GB ENGINEERING, LLC
Engineering ▪ Surveying

144 Jewell Street ▪ Garfield, NJ 07026 Tel: 973-340-0948 ▪ Fax: 973-340-0015

DRAINAGE CALCULATIONS

FOR

1 BARRY PLACE
PROP. LOT 20.01 in BLOCK 219
BOROUGH OF BERGENFIELD
BERGEN COUNTY
NEW JERSEY
2019/1215

Prepared for:

STEVEN PORADA

September 23,2021

THOMAS G. STEARNS III
N. J. PROFESSIONAL ENGINEER & SURVEYOR
N. J. LICENSE NO. GB40959

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Present Existing Site:

Area in Question consists of Proposed Lot 20.01
Area = 6600 sf = 0.152 Acres
tc = 6 min.

2	year storm,	i = 5.2 "/hr;	Use Rational Method
10	year storm,	i = 6.7 "/hr;	"
100	year storm,	i = 9.1 "/hr;	"

EXISTING COEFFICIENT FROM PRESET SITE:

	Area(SF)	%	Ce	Partial Ce
P/O Dwelling	1701	25.8	0.95	0.245
Porch w/stairs	109	1.7	0.95	0.016
Concrete walk	143	2.2	0.95	0.021
Macadam	175	2.7	1.95	0.052
Landscape	4472	67.8	0.3	0.203
	6,600	**100%**		**0.536**

RUNOFF FROM EXISTING SITE:

$Q_{e2} = CiA =$ 0.536 x 5.2 x 0.152 = 0.422 cfs 50% = 0.211 cfs

$V_{e2} =$ 0.211 x 1/2 x 18.00 x 60 = 114 allowable volume

$Q_{e10} = CiA =$ 0.536 x 6.7 x 0.152 = 0.544 cfs 75% = 0.408 cfs

$V_{e10} =$ 0.408 x 1/2 x 18.00 x 60 = 220 allowable volume

$Q_{e100} = CiA =$ 0.536 x 9.1 x 0.152 = 0.739 cfs 80% = 0.591 cfs

V = 0.591 x 1/2 x 18.00 x 60 = 319 allowable volume

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Proposed Developed Site:

Area in Question consists of Proposed Lot 20.01
Area = 6600 sf = 0.152 Acres
tc = 6 min.

2	year storm,	i = 5.2 "/hr;	Use Rational Method
10	year storm,	i = 6.7 "/hr;	"
100	year storm,	i = 9.1 "/hr;	"

RUNOFF COEFFICIENT FROM PROPOSED SITE:

	Area(SF)	%	Ce	Partial Ce
Dwelling	1743	26.4	0.95	0.251
Front porch	24	0.4	0.95	0.003
Driveway - macadam	450	6.8	0.95	0.065
Front walk-pavers	45	0.7	0.95	0.006
Conc. Feat.	42	0.6	0.95	0.006
Landscape	4296	65.1	0.3	0.195
	6600	**100%**		**0.527**

RUNOFF FROM PROPOSED SITE:

Q_{p2} = 0.527 x 5.2 x 0.152 = 0.415 cfs

V_{p2} = 0.415 x 1/2 x 18.00 x 60 = 224 cf

Q_{p10} = 0.527 x 6.7 x 0.152 = 0.535 cfs

V_{p10} = 0.535 x 1/2 x 18.00 x 60 = 289 cf

Q_{p100} = 0.527 x 9.1 x 0.152 = 0.726 cfs

V_{p100} = 0.726 x 1/2 x 18.00 x 60 = 392 cf

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Storage Required for Proposed Increase in Runoff Volume: (as per Residential Site Improvement)

2 yr storm	224	cf	-	114	=	**110**	cf
10 yr storm	289	cf	-	220	=	68	cf
100 yr storm	392	cf	-	319	=	73	cf

Storage Required for Roof Runoff:

10 yr storm used 60 min. storm duration I = 2.0"/hr

Roof Area - 1743 sf. Front porch 24 cf.

Designated Area $1767 \times \frac{2.0}{12} \times 0.95 \times \frac{60}{60} = \mathbf{280}$ cf.

Note: 110 cf (req. for 2 yr storm) < 280 cf

Use 280 cf as design volume

SEEPAGE PIT STORAGE CALCULATIONS FOR ROOF RUNOFF

Pre-cast 6 ft inner diameter concrete seepage pit → 6 ft deep
(6.5 ft outer diameter)

Provide stone with filter fabric around pit → 2.0 ft thick

40% stone void ratio used.
* No base stone area considered as storage due to sedimentation.

