAL LIMESTONE MATERIALS APPLIED AT RATES OF 8 TONS PER ACRE HAVE RESULTED IN ONLY A TEMPORARY BUFFERING EFFECT, AND "LIMING-ONLY" IS THEREFORE NOT CONSIDERED AN ACCEPTABLE MITIGATION PRACTICE.
- WATER QUALITY ENHANCEMENT:
PROTECTS ONSITE SOILS AND OFFSITE STREAMS AND LAKES FROM SULFURIC ACID LEACHATE THAT CREATES SOIL PH CONDITIONS UNSUITABLE FOR GROWTH OF VEGETATION.
- WHERE APPLICABLE:
THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO EROSION WHERE THE SEASON AND OTHER CONDITIONS MAY NOT BE SUITABLE FOR GROWING AN EROSION-RESISTANT COVER OR WHERE STABILIZATION IS NEEDED FOR A SHORT PERIOD UNTIL MORE SUITABLE PROTECTION CAN BE APPLIED.

METHODS AND MATERIALS:

- SITE PREPARATION:
 - 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 STANDARD FOR LAND GRADING, PG. 19-1 TO 19-3 (ASTM C-33) IS RECOMMENDED.
 - INSTALL NEEDED EROSION CONTROL PRACTICES OF FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.
- PROTECTIVE MATERIALS:
 - 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 SOILS CONSERVATION DISTRICT.
 - ASPHALT EMULSION IS RECOMMENDED AT THE RATE OF 600 TO 1,200 GALLONS PER ACRE. THIS IS SUITABLE FOR A LIMITED PERIOD OF TIME WHEN TRAVEL BY PEOPLE, ANIMALS OR MACHINES IS NOT A PROBLEM.
 - SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.
 - WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE MAY BE APPLIED BY A HYDROSEEDER.
 - MULCH NETTING, SUCH AS PAPER JUTE, EXCELISOR, COTTON, OR PLASTIC, MAY BE USED.
 - WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.
 - GRAVEL, CRUSHED STONE, OR SLAG 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.
- MULCH ANCHORING:
 - SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW MULCH 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.
 - 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.
 - MULCH NETTINGS. 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.
 - CRIMPER (MULCH ANCHORING TOOL) - A TRACTOR-DRAWN IMPLEMENT ESPECIALLY DESIGNED TO PUSH AND ANCHOR MULCH BEYOND THE SURFACE. THIS PRACTICE AFFORDS MAXIMUM EROSION CONTROL, BUT ITS 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 DONE ON THE CONTOUR.
 - APPLICATIONS SHOULD BE EITHER AT EDGES WHERE WIND CATCHES THE MULCH IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
 - USE ONE OF THE FOLLOWING:
 - 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 DRYING CONDITIONS WILL FORM A MEMBRANED NETWORK OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. VEGETABLE BASED GELS SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER.
 - 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.

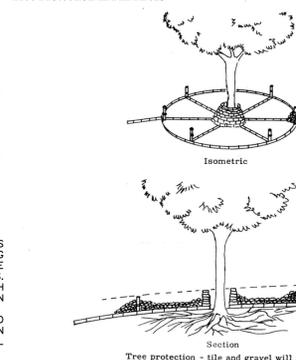
STANDARD FOR TREE PROTECTION DURING CONSTRUCTION

CRITERIA FOR PROTECTING REMAINING TREES:

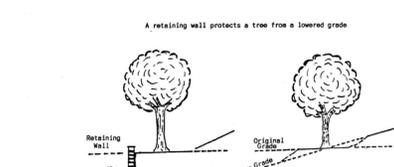
- GENERAL MECHANICAL DAMAGE - SEE FIGURE 9.3 FOR CORRECT ROOT ZONE CALCULATION AND PLACEMENT OF TREE PROTECTION.
- BOX TREES WITHIN 25 FEET OF A BUILDING SITE TO PREVENT MECHANICAL INJURY. FENCING OR OTHER BARRIER SHOULD BE INSTALLED BEYOND THE CRITICAL ROOT RADIUS SEE FIGURE 9.3. TREE ROOT SYSTEMS COMMONLY EXTEND WELL BEYOND THE DRIP LINE.
- BOARDS WILL NOT BE NAILED TO TREES DURING BUILDING OPERATIONS.
- FEEDER ROOTS SHOULD NOT BE CUT IN AN AREA INSIDE THE PROTECTED ROOT ZONE (PRZ).
- DAMAGED TRUNKS OR EXPOSED ROOTS SHOULD HAVE DAMAGED BARK REMOVED IMMEDIATELY AND NO PAINT SHALL BE APPLIED. EXPOSED ROOTS SHOULD BE COVERED WITH TOPSOIL IMMEDIATELY AFTER EXCAVATION IS COMPLETED. EXPOSED ROOTS SHALL BE PRUNED TO GIVE A CLEAN, SHARP SURFACE AMENABLE TO HEALING. ROOTS EXPOSED DURING HOT WEATHER SHOULD BE IRRIGATED TO PREVENT PERMANENT TREE INJURY. CARE FOR SERIOUS INJURY SHOULD BE PRESCRIBED BY A PROFESSIONAL FORESTER OR LICENSED TREE EXPERT.
- TREE LIMB REMOVAL, WHERE NECESSARY, WILL BE DONE AS NATURAL TARGET PRUNING TO REMOVE THE DESIRED BRANCH AS CLOSE AS POSSIBLE TO THE BRANCH COLLAR. THERE SHOULD BE NO FLUSH CUTS. FLUSH CUTS DESTROY A MAJOR DEFENSE SYSTEM OF THE TREE. SEE FIGURE 9-1-1. NO TREE PAINT SHALL BE APPLIED. ALL CUTS SHALL BE MADE AT THE OUTSIDE EDGE OF THE BRANCH COLLAR (FIG. 9-1 AND 9-2). CUTS MADE TOO FAR BEYOND THE BRANCH COLLAR MAY LEAD TO EXCESS SPROUTING, CRACKS AND ROT. REMOVAL OF A "Y" GROUCH SHOULD BE CONSIDERED FOR FREE STANDING SPECIMEN TREES (SEE FIGURE 9-2) TO AVOID FUTURE SPLITTING DAMAGE.

NOTE: FOR MORE SPECIFIC DATA ON CERTAIN TREE CHARACTERISTICS BY SPECIES, SEE TABLE 9.1, TREE CHARACTERISTICS OR CONSULT WITH LICENSED PROFESSIONAL TREE EXPERT, SOIL CONSERVATION DISTRICT OR RUTGERS COOPERATIVE EXTENSION. (SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.)

Tree Protection in Fill Areas



Tree Protection in Cut Areas



Root Protection During Construction Guide

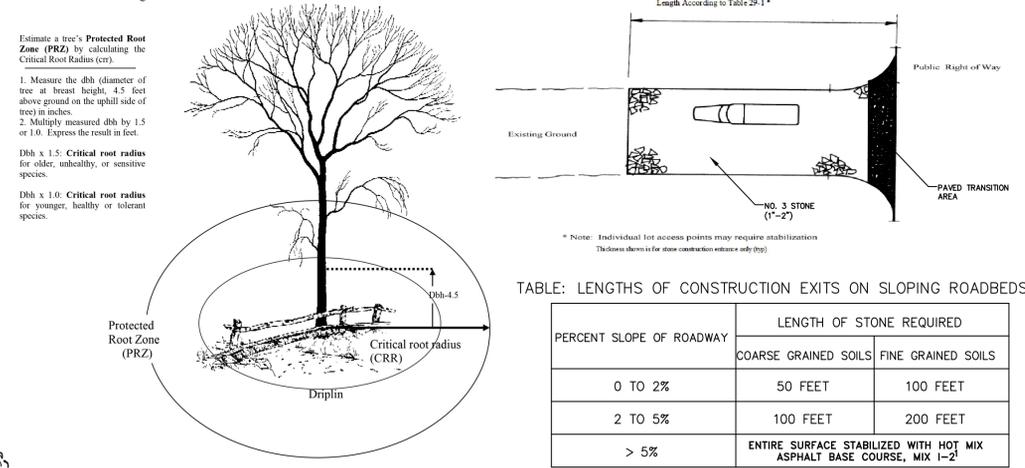


TABLE: LENGTHS OF CONSTRUCTION EXITS ON SLOPING ROADBEDS

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FEET	100 FEET
2 TO 5%	100 FEET	200 FEET
> 5%	ENTIRE SURFACE STABILIZED WITH HOT MIX ASPHALT BASE COURSE, MIX 1-2	

1. AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

ACID SOIL CONDITIONS AND MITIGATION PROCEDURES

- DEFINITION:
HIGH ACID-PRODUCING SOILS ARE SOILS WITH A PH OF 4.0 OR LESS OR CONTAIN IRON SULFIDE.
- PURPOSE:
TO PREVENT OR LIMIT EXPOSURE AREA, TIME, AND SPREADING BY EQUIPMENT OR RAINFALL ON- AND OFF-SITE AND TO MINIMIZE EROSION, SEDIMENTATION AND ACID LEACHATE-RELATED DAMAGES. HIGH ACID-PRODUCING SOIL MAY BE EXPOSED DURING EXCAVATION AND LAND GRADING ACTIVITIES, OR MAY BE INTRODUCED IN DREDGED SEDIMENT, SOILS AND SEDIMENT CONTAINING IRON SULFIDE, CHARACTERIZED BY PYRITE OR MARCASITE NUGGETS OR GREEN SANDS, ARE CHEMICALLY OXIDIZED WHEN EXPOSED TO AIR, PRODUCING SULFURIC ACID AND RESULT IN SOIL PH LEVELS FALLING TO PH 4.0 AND LOWER. MOST VEGETATION IS INCAPABLE OF GROWTH AT THIS PH LEVEL. ADJACENT LAND AND RECEIVING WATERS WILL BE NEGATIVELY IMPACTED BY THE ACID LEACHATE. CALCIUM-CONTAINING MATERIALS SUCH AS SIDEWALKS, CURBS AND OTHER STRUCTURES AND SOME METALLIC MATERIALS ARE ALSO SUSCEPTIBLE TO DEGRADATION. AGRICULTURAL LIMESTONE MATERIALS APPLIED AT RATES OF 8 TONS PER ACRE HAVE RESULTED IN ONLY A TEMPORARY BUFFERING EFFECT, AND "LIMING-ONLY" IS THEREFORE NOT CONSIDERED AN ACCEPTABLE MITIGATION PRACTICE.
- WATER QUALITY ENHANCEMENT:
PROTECTS ONSITE SOILS AND OFFSITE STREAMS AND LAKES FROM SULFURIC ACID LEACHATE THAT CREATES SOIL PH CONDITIONS UNSUITABLE FOR GROWTH OF VEGETATION.
- WHERE APPLICABLE:
THIS PRACTICE IS APPLICABLE TO ANY HIGH ACID-PRODUCING SOIL MATERIALS. SUCH MATERIALS HAVE BEEN FOUND IN THE COASTAL PLAN AREAS OF BURLINGTON, CAMDEN, CUMBERLAND, GLoucester, MERCER, MIDDLESEX, MONMOUTH, OCEAN, SALEM AND SOMERSET COUNTIES.
- PLANNING CRITERIA:
EARLY RECOGNITION AND BURIAL, REMOVAL OR DISPOSAL OF HIGH ACID-PRODUCING SOILS IS ESSENTIAL FOR LIMITING THE AMOUNT OF ACIDIC MATERIAL PRODUCED. REVIEW A SURFACE GEOLOGY MAP FOR THE PROPOSED SITE TO INVESTIGATE THE PRESENCE OF GEOLOGIC FORMATIONS WHICH COMMONLY CONTAIN HIGH ACID-PRODUCING DEPOSITS. THE GEOLOGIC FORMATIONS ARE AS FOLLOWS:
- | | |
|------------------|-----------------------------|
| MANASQUAN | RED BANK, SANDY HOOK MEMBER |
| MARSHALTOWN | SHARK RIVER |
| MERCHANTVILLE | TINTON |
| CHESEBROOK | WENONAH |
| ENGLISHTOWN SAND | WOODBURY CLAY |
| HORNERTOWN | |
| KIRKWOOD | |
| MAGDOFF | |

THE PROJECT SITE IS LOCATED WITHIN THE RARITAN FOLIATION.

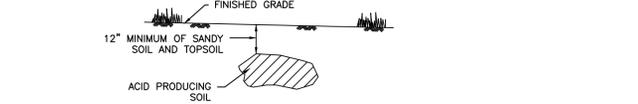
FIGURE 1-1 SHOWS AREAS WHERE THESE DEPOSITS MAY BE PRESENT. (SEE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.) CONTACT THE LOCAL SOIL CONSERVATION DISTRICT TO DETERMINE THE HISTORICAL PRESENCE OF HIGH ACID-PRODUCING SOILS IN THE VICINITY OF THE PROPOSED DEVELOPMENT SITE.

HIGH ACID-PRODUCING SOILS MAY BE PRESENT IN UNDISTURBED SOILS AT VARYING DEPTHS, INCLUDING NEAR THE SOIL SURFACE TO EXCAVATIONS OR BEEP DISTURBANCES. ITS PRESENCE ON A SITE MAY BE SIGNIFICANT OR LIMITED IN THE SOIL PROFILE. HIGH ACID PRODUCING SOILS ARE COMMONLY BLACK, DARK BROWN, GRAY OR GREENISH WITH SILVERY PYRITE OR MARCASITE NUGGETS OR FLAKES. ALTERNATIVELY, SANDY SOILS OR REDDISH, YELLOWISH OR LIGHT TO MEDIUM BROWN SOIL MATERIALS ARE USUALLY FREE OF HIGH ACID-PRODUCING DEPOSITS.

- METHODS AND MATERIALS:
1. THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID-PRODUCING SOILS ARE ENCOUNTERED.
- TOPSOIL STRIPPED FROM THE SITE SHALL BE STORED SEPARATELY FROM TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOILS.
 - 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.
 - 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 THE 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.
 - HIGH ACID-PRODUCING SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE (INCLUDING BORROW FROM CUTS OR DREDGED SEDIMENT) SHALL BE ULTIMATELY PLACED 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 5.0 OR MORE EXCEPT AS FOLLOWS:
 - AREAS WHERE TREES OR SHRUBS ARE TO BE PLANTED SHALL BE COVERED WITH A MINIMUM OF 24 INCHES OF SOIL WITH A PH OF 5.0 OR MORE.
 - DISPOSAL AREAS SHALL NOT BE LOCATED WITHIN 24 INCHES OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES, AND OTHERS, TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
 - EQUIPMENT USED FOR MOVEMENT OF HIGH ACID-PRODUCING SOILS SHALL 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.
 - 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.

APPENDIX A:

- EXPOSED SOIL HAVING A PH VALUE OF LESS THAN 4 SHALL BE TREATED IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGHLY ACID SOIL, PG. 1-1.
- EXCAVATED SOIL MATERIAL SHALL NOT BE PLACED ADJACENT TO RIVERS, STREAMS OR BODIES OF WATER IN A MANNER THAT WILL CAUSE IT TO BE WASHED AWAY BY HIGH WATER OR RUNOFF. EXCESS BORROW MATERIAL REMOVED FROM THE CONSTRUCTION SITE SHALL BE STABILIZED AT THE SITE OF PLACEMENT.

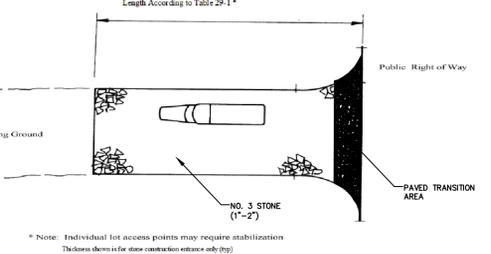
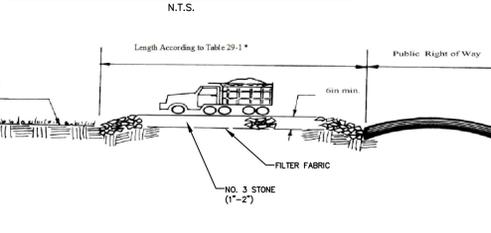


- NOTE:
1. ACID PRODUCING SOILS ARE DEFINED AS SOILS CONTAINING IRON SULFIDE MINERALS OR SOILS WITH A PH OF 4.0 OR LESS.
- IRON SULFIDE MINERALS WILL PRODUCE SULFURIC ACID WHEN EXPOSED TO THE AIR OR SURFACE WATERS.
 - SOIL USED TO COVER ACID PRODUCING SOILS SHALL HAVE A PH OF 5.0 OR MORE.

ADDITIONAL NOTES:

- AREAS ON SLOPES SHALL BE COVERED WITH 2 FEET OF SUITABLE SOIL HAVING A PH OF 5 OR MORE. THE TOP 5 INCHES (UNSETTLED) SHALL BE TOPSOIL.
- AREAS WHERE TREES/SHRUBS WILL BE PLANTED SHALL ALSO BE COVERED WITH A MINIMUM OF 2 FEET OF SUITABLE MATERIAL INCLUDING TOPSOIL TO A DEPTH OF 5 INCHES UNSETTLED.
- ACID SOIL PLACEMENT SHALL AVOID, IF POSSIBLE, PLACEMENT IN AREAS PROPOSED FOR FUTURE RESIDENTIAL LOTS.

BURIAL OF ACID PRODUCING SOILS



NOTE: SOIL SHOULD BE MOIST BUT NOT SATURATED. DO NOT TEST WHEN SOIL IS EXCESSIVELY DRY OR SUBJECT TO FREEZING TEMPERATURES. SLOW, STEADY DOWNWARD PRESSURE USED TO ADVANCE THE PROBE. MEASURE DEPTH WHEN GAGE READING REACHES 300 PSI OR DEPTH OF 6\"/>

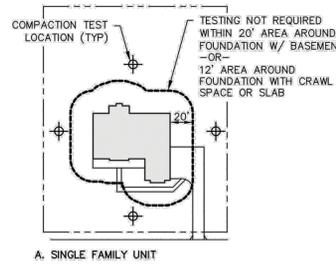
* PENETROMETER MAY BE RE-INSERTED IF/WHEN AN OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED.

USE CORRECT SIZE TIP FOR SOIL TYPE

HANDHELD SOIL PENETROMETER TEST
N.T.S.