Pit Volume: 6 ft deep 2.0 ft thick stone

V = (3.14 x 6 x 6 x 6 / 4) +

(3.14 x (110 - 42) x 0.4 x 6 / 4 = **298 CF**

Provided Storage for Dwelling 298 CF > 280 CF Required

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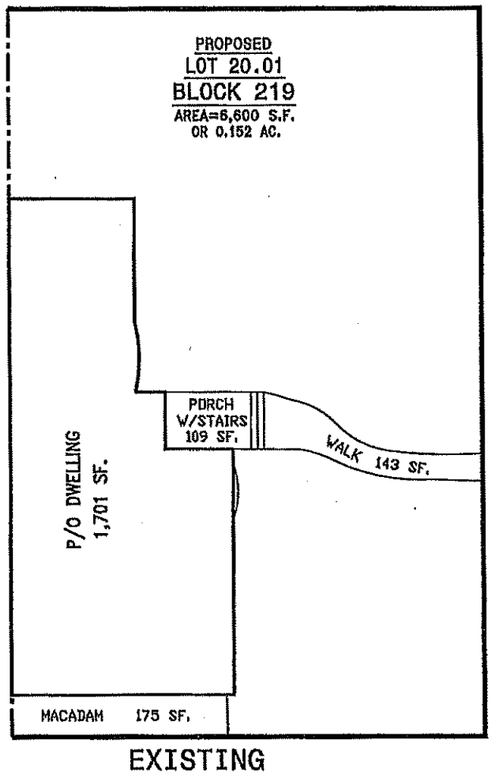

EXISTING

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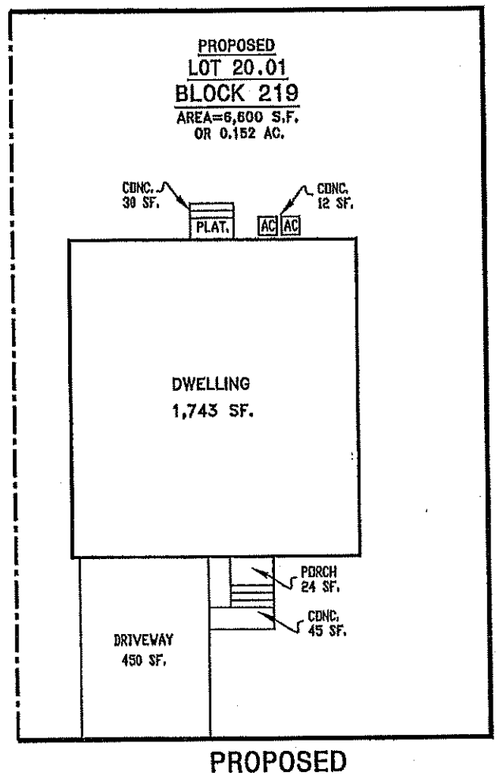

PROPOSED

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DRAINAGE CALCULATIONS

FOR

7 BARRY PLACE
PROP. LOT 20.02 in BLOCK 219
BOROUGH OF BERGENFIELD
BERGEN COUNTY
NEW JERSEY
2019/1215

Prepared for:

STEVEN PORADA

September 23, 2021

THOMAS G. STEARNS III
N. J. PROFESSIONAL ENGINEER & SURVEYOR
N. J. LICENSE NO. GB40959

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Present Existing Site:

Area in Question consists of Proposed Lot 20.02
Area = 5900 sf = 0.135 Acres
tc = 6 min.

2	year storm,	i = 5.2 "/hr;	Use Rational Method
10	year storm,	i = 6.7 "/hr;	"
100	year storm,	i = 9.1 "/hr;	"

EXISTING COEFFICIENT FROM PRESET SITE:

	Area(SF)	%	Ce	Partial Ce
P/O Dwelling	492	8.3	0.95	0.079
Plat./Steps	32	0.5	0.95	0.005
Wood Deck	278	4.7	0.95	0.045
In-ground pool	713	12.1	0.95	0.115
Concrete feat.	1196	20.3	0.95	0.193
Macadam	64	1.1	0.95	0.010
Pool Equip.	90	1.5	0.95	0.014
Landscape	3035	51.4	0.3	0.154
	5,900	**100%**		**0.616**

RUNOFF FROM EXISTING SITE:

$Q_{e2} = CiA =$ 0.616 x 5.2 x 0.135 = 0.434 cfs 50% = 0.217 cfs

$V_{e2} =$ 0.217 x 1/2 x 18.00 x 60 = 117 allowable volume

$Q_{e10} = CiA =$ 0.616 x 6.7 x 0.135 = 0.559 cfs 75% = 0.419 cfs

$V_{e10} =$ 0.419 x 1/2 x 18.00 x 60 = 226 allowable volume

$Q_{e100} = CiA =$ 0.616 x 9.1 x 0.135 = 0.759 cfs 80% = 0.607 cfs

$V =$ 0.607 x 1/2 x 18.00 x 60 = 328 allowable volume

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Proposed Developed Site:

Area in Question consists of Proposed Lot 20.02
Area = 5900 sf = 0.135 Acres
tc = 6 min.

2	year storm,	i = 5.2 "/hr;	Use Rational Method
10	year storm,	i = 6.7 "/hr;	"
100	year storm,	i = 9.1 "/hr;	"

RUNOFF COEFFICIENT FROM PROPOSED SITE:

	Area(SF)	%	Ce	Partial Ce
Dwelling	1743	29.5	0.95	0.281
Front porch	24	0.4	0.95	0.004
Driveway-macadam	460	7.8	0.95	0.074
Front Walk-pavers	45	0.8	0.95	0.007
Conc. Feat.	48	0.8	0.95	0.008
Landscape	3580	60.7	0.3	0.182
	5900	**100%**		**0.556**

RUNOFF FROM PROPOSED SITE:

Q_{p2} = 0.556 x 5.2 x 0.135 = 0.391 cfs

V_{p2} = 0.391 x 1/2 x 18.00 x 60 = 211 cf

Q_{p10} = 0.556 x 6.7 x 0.135 = 0.504 cfs

V_{p10} = 0.504 x 1/2 x 18.00 x 60 = 272 cf

Q_{p100} = 0.556 x 9.1 x 0.135 = 0.685 cfs

V_{p100} = 0.685 x 1/2 x 18.00 x 60 = 370 cf

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Storage Required for Proposed Increase in Runoff Volume: (as per Residential Site Improvement)

2 yr storm	211	cf	-	117	=	**94**	cf
10 yr storm	272	cf	-	226	=	46	cf
100 yr storm	370	cf	-	328	=	42	cf

Storage Required for Roof Runoff:

10 yr storm used 60 min. storm duration I = 2.0"/hr

Roof Area - 1743 sf. Front porch 24 cf.

Designated Area 1767 x $\frac{2.0}{12}$ x 0.95 x $\frac{60}{60}$ = **280** cf.

Note: 94 cf (req. for 2 yr storm) < 280 cf

Use 280 cf as design volume

SEEPAGE PIT STORAGE CALCULATIONS FOR ROOF RUNOFF

Pre-cast 6 ft inner diameter concrete seepage pit → 6 ft deep
(6.5 ft outer diameter)

Provide stone with filter fabric around pit → 2.0 ft thick

40% stone void ratio used.
* No base stone area considered as storage due to sedimentation.

Pit Volume: 6 ft deep 2.0 ft thick stone

V = (3.14 x 6 x 6 x 6 / 4) +

(3.14 x (110 - 42) x 0.4 x 6 / 4 = **298 CF**

Provided Storage for Dwelling 298 CF > 280 CF Required

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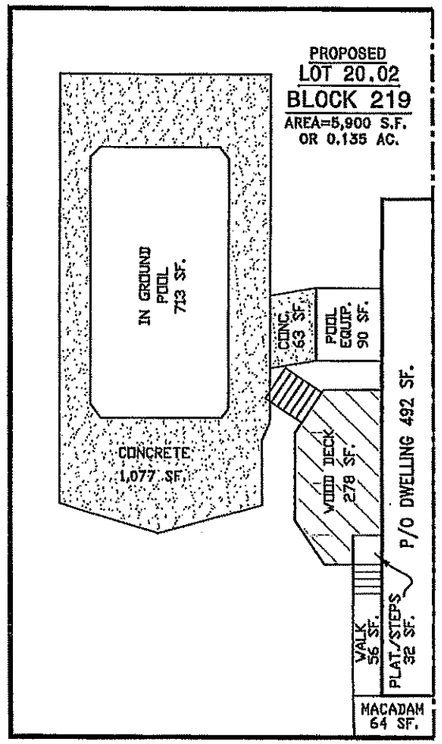