SOIL DE-COMPACTION AND TESTING REQUIREMENTS

- SOIL COMPACTION TESTING REQUIREMENTS
 - SUBGRADE SOILS PRIOR TO THE APPLICATION OF TOPSOIL (SEE PERMANENT SEEDING AND STABILIZATION NOTES FOR TOPSOIL REQUIREMENTS) SHALL BE SUBJECT TO EXCESSIVE COMPACTION TO A DEPTH OF 18"-24" INCHES TO ENHANCE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
 - AREAS OF THE SITE WHICH ARE SUBJECT TO COMPACTION TESTING AND/OR MITIGATION ARE NOTED ON THE CERTIFIED SOIL EROSION CONTROL PLAN.
 - IN THE EVENT THAT TESTING INDICATES COMPACTION IN EXCESS OF THE MAXIMUM THRESHOLDS INDICATED FOR THE SIMPLIFIED TESTING METHODS (SEE DETAIL BELOW), THE CONTRACTOR/OWNER SHALL HAVE THE OPTION TO PERFORM EITHER (1) COMPACTION MITIGATION OVER THE ENTIRE MITIGATION AREA DENOTED ON THE PLAN (EXCLUDING EXEMPT AREAS), OR (2) PERFORM ADDITIONAL, MORE DETAILED TESTING TO ESTABLISH THE LIMITS OF EXCESSIVE COMPACTION WHEREUPON ONLY THE EXCESSIVELY COMPACTED AREAS WOULD REQUIRE COMPACTION MITIGATION. ADDITIONAL DETAILED TESTING SHALL BE PERFORMED BY A TRAINED, LICENSED PROFESSIONAL.
- COMPACTION TESTING METHODS
 - PROBING WIRE TEST (SEE DETAIL)
 - HAND-HELD PENETROMETER TEST (SEE DETAIL)
 - TUBE BULK DENSITY TEST (LICENSED PROFESSIONAL ENGINEER REQUIRED)
 - NUCLEAR DENSITY TEST (LICENSED PROFESSIONAL ENGINEER REQUIRED)
- NOTE: ADDITIONAL TESTING METHODS WHICH CONFORM TO ASTM STANDARDS AND SPECIFICATIONS, AND WHICH PRODUCE A DRY WEIGHT, SOIL BULK DENSITY MEASUREMENT MAY BE ALLOWED SUBJECT TO DISTRICT APPROVAL.
- NOTE: SOIL COMPACTION TESTING IS NOT REQUIRED IF WHEN SUBSOIL COMPACTION REMEDIATION (SCARIFICATION/TILLAGE (18"-24" MINIMUM DEPTH) OR SIMILAR IS PROPOSED AS PART OF THE SEQUENCE OF CONSTRUCTION.
- PROCEDURES FOR SOIL COMPACTION MITIGATION
 - PROCEDURES SHALL BE USED TO MITIGATE EXCESSIVE SOIL COMPACTION PRIOR TO PLACEMENT OF TOPSOIL AND ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
 - RESTORATION OF COMPACTED SOILS SHALL BE THROUGH DEEP SCARIFICATION/TILLAGE (18"-24" MINIMUM DEPTH) WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.). IN THE ALTERNATE, ANOTHER METHOD AS SPECIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER MAY BE SUBSTITUTED SUBJECT TO DISTRICT APPROVAL.



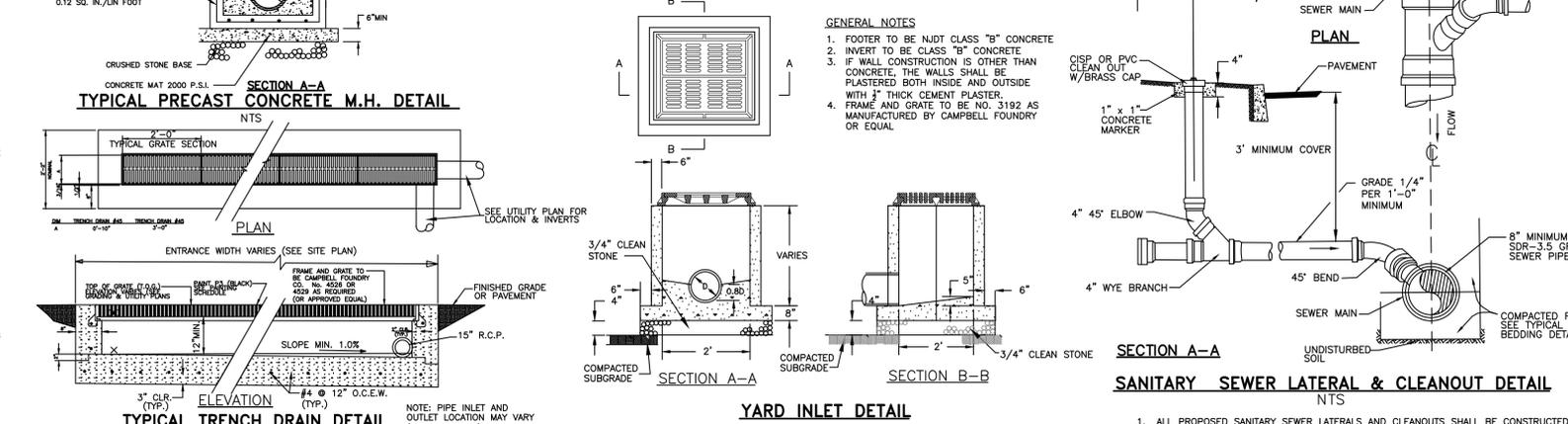
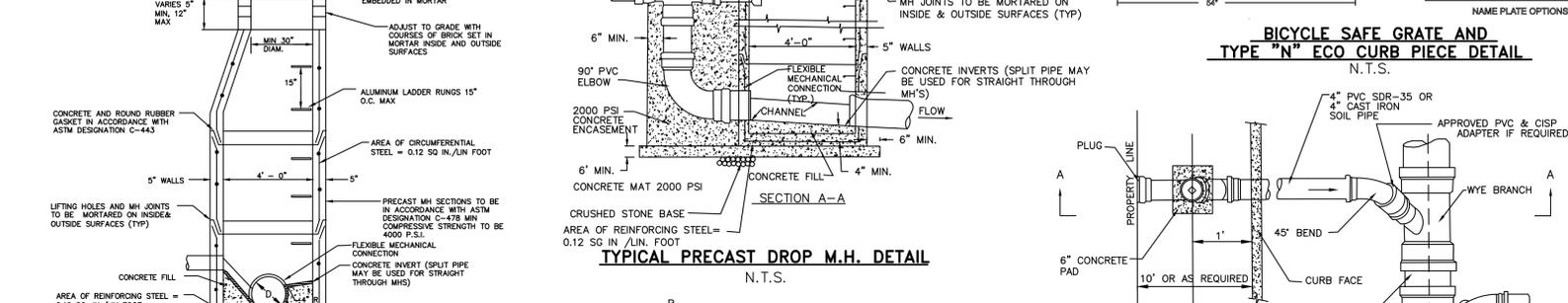
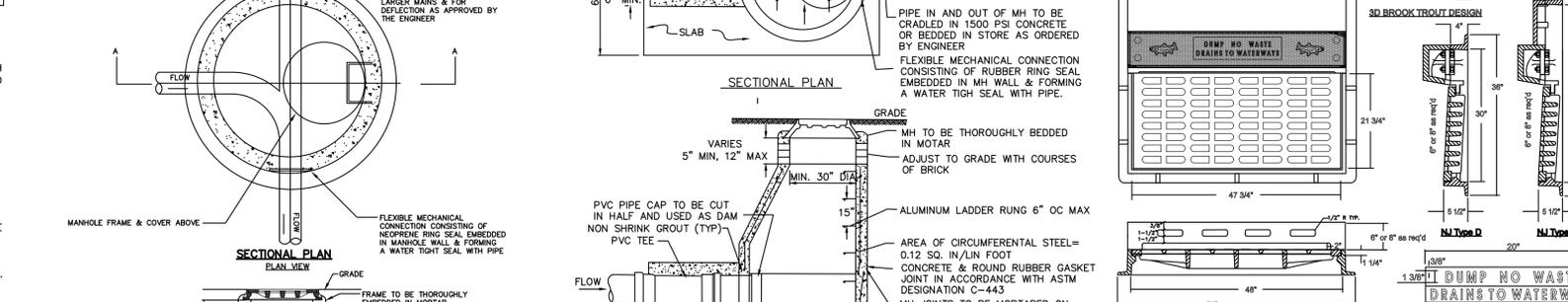
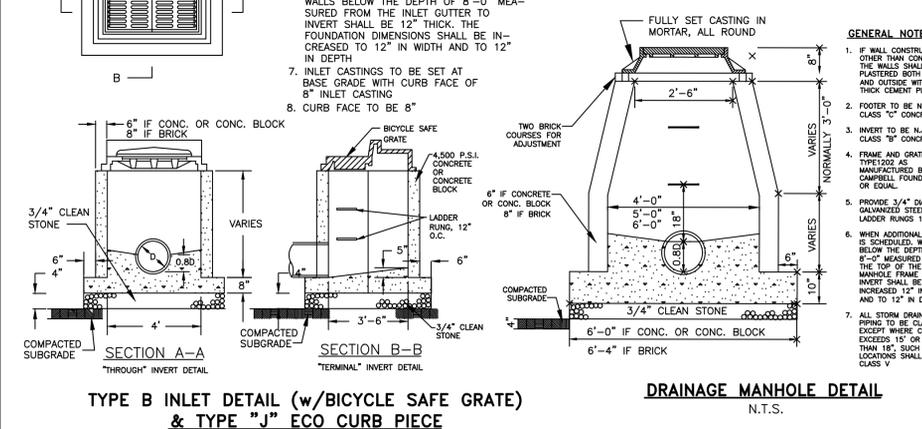
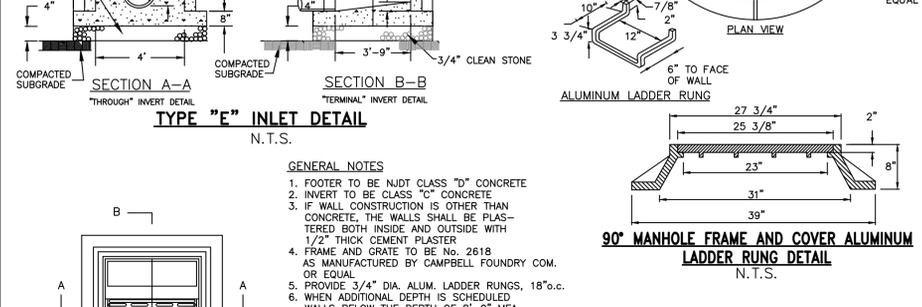
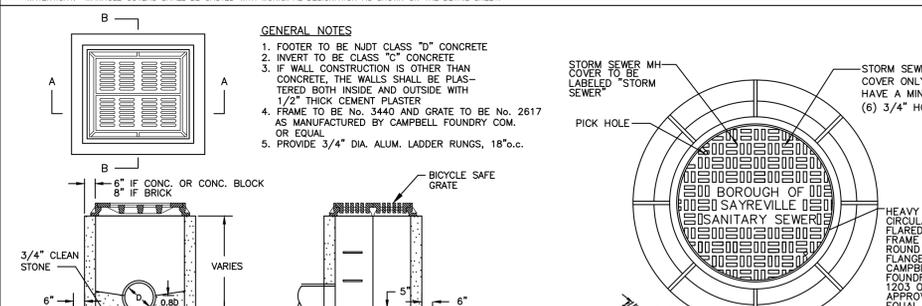
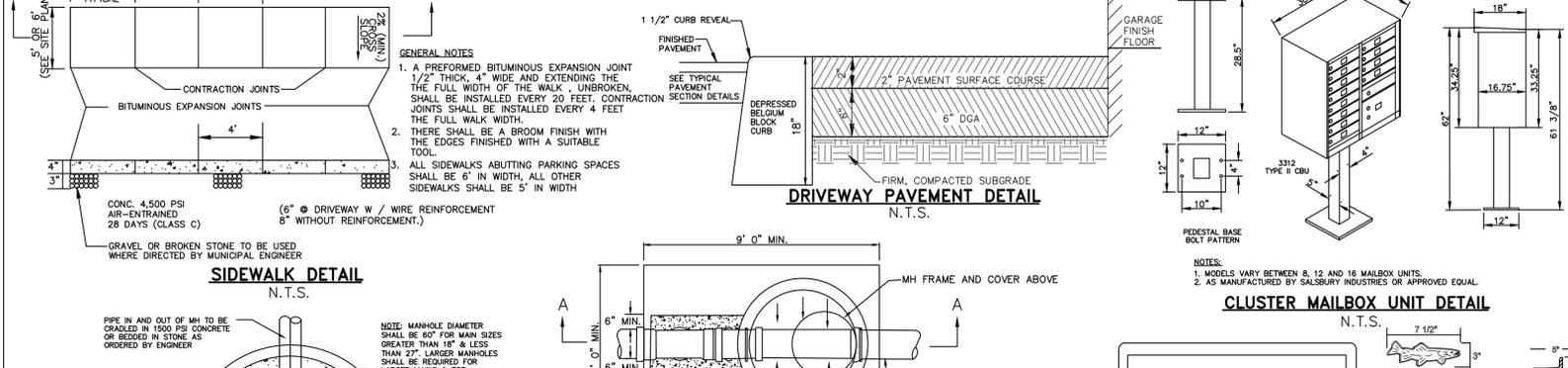
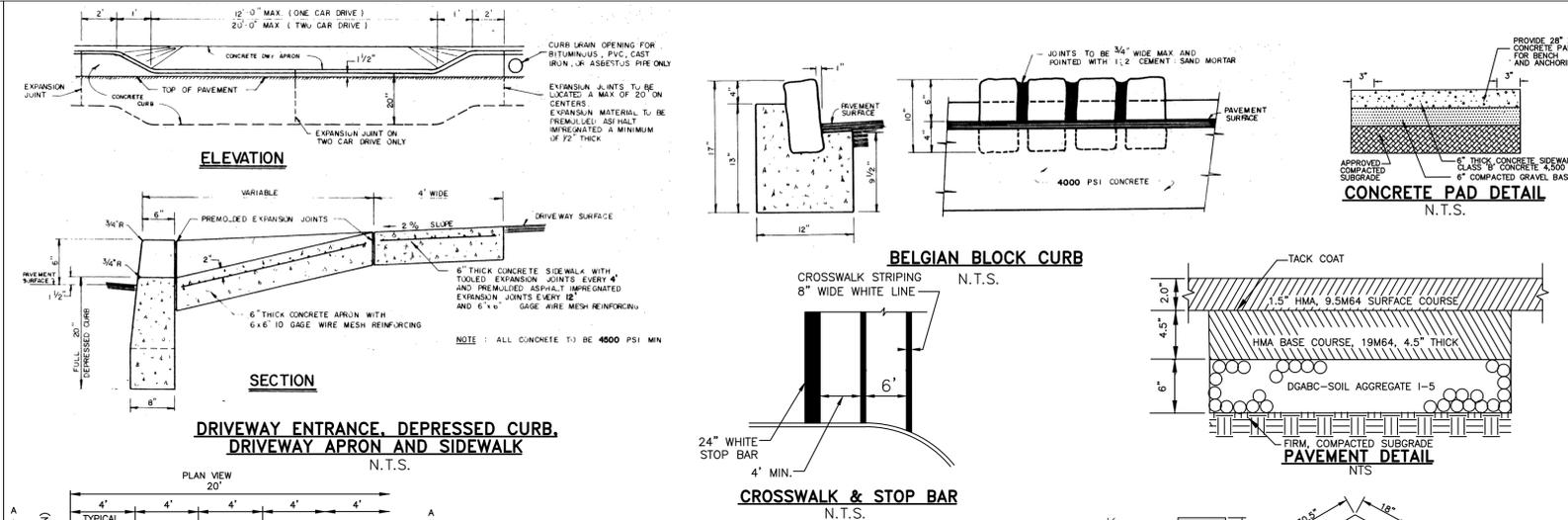
SAVERVILLE WATER STANDARDS NOTES:

- WATER CONNECTIONS SHALL BE MADE TO A STREET MAIN ONLY UNDER THE SUPERVISION AND INSPECTION OF THE MUNICIPAL ENGINEER OR WATER UTILITY SUPERINTENDENT. CONNECTION TO THE MAIN SHALL BE MADE WITH A MET THE MACHINE AND AWMA APPROVED SERVICE SADDLES, TAPPING SLEEVES, VALVES AND OTHER APPURTENANCES.
- ALL UNDERGROUND COMPONENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE INSTALLED WITH A MINIMUM COVER OF FOUR FEET OR BELOW THE MOST SEVERE FROST LINE, WHICHEVER IS GREATER.
- CEMENT LINED DUCTILE IRON PIPE AND FITTINGS SHALL MEET THE STANDARDS OF AWMA C150, AWMA C151, AWMA C110 AND AWMA C104 1/4 TEST REVISIONS. THE MINIMUM ALLOWABLE PIPE CLASS SHALL BE 52.
- ALL JOINTS FOR THE WATER MAIN, SHALL BE OF THE "PUSH-ON" JOINTS TYPE UTILIZING A NEOPRENE RUBBER GASKET WITH BRONZE CONDUCTIVITY WEDGES OR MECHANICAL JOINTS USING LEAD TIPPED GASKETS. JOINTS SHALL MEET THE STANDARDS OF AWMA C111, LATEST REVISIONS.
- VALVES SHALL MEET AWMA STANDARD C500, LATEST REVISION, FOR RESILIENT-SEATED NONDRIVING STEM GATE VALVES. ALL VALVES SHOULD OPEN COUNTER CLOCKWISE.
- VALVE BOXES, CURB BOXES, AND METER BOXES SHALL BE CONSTRUCTED OF THE FINEST QUALITY GRAY CAST IRON AND MEET ALL APPLICABLE AWMA STANDARDS.
- CORPORATION COCKS AND CURB STOPS SHALL BE CONSTRUCTED OF THE FINEST QUALITY RED BRASS AND MEET ALL APPLICABLE AWMA STANDARDS.
- ALL SERVICE LINES 3/4" THROUGH 2" SHALL BE SOFT TEMPER TYPE K MEETING STANDARD ASTM B88, LATEST REVISION. COPPER PIPING MAY BE USED TO A NOMINAL SIZE OF FOUR INCHES.
- CEMENT LINED DUCTILE IRON PIPE SHALL MEET AWMA STANDARDS C150, C151, C110, C111, AND C104, LATEST REVISIONS.
- THE SERVICE SADDLE SHALL MEET ASTM A536 AND A307, LATEST REVISIONS WHEN REQUIRED.
- THE FIRE HYDRANT SHALL BE INSTALLED IN ACCORDANCE WITH THE MUNICIPALITY'S STANDARD DETAIL, AND SHALL BE MODEL A-421 AS MANUFACTURED BY MUELLER.
- WATER METERS ON WATER SERVICES SHALL BE SUBJECT TO APPROVAL BY THE WATER UTILITY SUPERINTENDENT AND MEET THE LATEST STANDARDS OF AWMA SECTIONS C700 - C708 AND SHALL BE AS MANUFACTURED BY ROCKWELL.
- "ORDINARY BEDDING" SHALL BE UTILIZED FOR THE INSTALLATION OF MAINS EXCEPT WHERE SUBSIDIARY CONDITIONS REQUIRE SPECIAL STONE BEDDING OR CONCRETE CRADLE BEDDING, BY THE MUNICIPAL ENGINEER. ORDINARY BEDDING SHALL BE DEFINED AS THAT METHOD OF BEDDING MAINS IN WHICH THE MAIN IS BEDDED, ON APPROVED GRANULAR MATERIAL WITH "ORDINARY" CARE IN AN EARTH FOUNDATIONS SHAPED TO FIT THE LOWER PART OF THE MAIN EXTERIOR WITH REASONABLE CLOSENESS FOR A WIDTH OF AT LEAST 50 PERCENT OF THE MAIN DIAMETER, AND IN WHICH THE REMAINDER OF THE MAIN IS SURROUNDED TO A HEIGHT OF AT LEAST 0.5 FEET ABOVE ITS TOP WITH APPROVED GRANULAR MATERIAL, SHOVEL PLACED TO COMPLETELY FILL ALL SPACES UNDER AND ADJACENT TO THE MAIN, ALL UNDER THE GENERAL DIRECTION OF THE MUNICIPAL ENGINEER OR WATER UTILITY SUPERINTENDENT DURING THE COURSE OF CONSTRUCTION, IN ALL CASES THE TYPE AND AMOUNT OF GRANULAR MATERIAL SHALL BE APPROVED BY THE MUNICIPAL ENGINEER.
- "CONCRETE CRADLE BEDDING" IS THAT METHOD OF BEDDING MAINS IN WHICH THE LOWER PART OF THE MAIN EXTERIOR IS BEDDED IN 2000 POUND CONCRETE WITHOUT REINFORCEMENT, HAVING A MINIMUM THICKNESS UNDER THE PIPE OF ONE-FOURTH THE NOMINAL INTERNAL DIAMETER AND EXTENDING UPWARD TO A HEIGHT EQUAL TO ONE-HALF OF THE NOMINAL INSIDE DIAMETER AND THE SAME SHALL BE UTILIZED WHERE SO ORDERED BY THE MUNICIPAL ENGINEER.
- "CONCRETE ENCASED PIPE BEDDING" IS THAT METHOD OF BEDDING MAIN IN WHICH THE ENTIRE EXTERIOR IS ENCASED IN 2000 POUND CONCRETE OR BETTER AND SAME SHALL BE UTILIZED WHERE ORDERED BY THE MUNICIPAL ENGINEER.
- ALL WATER MAINS SHALL BE EXTENDED ALONG THE ENTIRE FRONTAGE OF THE SITE TO THE FARTHEST PROPERTY LIMIT FROM THE EXISTING MAIN.
- VALVES SHALL BE PROVIDED AT THE INTERSECTION OF EACH STREET AND SHALL BE A MINIMUM OF ONE THOUSAND (1,000) FEET APART, ACCORDINGLY, THREE (3) GATE VALVES ARE REQUIRED AT T-TYPE INTERSECTIONS. VALVES SHALL BE PROVIDED BETWEEN THE WATER MAIN AND FIRE HYDRANT, BETWEEN THE WATER MAIN AND FIRE HYDRANT, BETWEEN THE WATER MAIN AND FIRE HYDRANT, AND AT OTHER LOCATIONS RECOMMENDED BY THE MUNICIPAL ENGINEER OR WATER UTILITY SUPERINTENDENT.
- THRUST BLOCKS TO RESIST ANY MOVEMENT IN MAINS AND FITTINGS SHALL BE PLACED AT ALL VALVES, FITTINGS, REDUCERS, TEES, CROSSES, BENDS, HYDRANTS AND DEAD ENDS. ALL THRUST BLOCKS SHALL BE CAST-IN-PLACE CONCRETE, 2000 P.S.I. STRENGTH. ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE AGAINST UNDISTURBED SOIL. THE USE OF EPOXY COATED ANCHOR RODS AND FITTINGS OR MECHANICAL JOINT RETAINER GLANDS MAY BE REQUIRED AT THE DISCRETION OF THE MUNICIPAL ENGINEER OR WATER UTILITY SUPERINTENDENT.
- FIRE HYDRANTS SHALL BE LOCATED AS DIRECTED BY THE MUNICIPAL ENGINEER AND/OR FIRE SUBCODE OFFICIAL AND SHALL BE REQUIRED AT THE END OF ALL DEAD-END MAINS AND A MINIMUM OF FIVE HUNDRED (500) FEET APART AS MEASURED ALONG THE CURB LINE OF THE ROADWAY. HYDRANTS SHALL BE PROVIDED AT ALL HIGH SPOTS AS A MEANS OF AIR RELEASE AND AT LOW POINTS AS A MEANS OF BLOW OFF. FIRE HYDRANTS SHALL BE EQUIPPED WITH SIX INCH GATE VALVES AND SHALL BE CONSTRUCTED WITH THE MUNICIPALITY'S STANDARD DETAILS.