EXISTING

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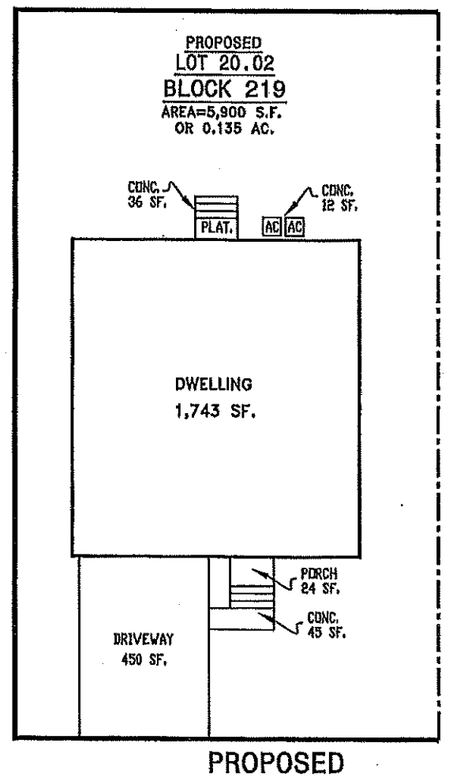
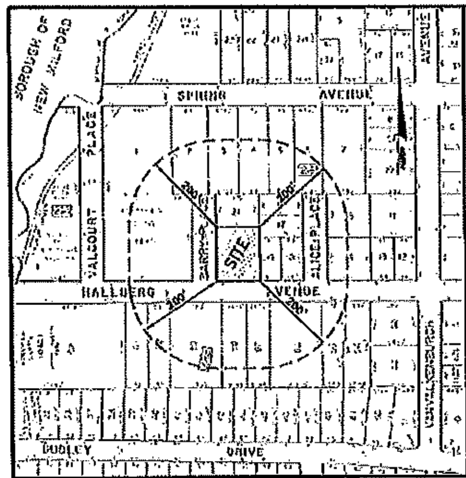
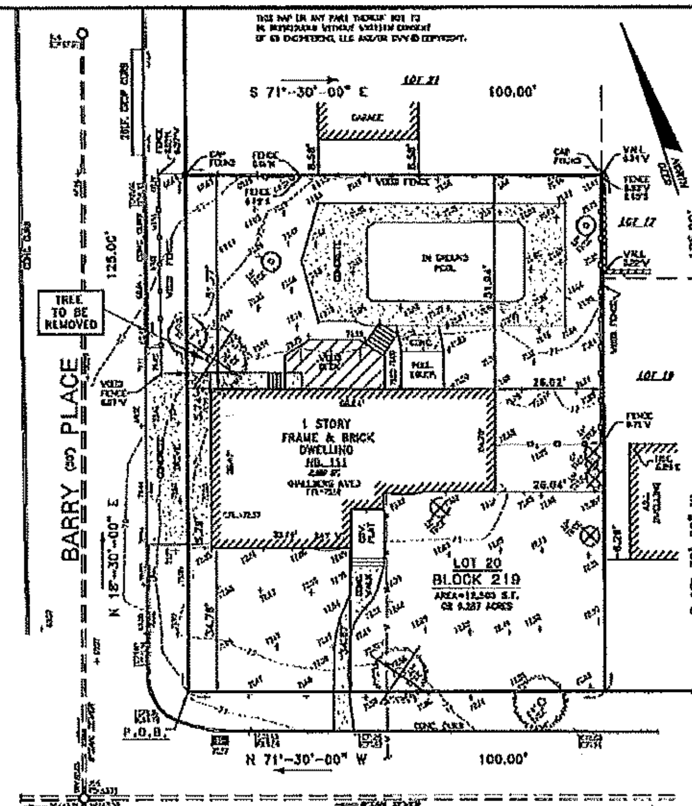


PROPOSED



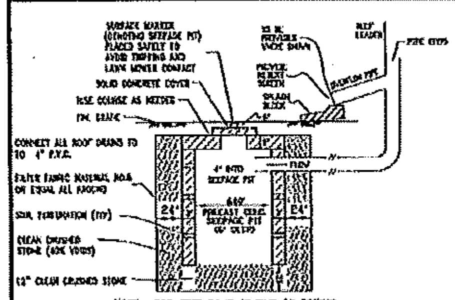
AREA LOCATION MAP



HALLBERG (50') AVENUE

BOUNDARY & TOPOGRAPHY

SCALE: 1"= 20'



NOTE : SOIL TEST DONE AT TIME OF CONSTR. RESULTS TO BOROUGH ENGINEER

PRECAST SEEPAGE PIT (TYP.2)

(NO SCALE)

SEEPAGE PIT NOTES:

1. SEEPAGE PIT TO BE INSPECTED ONCE A YEAR BY HOMEOWNER. CLEAN OUT DEBRIS AS REQUIRED.
2. ALL SOIL ASSUMPTIONS ARE TO BE FIELD VERIFIED.
3. SEEPAGE PIT IS DESIGNED FOR ROOF RUNOFF ONLY.
4. PROPOSED ROOF LEADER OVERFLOWS SHALL BE DIRECTED AWAY FROM ADJACENT PROPERTIES.
5. PROPOSED SEEPAGE PITS SHALL BE A MINIMUM OF (2') FEET ABOVE THE SEASONAL HIGH GROUNDWATER TABLE.