SAVERVILLE SANITARY SEWER NOTES:

- SEWER CONNECTIONS SHALL BE MADE TO A STREET MAIN ONLY UNDER THE INSPECTION OF THE MUNICIPAL ENGINEER OR SEWER UTILITY SUPERINTENDENT. CONNECTION TO THE SEWER SHALL BE MADE THROUGH AN APPROVED WYE, SADDLE OR MANHOLE-STUB. CONNECTIONS SHALL BE WATER TIGHT AND IN ACCORDANCE WITH THE MUNICIPALITY'S STANDARD DETAILS. CONNECTION TO AN EXISTING MANHOLE SHALL BE MADE WITH A CORING MACHINE WHERE A STUB OR KNOCKOUT BULKHEAD HAS NOT BEEN PROVIDED.
- CONCRETE PIPE SHALL MEET ALL REQUIREMENTS OF A.S.T.M. SPECIFICATIONS C 76 LATEST REVISIONS. ALL PIPE SHALL BE CLASS III STRENGTH EXCEPT WHERE STRONGER PIPE IS REQUIRED.
 - (A) FOR DEPTHS LESS THAN THREE FEET, MEASURED FROM THE TOP OF THE PIPE, INSTALLED UNDER TRAFFIC AREAS, CLASS IV PIPE SHALL BE REQUIRED.
 - (B) THE FOLLOWING TRENCH DEPTHS ARE MAXIMUM FOR THE PIPE CLASSES NOTED, INSTALLED WITH ORDINARY BEDDING, WHERE THE TRENCH WIDTH EQUALS THE PIPE OUTSIDE DIAMETER, PLUS 16 INCHES:

PIPE DIAMETER (IN.)	DEPTH (FT.)	PIPE CLASS
12	8.5	20.6
18	11.7	20.7
24	14.2	23.0
30	14.8	24.7
36	13.7	20.4
 - (C) USUAL CONDITIONS NOT COVERED BY PARAGRAPH (A) OR (B) ABOVE SHALL BE GIVEN SPECIAL CONSIDERATION.
- PVC PIPE SHALL MEET A.S.T.M. D3034 - SDR 35, LATEST REVISION. PVC FORCE MAIN SHALL COMPLY WITH AWMA C-900, LATEST REVISION AND PRESSURE CLASS REQUIRED BY THE MUNICIPAL ENGINEER.
- WHEN THE COVER ABOVE THE SEWER PIPE IS THREE FEET OR LESS, A HIGHER STRENGTH PIPE, DUCTILE IRON PIPE OR CONCRETE CRADLE OR ENCASEMENT SHALL BE REQUIRED.
- JOINTS FOR SEWER PIPES SHALL BE AS SPECIFIED BELOW:
 - (A) PVC PIPE: PUSH-ON RUBBER GASKET COMPLYING WITH A.S.T.M. D1869, LATEST REVISION.
 - (B) "ORDINARY BEDDING", "CONCRETE CRADLE BEDDING", AND "CONCRETE ENCASED PIPE BEDDING" SHALL BE REQUIRED AS PER THE APPROPRIATE SECTION CONTAINED IN THE WATER DISTRIBUTION REQUIREMENTS OF SAVERVILLE BOROUGH STANDARDS.
- MANHOLES SHALL BE PROVIDED AT ENDS OF SEWER LINES, AT INTERSECTIONS AND AT CHANGES OF GRADE OR ALIGNMENT. DISTANCES SHALL NOT EXCEED 400 FEET FOR SIZES 18 INCHES OR LESS, WHERE INTERNAL SEWERS ENTER MANHOLES AT ELEVATIONS 2 FEET OR MORE ABOVE THE INVERT. AN INTERNAL DROP LINE SHALL BE PROVIDED AND DROP MANHOLES SHALL BE PRECAST CONCRETE, AND COMPLY WITH A.S.T.M. C478-64T, LATEST REVISION.
- MANHOLE FRAMES AND COVERS SHALL BE OF CAST IRON CONFORMING TO SPECIFICATIONS A.S.T.M. A-48, LATEST REVISION. FRAMES SHALL WEIGH A MINIMUM OF 312 POUNDS. MANHOLES IN ROADWAYS SHALL BE CAMPBELL FOUNDRY COMPANY NO. 1203 WITH NON-PENETRATING RIGIDHOLES. MANHOLES IN EASEMENTS SHALL BE CAMPBELL FOUNDRY NO. 1487. MANHOLES IN ALL AREA SUBJECT TO FLOODING SHALL BE WATER TIGHT. MANHOLE COVERS SHALL BE CAST WITH MUNICIPAL DESIGNATIONS AS SHOWN ON THE DETAIL SHEET.



WILLIAM T. WENTZEN, P.E., P.P., C.M.E.
PROFESSIONAL ENGINEER
 NJ LICENSE NO. 27799

CERTIFICATE OF AUTHORIZATION #24G28239800

AE

436 W. COMMODORE BLVD., SUITE #2
 JACKSON, NJ 08527
 TEL: (732) 431-1440 FAX: (732) 987-5078

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	09/17/2020

DATE:	REVISIONS	DATE
09/12/2019		

DETAILS

PREPARED FOR

CAMELOT AT ERNSTON ROAD

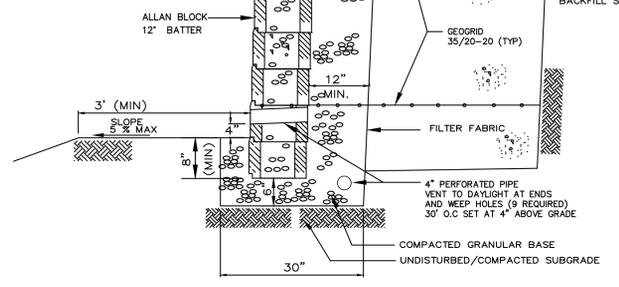
SITUATED IN

BLOCK 366.01 - LOT 1
BLOCK 347.01 - LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY

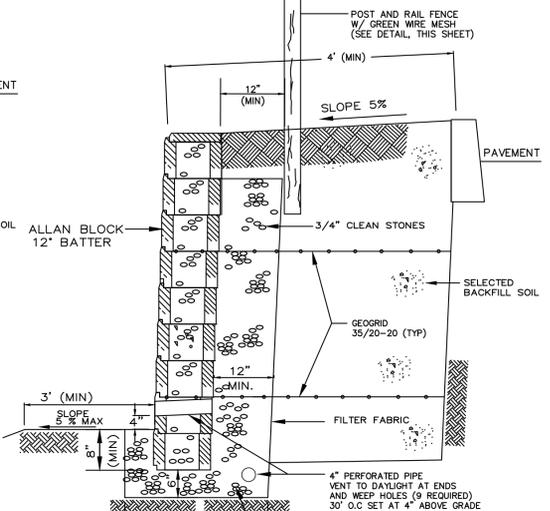
SHEET 24 OF 27

GENERAL RETAINING WALL NOTES:

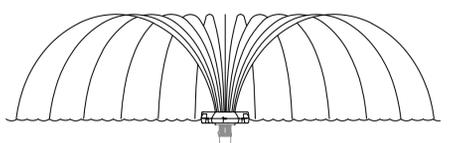
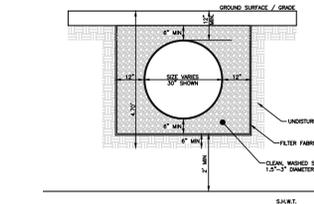
- 1) ALL RETAINING WALLS OVER 4' HIGH SHALL REQUIRE STRUCTURAL SHOP DRAWINGS AND CALCULATIONS PREPARED BY A QUALIFIED PROFESSIONAL ENGINEER PRIOR TO CONSTRUCTION. UPON COMPLETION OF INSTALLATION, THE DEVELOPER'S ENGINEER SHALL BE REQUIRED TO SUBMIT A CERTIFICATION AS TO PROPER CONSTRUCTION OF SAID RETAINING WALLS.
- 2) ALL RETAINING WALLS, WHERE SO NOTED ON THE SITE PLANS, SHALL BE PROVIDED WITH A 4' HIGH POST AND RAIL FENCE W/ GREEN WIRE MESH ON THE HIGH SIDE OF THE RETAINING WALL IN ACCORDANCE WITH B.O.C.A. REQUIREMENTS



MODULAR BLOCK RETAINING WALL DETAIL
N.T.S.