NOTE : SOIL LOG AND PERCOLATION TEST TO BE PERFORMED AT THE LOCATION OF THE PROPOSED SEEPAGE PIT BOROUGH ENGINEER TO BE NOTIFIED PRIOR TO TEST FOR INSPECTION. RESULTS OF THE TEST TO BE SUBMITTED TO BOROUGH ENGINEER.

LEGEND

EXISTING FEATURES

- Right of Way Line
- Curb Line
- Concrete Sidewalk
- Sanitary Sewer Main
- Sanitary Manhole
- Gas Main
- Gas Valve
- Water Main
- Water Valve
- Existing Grade
- Contour Elevation Line

PROPOSED FEATURES

- PROP. SAN. SEWER CONN. (4"PVC)
- PROP. WATER CONN. (1" COPPER)
- PROP. GAS
- FIN. GRADE
- PROP. CONC. SIDEWALK, ETC.
- PROP. 4" PVC ROOF DRAINS
- PROP. CONCRETE CURB
- PROP. SEEPAGE PIT
- PROP. WATER VALVE
- PROP. GAS VALVE
- PROP. CONTOURS

THIS SITE PLAN HAS BEEN APPROVED AT A MEETING OF:
PLANNING BOARD ☐ OF THE BOROUGH OF
BD. OF ADJUSTMENT ☐ BERGENFIELD

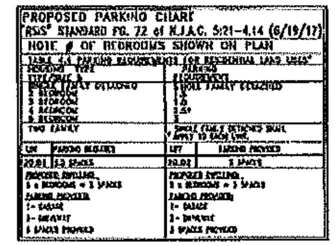
MEETING HELD ON:____________2021

APPROVED:

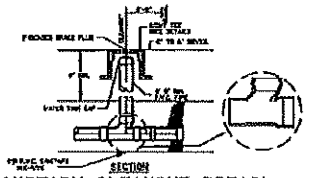
CHAIRMAN — DATE

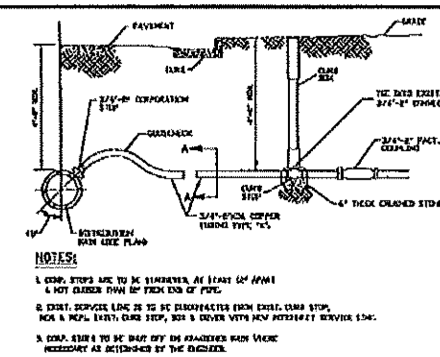
SECRETARY — DATE — BOROUGH ENGINEER — DATE

PROPOSED PARKING CHART



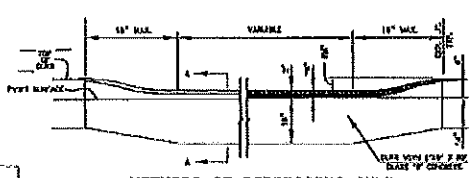
SANITARY CLEANOUT DETAIL





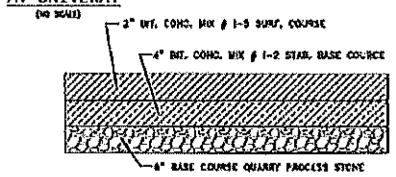
TYPICAL WATER SERVICE HOUSE-CONNECTION INSTALLATION

NOT TO SCALE



METHODS OF DEPRESSING CURB AT DRIVEWAY

(NO SCALE)



DRIVEWAY PAVEMENT DETAIL

(NO SCALE)

SOIL MOVING CALCULATIONS

PROPOSED LOT 20.01

FOOTING CUT

Location	Perimeter	Location	Perimeter	Total:	CY
Dwelling	211 lf	Front Rear pch	26 lf	237 lf	
4 sf x 237 = 948 sf		FOOTING CUT		948 sf	35

PROPOSED CUT

Location	Area sf	Avg. Elev.	Prop. Elev.	Δ Height	Total in CF	CY
Basement	1259 sf	72.12 sf	65.67 sf	6.45 ft	8172 sf	
Seepage Pit	86 sf	71.67 sf	65.34 sf	6.33 ft	544 sf	
			PROPOSED CUT		8917 sf	330

NET CUT = FOOTING CUT + PROP. CUT

NET CUT = 948 cf + 8917 cf

NET CUT = 9865 CF = 365 CY

SOIL MOVING CALCULATIONS

PROPOSED LOT 20.02

FOOTING CUT

Location	Perimeter	Location	Perimeter	Total:	CY
Dwelling	211 lf	Front Rear pch	26 lf	237 lf	
4 sf x 237 = 948 sf		FOOTING CUT		948 sf	35

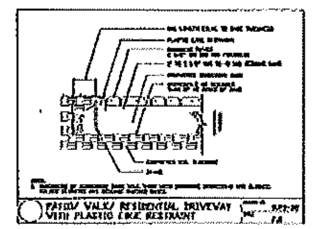
PROPOSED CUT

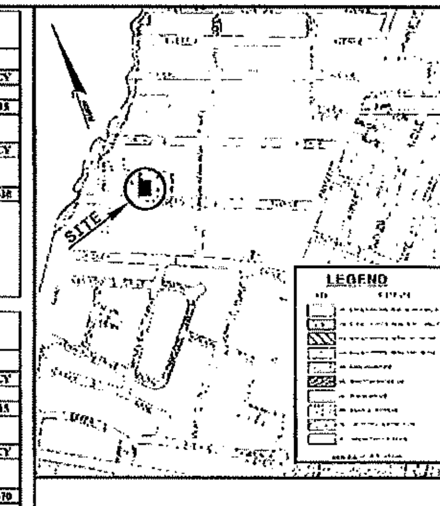
Location	Area sf	Avg. Elev.	Prop. Elev.	Δ Height	Total in CF	CY
Basement	1259 sf	71.17 sf	63.63 sf	7.54 ft	9103 sf	
Seepage Pit	86 sf	72.22 sf	65.89 sf	6.33 ft	544 sf	
			PROPOSED CUT		9987 sf	370

NET CUT = FOOTING CUT + PROP. CUT

NET CUT = 948 cf + 9987 cf

NET CUT = 10935 CF = 405 CY





GENERAL NOTES:

1. BEING A PROPOSED SUBDIVISION FOR LOT 20 IN BLOCK 219 AS SHOWN ON THE TAX MAP OF THE BOROUGH OF BERGENFIELD, BERGEN COUNTY, NEW JERSEY. TAX MAP SHEET NO. 13. ALSO KNOWN AS LOTS: 24 AND PART OF 23 AS SHOWN ON A MAP ENTITLED: "MAP OF PROPERTY OF CARL HALLBERG" FILED IN THE B.C.C.O. MARCH 1, 1912 AS MAP NO. 1408.
2. EXISTING LOT 20 CONTAINS: 12,500 SF or 0.287 ACRES
3. PROPOSED LOT 20.01 CONTAINS: 6,600 SF OR 0.152 ACRES
4. PROPOSED LOT 20.02 CONTAINS: 5,900 SF OR 0.135 ACRES
5. THE PROPERTY LIES WITHIN "R-5" RESIDENTIAL ZONE ONE-FAMILY HOMES ARE CONSIDERED A PERMITTED USE. SEE ZONE CHART BELOW:

ZONE "R-5"			EXIST.	PROPOSED	PROPOSED	VARIANCE	
REQUIREMENTS:	"R-5" [illegible]	"R-5" [illegible]	LOT 20	LOT 20.01	LOT 20.02	[illegible]	[illegible]
MIN. LOT AREA:	6,000 SF	5,000 SF	12,500 SF.	6,600 SF	5,900 SF	NO	NO
MIN. LOT WIDTH:	60 FT.	50 FT.	100.00'	66.00'	59.00'	NO	NO
MIN. FRONT YARD	25 FT.	25 FT.	31.67'	25.00'	25.00'	NO	NO
MIN. FRONT YARD	15 FT.	15 FT.	5.74' (E)	18.00'	N/A	NO	NO
MIN. SIDE YARD	7.5 FT.	5 FT.	26.02'	8.00'	8.00'	NO	NO
MIN. SIDE BOTH	15 FT.	10 FT.	31.76'	20.00'	19.00'	NO	NO
MIN. REAR YARD:	25 FT.	25 FT.	51.77'	31.42'	31.42'	NO	NO
LOT COVERAGE:	30%	33%	17.5%	28.0%	29.9%	NO	NO
IMPR. LOT COVERAGE:	35%	40%	21.32%	34.9%	39.3%	NO	NO
MAX BUILDING HT.:	30' FT. / 2 STY.	30' FT. / 2 STY.	1 STY.	29.18' / 2 STY.	29.83' / 2 STY.	NO	NO