MODULAR BLOCK RETAINING WALL DETAIL W/ POST AND RAIL FENCE
N.T.S.



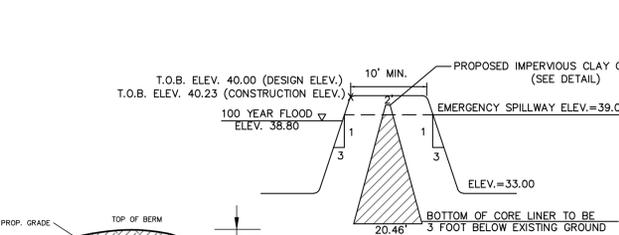
MODEL	VOLUME	FRANSE	PIPE HEIGHT	SPRAY DIAMETER	MIN. OPERATING DEPTH
100	1	1	1	4	15
150	1	1	1	4	15
200	1	1	1	4	15

SUNBURST SURFACE SPRAY AERATOR
N.T.S.

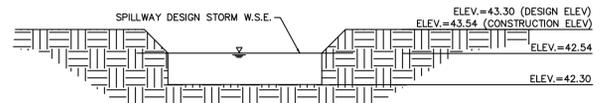
GENERAL NOTES:

1. THE RETENTION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL.
3. FILTER FABRIC AND STONE SHOULD BE KEPT CLEAN OF SOIL/SEDIMENT DURING THE INSTALLATION PROCESS. IF INSPECTION INDICATED THAT SOIL/SEDIMENT HAS ENTERED THE SUBSURFACE RETENTION SYSTEM, APPROPRIATE MEASURES SHOULD BE TAKEN (I.E. CLEANING THE SOIL/SEDIMENT FROM THE FABRIC, STONE, BED, ETC., AND/OR REPLACEMENT OF THE FABRIC AND STONE).
4. THE BOTTOM OF ALL BEDS SHALL BE UNDISTURBED OR UNCOMPACTED SUBGRADE TO THE GREATEST EXTENT POSSIBLE. EARTHWORK OPERATIONS IN THE INFILTRATION BASINS TO BE PERFORMED WITH CARE AND METHODS NECESSARY TO LIMIT COMPACTION.
5. DURING CONSTRUCTION, PRECAUTIONS SHOULD BE TAKEN TO PREVENT BOTH SUBGRADE SOIL COMPACTION AND SEDIMENT CONTAMINATION. EXHAUSTION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE SUBSURFACE RETENTION SYSTEM, WHERE APPLICABLE, OTHERWISE LIGHT WEIGHT, RUBBER Tired EQUIPMENT SHALL BE USED. CONSTRUCTION SHALL FOLLOW MEASURES AS STATED IN THE NEW JERSEY B.M.P. MANUAL CHAPTER 8.5.
6. STONE BED TO BE WRAPPED IN HIGH PERMITIVITY NON-WOVEN GEOTEXTILE FILTER FABRIC AND SHOULD BE MACOFERRI MACTEX M2725, OR ITS EQUIVALENT.

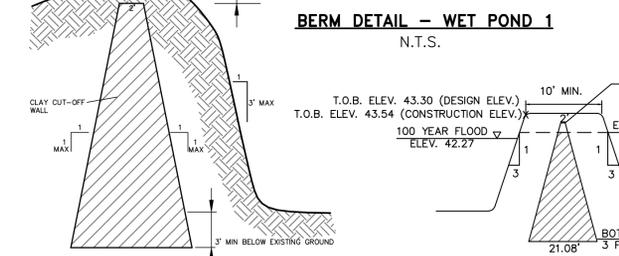
UNDERGROUND STORAGE SYSTEM
N.T.S.



EMERGENCY SPILLWAY CROSS SECTION - WET POND 1
N.T.S.



EMERGENCY SPILLWAY CROSS SECTION - WET POND 2
N.T.S.



BERM DETAIL - WET POND 1
N.T.S.



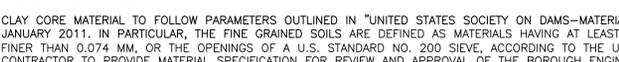
BERM DETAIL - WET POND 2
N.T.S.

BASIN EMBANKMENT NOTES:

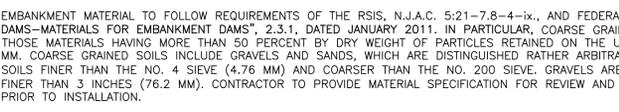
1. CLAY CORE MATERIAL TO FOLLOW PARAMETERS OUTLINED IN "UNITED STATES SOCIETY ON DAMS-MATERIALS FOR EMBANKMENT DAMS", 2.2.1, DATED JANUARY 2011. IN PARTICULAR, THE FINE GRAINED SOILS ARE DEFINED AS MATERIALS HAVING AT LEAST 50 PERCENT BY WEIGHT OF PARTICLES FINER THAN 0.074 MM, OR THE OPENINGS OF A U.S. STANDARD NO. 200 SIEVE, ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). CONTRACTOR TO PROVIDE MATERIAL SPECIFICATION FOR REVIEW AND APPROVAL OF THE BOROUGH ENGINEER PRIOR TO INSTALLATION.
2. EMBANKMENT MATERIAL TO FOLLOW REQUIREMENTS OF THE RSIS, N.J.A.C. 5:21-7.8-4-ix., AND FEDERAL DOCUMENT "UNITED STATES SOCIETY ON DAMS-MATERIALS FOR EMBANKMENT DAMS", 2.3.1, DATED JANUARY 2011. IN PARTICULAR, COARSE GRAINED SOILS ARE DEFINED BY THE USCS AS THOSE MATERIALS HAVING MORE THAN 50 PERCENT BY DRY WEIGHT OF PARTICLES RETAINED ON THE U.S. STANDARD NO. 200 SIEVE, OR 0.074 MM. COARSE GRAINED SOILS INCLUDE GRAVELS AND SANDS, WHICH ARE DISTINGUISHED RATHER ARBITRARILY BY SIZE. SANDS ARE DEFINED AS SOILS FINER THAN THE NO. 4 SIEVE (4.76 MM) AND COARSER THAN THE NO. 200 SIEVE. GRAVELS ARE COARSER THAN THE NO. 4 SIEVE AND FINER THAN 3 INCHES (76.2 MM). CONTRACTOR TO PROVIDE MATERIAL SPECIFICATION FOR REVIEW AND APPROVAL OF THE BOROUGH ENGINEER PRIOR TO INSTALLATION.



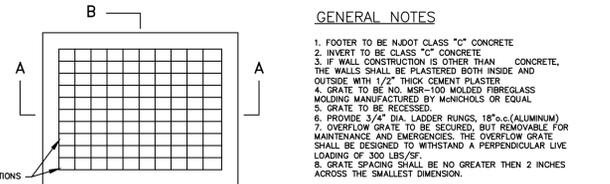
CLAY CUT-OFF WALL DETAIL
N.T.S.



CLAY CUT-OFF WALL DETAIL
N.T.S.

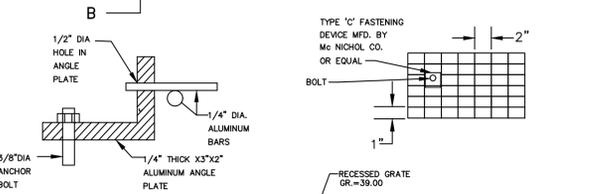


CLAY CUT-OFF WALL DETAIL
N.T.S.

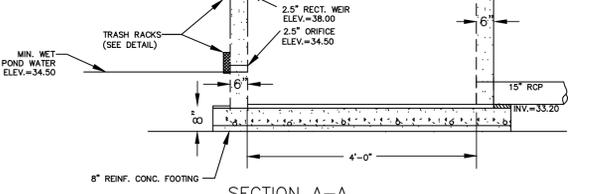


GENERAL NOTES

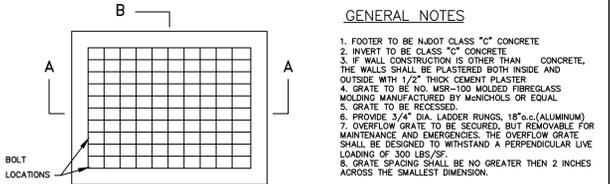
1. FOOTER TO BE N.DOT CLASS "C" CONCRETE
2. INVERT TO BE CLASS "C" CONCRETE
3. IF WALL CONSTRUCTION IS OTHER THAN CONCRETE, THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER
4. GRATE TO BE NO. MS#-100 MALLED FIBREGLASS MOLDING MANUFACTURED BY MONICHOOLS OR EQUAL
5. GRATE TO BE RECESSED
6. PROVIDE 3/4" DIA. LADDER RUNGS, 18" O.C. (ALUMINUM)
7. OVERFLOW GRATE TO BE SECURED, BUT REMOVABLE FOR MAINTENANCE AND EMERGENCIES. THE OVERFLOW GRATE SHALL BE DESIGNED TO WITHSTAND A PERPENDICULAR LIVE LOADING OF 300 LBS/SF.
8. GRATE SPACING SHALL BE NO GREATER THEN 2 INCHES ACROSS THE SMALLEST DIMENSION.



NOTE
1. OUTLET STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH ASTM STANDARDS. SHOP DRAWING SHALL BE SUBMITTED TO TOWNSHIP ENGINEER PRIOR TO CONSTRUCTION.

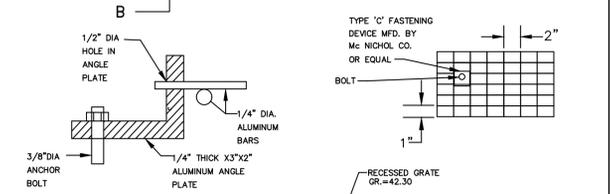


OUTLET STRUCTURE DETAIL / WET POND #1

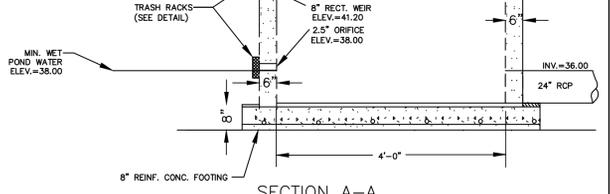


GENERAL NOTES

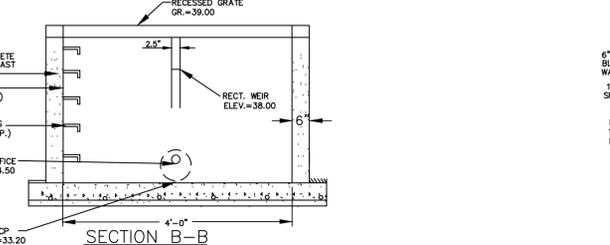
1. FOOTER TO BE N.DOT CLASS "C" CONCRETE
2. INVERT TO BE CLASS "C" CONCRETE
3. IF WALL CONSTRUCTION IS OTHER THAN CONCRETE, THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER
4. GRATE TO BE NO. MS#-100 MALLED FIBREGLASS MOLDING MANUFACTURED BY MONICHOOLS OR EQUAL
5. GRATE TO BE RECESSED
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8. GRATE SPACING SHALL BE NO GREATER THEN 2 INCHES ACROSS THE SMALLEST DIMENSION.



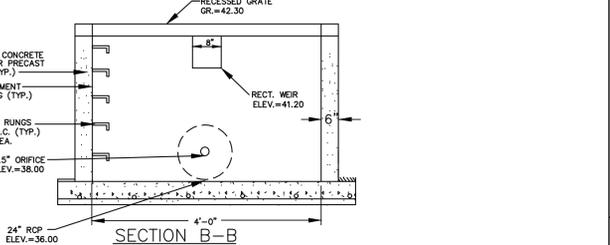
NOTE
1. OUTLET STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH ASTM STANDARDS. SHOP DRAWING SHALL BE SUBMITTED TO TOWNSHIP ENGINEER PRIOR TO CONSTRUCTION.



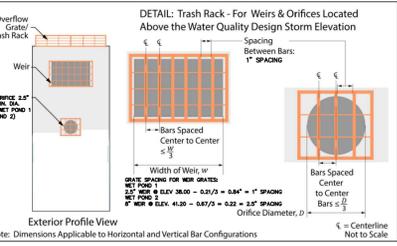
OUTLET STRUCTURE DETAIL / WET POND #2



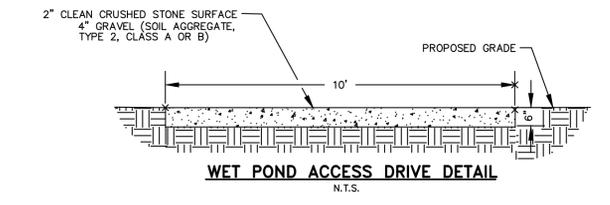
WET POND ACCESS DRIVE DETAIL
N.T.S.



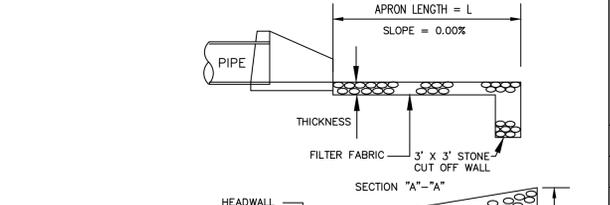
WET POND ACCESS DRIVE DETAIL
N.T.S.



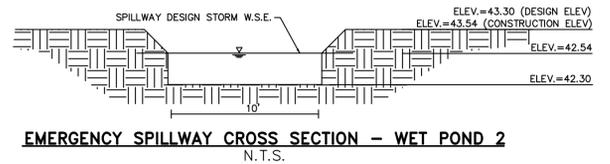
TRASH RACK DETAIL
N.T.S.



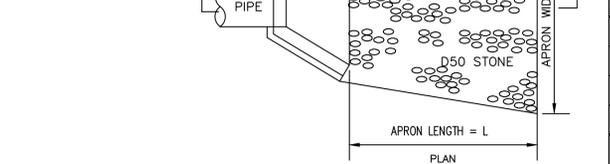
WET POND #1 DETAIL
N.T.S.



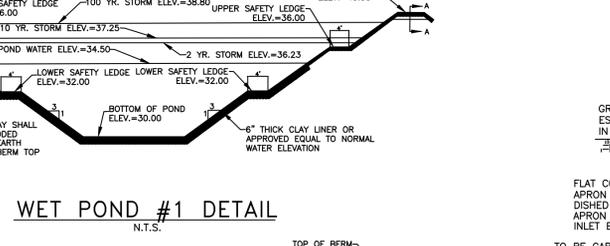
WET POND #2 DETAIL
N.T.S.



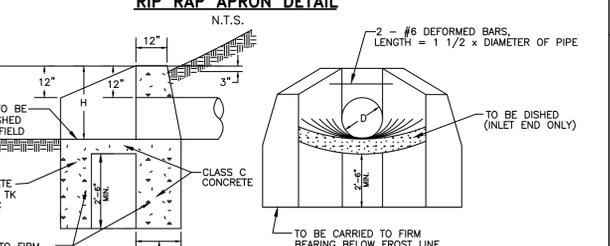
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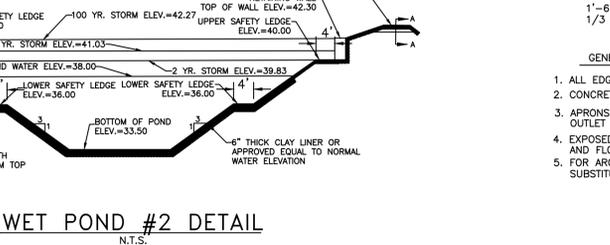
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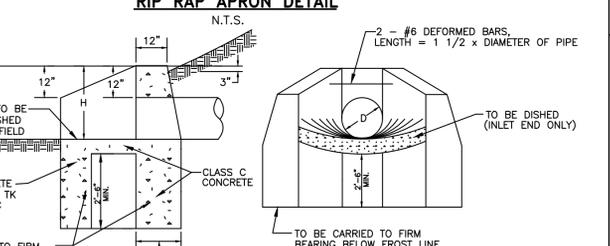
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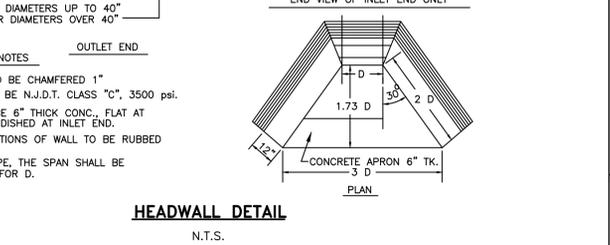
WET POND #2 DETAIL
N.T.S.



WET POND #2 DETAIL
N.T.S.



RIP RAP APRON DETAIL
N.T.S.



HEADWALL DETAIL
N.T.S.

WILLIAM T. WENTZEN, P.E., P.P., C.M.E.
PROFESSIONAL ENGINEER
NJ LICENSE NO. 27799

CERTIFICATE OF AUTHORIZATION #246A28239800

436 W. COMMODORE BLVD., SUITE #2
JACKSON, NJ 08527
TEL: (732) 431-1440 FAX: (732) 987-5078

ENGINEERING
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REVISIONS	DATE
REVISED PER TOWNSHIP ENGINEERS REVIEW COMMENTS	09/17/2020
DATE: 09/12/2019	RMP
SCALE: VARIES	SK
AE FILE NAME: DETAILS	WTW
AE FILE NUMBER: 117	REL

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DETAILS

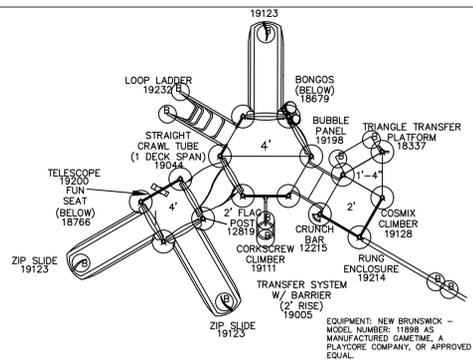
PREPARED FOR

CAMELOT AT ERNSTON ROAD

SITUATED IN

BLOCK 366.01 - LOT 1
BLOCK 347.01 - LOT 3.01
BOROUGH OF SAYREVILLE
MIDDLESEX COUNTY
NEW JERSEY

SHEET **25** OF **27**



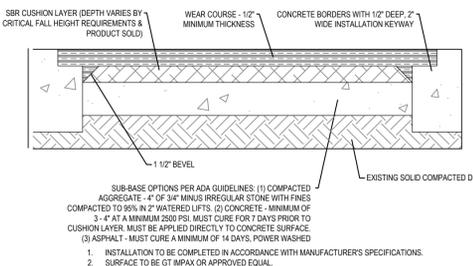
PLAYGROUND EQUIPMENT - TOT LOT
N.T.S.