(E) EXISTING VARIANCE
(V) VARIANCE REQUESTED

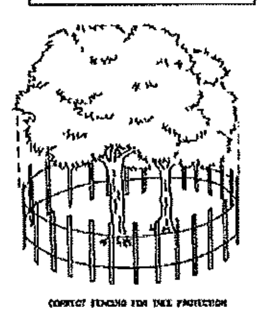
6. SURVEY INFORMATION BY GB ENGINEERING, LLC, DATED MARCH 9, 2019.
7. ELEVATIONS SHOWN ARE BASED ON NAVD'88 DATUM.
8. PROPERTY IS LOCATED IN ZONE "X" AS PER FLOOD INSURANCE RATE MAP NO. 34003C 0192 H, DATED AUGUST 28, 2019, BERGEN COUNTY, NEW JERSEY.
9. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. EXACT LOCATIONS TO BE MARKED OUT AT TIME OF CONSTRUCTION.
10. UTILIZE EXISTING UTILITIES WHERE POSSIBLE.
11. CONTRACTOR TO REMOVE ANY UNDERGROUND TANKS & CAP ALL EXISTING UTILITIES IN ACCORDANCE WITH LOCAL REQUIREMENTS.
12. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH BOROUGH OF BERGENFIELD STANDARDS & ORDINANCES.
13. DRAINAGE FROM THIS PROPERTY SHALL NOT IMPACT ADJ. PROPERTIES PRIOR, DURING AND AFTER CONSTRUCTION. IN THE EVENT ADJ. PROPERTIES ARE IMPACTED, THE APPLICANT IS REQUIRED TO CORRECT THIS MATTER AT THEIR OWN EXPENSE.
14. APPLICANT TO ENSURE THAT FINAL GRADING OF LOT DOES NOT CAUSE SURFACE WATER RUNOFF TO FLOW TO ADJACENT PROPERTIES.
15. REFER TO ARCHITECT PLANS FOR DETAILS.
16. THIS SUBDIVISION WILL BE FILED BY DEED.
17. CONTRACTOR TO PROVIDE IRRIGATION SYSTEM FOR EACH LOT.

TREE PLANTING- 8 TOTAL

4 – Allegheny Serviceberry TREE, Amelanchier laevis, 8 FT. HT. / B& B (Ao)

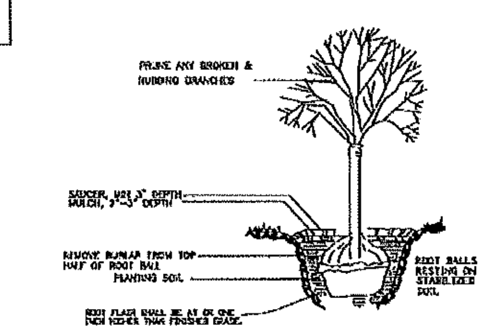
4 – Honey Locust TREE, Gleditsia triacanthos, 8 FT. HT. / B& B (Ho)

EXACT LOCATION TO BE COORDINATED/DETERMINED BY BOROUGH SHADE TREE COMMISSION



TREE PROTECTION DETAIL

NOT TO SCALE



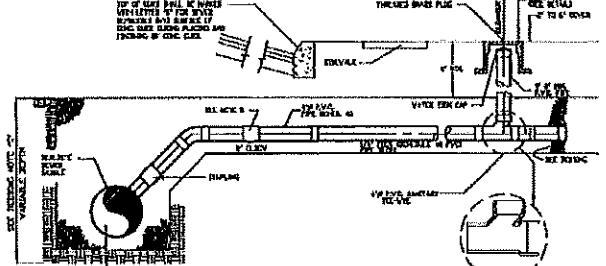
TREE PLANTING DETAIL

EXISTING LOT COVERAGE SCHEDULE: PROPOSED LOT 20.02		
P/O Dwelling	492 SF.	8.3 %
Plat./Steps	32 SF.	0.6 %
Wood Deck	278 SF.	4.7 %
In-ground pool	713 SF.	12.1 %
Concrete feat.	1196 SF.	20.3 %
Macadam	64 SF.	1.1 %
Pool Equip.	00 SF.	1.6 %
TOTAL LOT COVERAGE:	2866 SF.	48.6 %

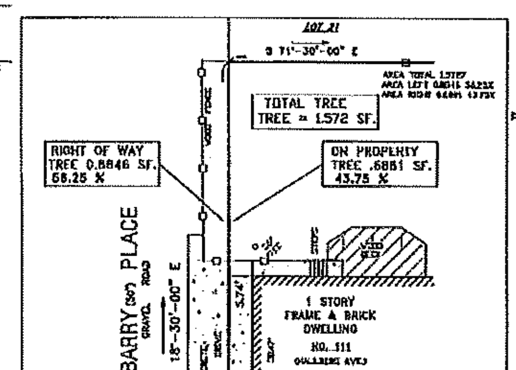
PROPOSED LOT COVERAGE SCHEDULE: PROPOSED LOT 20.02		
Dwelling	1743 SF.	29.6 %
Front porch	24 SF.	0.4 %
Driveway - Pavers	460 SF.	7.8 %
Front Walk - Pavers	45 SF.	0.8 %
Conc. Feat.	48 SF.	0.8 %
TOTAL LOT COVERAGE:	2320 SF.	39.3 %