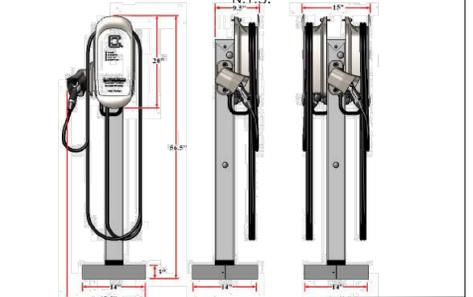
PLAYGROUND EQUIPMENT - STALLION SPRING RIDER



PLAYGROUND EQUIPMENT - MINIATURE WHIRL



PLAYGROUND SURFACING



CAR CHARGING STATION



BENCH DETAIL

IN-GROUND POST BARBECUE

INSTALLATION AND OPERATING INSTRUCTIONS



OUTDOOR BBQ DETAIL

CURB RAMP TYPE 1				CURB RAMP TYPE 2				CURB RAMP TYPE 3				CURB RAMP TYPE 4			
INCHES	FEET	INCHES	FEET	INCHES	FEET	INCHES	FEET	INCHES	FEET	INCHES	FEET	INCHES	FEET	INCHES	FEET
2.5	0.21	3	0.25	4	0.33	5	0.42	6	0.50	7	0.58	8	0.67	9	0.75
3	0.25	4	0.33	5	0.42	6	0.50	7	0.58	8	0.67	9	0.75	10	0.83
4	0.33	5	0.42	6	0.50	7	0.58	8	0.67	9	0.75	10	0.83	11	0.92
5	0.42	6	0.50	7	0.58	8	0.67	9	0.75	10	0.83	11	0.92	12	1.00
6	0.50	7	0.58	8	0.67	9	0.75	10	0.83	11	0.92	12	1.00	13	1.08
7	0.58	8	0.67	9	0.75	10	0.83	11	0.92	12	1.00	13	1.08	14	1.17
8	0.67	9	0.75	10	0.83	11	0.92	12	1.00	13	1.08	14	1.17	15	1.25
9	0.75	10	0.83	11	0.92	12	1.00	13	1.08	14	1.17	15	1.25	16	1.33
10	0.83	11	0.92	12	1.00	13	1.08	14	1.17	15	1.25	16	1.33	17	1.42
11	0.92	12	1.00	13	1.08	14	1.17	15	1.25	16	1.33	17	1.42	18	1.50
12	1.00	13	1.08	14	1.17	15	1.25	16	1.33	17	1.42	18	1.50	19	1.58
13	1.08	14	1.17	15	1.25	16	1.33	17	1.42	18	1.50	19	1.58	20	1.67
14	1.17	15	1.25	16	1.33	17	1.42	18	1.50	19	1.58	20	1.67	21	1.75
15	1.25	16	1.33	17	1.42	18	1.50	19	1.58	20	1.67	21	1.75	22	1.83
16	1.33	17	1.42	18	1.50	19	1.58	20	1.67	21	1.75	22	1.83	23	1.92
17	1.42	18	1.50	19	1.58	20	1.67	21	1.75	22	1.83	23	1.92	24	2.00
18	1.50	19	1.58	20	1.67	21	1.75	22	1.83	23	1.92	24	2.00	25	2.08
19	1.58	20	1.67	21	1.75	22	1.83	23	1.92	24	2.00	25	2.08	26	2.17
20	1.67	21	1.75	22	1.83	23	1.92	24	2.00	25	2.08	26	2.17	27	2.25
21	1.75	22	1.83	23	1.92	24	2.00	25	2.08	26	2.17	27	2.25	28	2.33
22	1.83	23	1.92	24	2.00	25	2.08	26	2.17	27	2.25	28	2.33	29	2.42
23	1.92	24	2.00	25	2.08	26	2.17	27	2.25	28	2.33	29	2.42	30	2.50
24	2.00	25	2.08	26	2.17	27	2.25	28	2.33	29	2.42	30	2.50	31	2.58
25	2.08	26	2.17	27	2.25	28	2.33	29	2.42	30	2.50	31	2.58	32	2.67
26	2.17	27	2.25	28	2.33	29	2.42	30	2.50	31	2.58	32	2.67	33	2.75
27	2.25	28	2.33	29	2.42	30	2.50	31	2.58	32	2.67	33	2.75	34	2.83
28	2.33	29	2.42	30	2.50	31	2.58	32	2.67	33	2.75	34	2.83	35	2.92
29	2.42	30	2.50	31	2.58	32	2.67	33	2.75	34	2.83	35	2.92	36	3.00
30	2.50	31	2.58	32	2.67	33	2.75	34	2.83	35	2.92	36	3.00	37	3.08
31	2.58	32	2.67	33	2.75	34	2.83	35	2.92	36	3.00	37	3.08	38	3.17
32	2.67	33	2.75	34	2.83	35	2.92	36	3.00	37	3.08	38	3.17	39	3.25
33	2.75	34	2.83	35	2.92	36	3.00	37	3.08	38	3.17	39	3.25	40	3.33
34	2.83	35	2.92	36	3.00	37	3.08	38	3.17	39	3.25	40	3.33	41	3.42
35	2.92	36	3.00	37	3.08	38	3.17	39	3.25	40	3.33	41	3.42	42	3.50
36	3.00	37	3.08	38	3.17	39	3.25	40	3.33	41	3.42	42	3.50	43	3.58
37	3.08	38	3.17	39	3.25	40	3.33	41	3.42	42	3.50	43	3.58	44	3.67
38	3.17	39	3.25	40	3.33	41	3.42	42	3.50	43	3.58	44	3.67	45	3.75
39	3.25	40	3.33	41	3.42	42	3.50	43	3.58	44	3.67	45	3.75	46	3.83
40	3.33	41	3.42	42	3.50	43	3.58	44	3.67	45	3.75	46	3.83	47	3.92
41	3.42	42	3.50	43	3.58	44	3.67	45	3.75	46	3.83	47	3.92	48	4.00
42	3.50	43	3.58	44	3.67	45	3.75	46	3.83	47	3.92	48	4.00	49	4.08
43	3.58	44	3.67	45	3.75	46	3.83	47	3.92	48	4.00	49	4.08	50	4.17
44	3.67	45	3.75	46	3.83	47	3.92	48	4.00	49	4.08	50	4.17	51	4.25
45	3.75	46	3.83	47	3.92	48	4.00	49	4.08	50	4.17	51	4.25	52	4.33
46	3.83	47	3.92	48	4.00	49	4.08	50	4.17	51	4.25	52	4.33	53	4.42
47	3.92	48	4.00	49	4.08	50	4.17	51	4.25	52	4.33	53	4.42	54	4.50
48	4.00	49	4.08	50	4.17	51	4.25	52	4.33	53	4.42	54	4.50	55	4.58
49	4.08	50	4.17	51	4.25	52	4.33	53	4.42	54	4.50	55	4.58	56	4.67
50	4.17	51	4.25	52	4.33	53	4.42	54	4.50	55	4.58	56	4.67	57	4.75
51	4.25	52	4.33	53	4.42	54	4.50	55	4.58	56	4.67	57	4.75	58	4.83
52	4.33	53	4.42	54	4.50	55	4.58	56	4.67	57	4.75	58	4.83	59	4.92
53	4.42	54	4.50	55	4.58	56	4.67	57	4.75	58	4.83	59	4.92	60	5.00
54	4.50	55	4.58	56	4.67	57	4.75	58	4.83	59	4.92	60	5.00	61	5.08
55	4.58	56	4.67	57	4.75	58	4.83	59	4.92	60	5.00	61	5.08	62	5.17
56	4.67	57	4.75	58	4.83	59	4.92	60	5.00	61	5.08	62	5.17	63	5.25
57	4.75	58	4.83	59	4.92	60	5.00	61	5.08	62	5.17	63	5.25	64	5.33
58	4.83	59	4.92	60	5.00	61	5.08	62	5.17	63	5.25	64	5.33	65	5.42
59	4.92	60	5.00	61	5.08	62	5.17	63	5.25	64	5.33	65	5.42	66	5.50
60	5.00	61	5.08	62	5.17	63	5.25	64	5.33	65	5.42	66	5.50	67	5.58
61	5.08	62	5.17	63	5.25	64	5.33	65	5.42	66	5.50	67	5.58	68	5.67
62	5.17	63	5.25	64	5.33	65	5.42	66	5.50	67	5.58	68	5.67	69	5.75
63	5.25	64	5.33	65	5.42	66	5.50	67	5.58	68	5.67	69	5.75	70	5.83
64	5.33	65	5.42	66	5.50	67	5.58	68	5.67	69	5.75	70	5.83	71	5.92
65	5.42	66	5.50	67	5.58	68	5.67	69	5.75	70	5.83	71	5.92	72	6.00
66	5.50	67	5.58	68	5.67	69	5.75	70	5.83	71	5.92	72	6.00	73	6.08
67	5.58	68	5.67	69	5.75	70	5.83	71	5.92	72	6.00	73	6.08	74	6.17
68	5.67	69	5.75	70	5.83	71	5.92	72	6.00	73	6.08	74	6.17	75	6.25
69	5.75	68	5.83	71	5.92	72	6.00	73	6.08	74	6.17	75	6.25	76	6.33
70	5.83	71	5.92	72	6.00	73	6.08	74	6.17	75	6.25	76	6.33	77	6.42
71	5.92	72	6.00	73	6.08	74	6.17	75	6.25	76	6.33	77	6.42	78	6.50
72	6.00	73	6.08	74	6.17	75	6.25	76	6.33	77	6.42	78	6.50	79	6.58
73	6.08	74	6.17	75	6.25	76	6.33	77	6.42	78	6.50	79	6.58	80	6.67
74	6.17	75	6.25	76	6.33	77	6.42	78	6.50	79	6.58	80	6.67	81	6.75
75	6.25	76	6.33	77	6.42	78	6.50	79	6.58	80	6.67	81	6.75	82	6.83
76	6.33	77	6.42	78	6.50	79	6.58	80	6.67	81	6.75	82	6.83	83	6.92
77	6.42	78													