EXISTING LOT COVERAGE SCHEDULE: PROPOSED LOT 20.01		
P/O Dwelling	1701 SF.	25.8 %
Porch w/stairs	109 SF.	1.7 %
Concrete walk	143 SF.	2.2 %
Macadam	175 SF.	2.7 %
TOTAL LOT COVERAGE:	2128 SF.	32.2 %

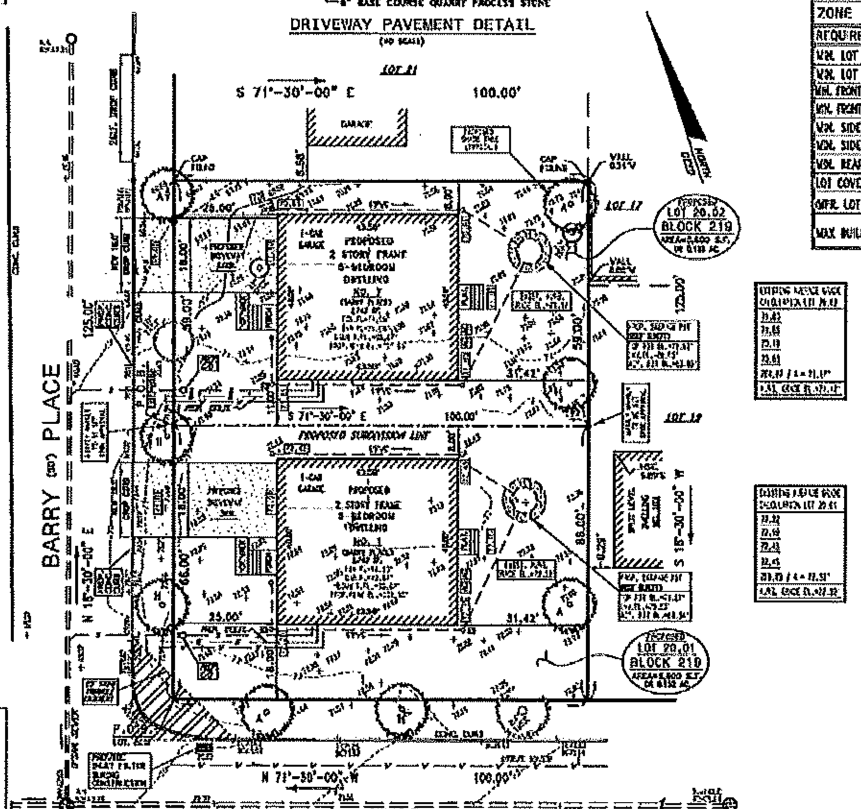
PROPOSED LOT COVERAGE SCHEDULE: PROPOSED LOT 20.01		
Dwelling	1743 SF.	26.4 %
Front porch	24 SF.	0.4 %
Driveway - macadam	460 SF.	6.8 %
Front walk-pavers	45 SF.	0.7 %
Conc. Feat.	42 SF.	0.6 %
TOTAL LOT COVERAGE:	2304 SF.	34.9 %



TYPICAL SEWER CONNECTION



TREE DETAIL



HALLBERG (50') AVENUE

PROPOSED SUBDIVISION DETAIL

SCALE: 1"= 20'

GRAPHIC SCALE: 1"=20'

OWNER:
THE PORADA DEVELOPMENT GROUP LLC
710 NEWCOMB ROAD
RIDGEWOOD, NJ 07450
CONTACT INFO:
PHONE: 201-463-6607
EMAIL: STEVENPORADA@YAHOO.COM

NO.	DATE	REVISION
2.		
1.		

THIS SUBDIVISION PLAN HAS BEEN PREPARED UNDER MY IMMEDIATE SUPERVISION
CERTIFIED TO: THE PORADA DEVELOPMENT GROUP LLC
CERTIFICATE OF AUTHORIZATION NO: 24GA-28110050

THOMAS G. STEARNS III – #GB40959
N.J. PROFESSIONAL ENGINEER & LAND SURVEYOR

MAP SHOWING

• MINOR SUBDIVISION •

111 HALLBERG AVENUE

LOT 20 IN BLOCK 219 TAX MAP

BOROUGH OF BERGENFIELD

BERGEN COUNTY NEW JERSEY

GB ENGINEERING, LLC
ENGINEERS & SURVEYORS
144 JEWELL STREET
GARFIELD, NEW JERSEY 07026
EMAIL: GBSURVEYOR@AOL.COM
(973) 340-0948 FAX 340-0015

SCALE: 1"= 20'-0"
DATE: SEPTEMBER 23, 2021
SHEET NO. 1 of 1
FILE NO. 2021/1044