Memo

To:	Board of Adjustment Chairperson McGinley and Acting Secretary Maccarelli Verona Board of Adjustment (BoA)
From:	Plan Review Committee of the Verona Environmental Commission
c:	Verona Environmental Commission Chair
Date:	November 1, 2023
Re:	**Case # 2023-14** 58 Durrell Street [Block 1306, Lot 13.02] Verona, New Jersey
Zone:	A-3 (Residential Townhouse)

The Plan Review Committee of the Verona Environmental Commission (VEC) reviewed the application for 58 Durrell Street in Verona submitted by Theo Silverberg, which we received on October 23, 2023. We understand that the Applicant is seeking to obtain a variance for exceeding total maximum allowable improved lot coverage by 13.5%, proposing 48.5% where 35% is allowed. The Applicant is also proposing a patio that would encroach into the 5-foot side yard setback. The comments below are provided for the Board's consideration:

1) The VEC understands that the applicant is proposing to add 3,686 ft^2 of new impervious surface to the existing site's 4,422 ft^2 total improved lot coverage. §455-17 Verona's Minor development portion of the Stormwater Ordinance requires that when more than 400 ft^2 of new coverage is added to a site, that the Applicant shall manage runoff using green infrastructure practices such as pervious paving/paver systems, small scale infiltration or bioretention basins (raingardens) grass swales, etc. as found in Table 5, "Minor Development BMP" of the ordinance.

2) Existing and Proposed Improved Lot Coverage is listed as 26.4% and 48.5% on the application, respectively. Scaling off the drawing, we calculated an Existing Improved Lot Coverage of 26.3% based on an Existing "Improved Area" of 4,383 ft^2 (please see attached annotated drawing). Furthermore, we calculated a Proposed Improved Lot Coverage of 48.9% based on a Proposed "Improved Area" of 8,145 ft^2. We understand that the maximum Improved Lot Coverage for the A-3 Zone is 35%.

3) Since site grades generally drop from west to east on the property; could a green infrastructure practice be placed more upgradient from the neighboring property (more to the west side than what is shown on the plan drawing) so that infiltrating water has more opportunity to sink rather than flow laterally beyond the property boundary? Also, has there been any investigation on the depth to seasonal high water table (SHWT) and whether there is sufficient freeboard above it to accept infiltrating stormwater runoff? Plan notes indicate that the contractor is responsible for determining SHWT, whereas that responsibility should be on the design professional.

4) The Applicant should provide testimony as to the potential removal of trees in the rear of the yard to make way for the proposed patio or equipment pad, and if any are slated for removal, be required to comply with §493, Article II.

5) We recommend that downspout pipes on the home be disconnected from storm drains and redirected to flow away from the home, over the property's remaining permeable areas, gardens, and lawns.

6) In addition, please see attached the Low Impact Planning and Construction Checklist. This suggested list was compiled by the VEC based on best available practices.

[STD/JP]
VEC_2023-11-01 Comments 58 Durrell St.docx

Areas (scaled off plan)
Lot size =16,658.4 ft2

Existing "Improved Area" = 4,087.3 (I) + 276.5 (II) + 18.8 (III) = 4,382.6 ft2

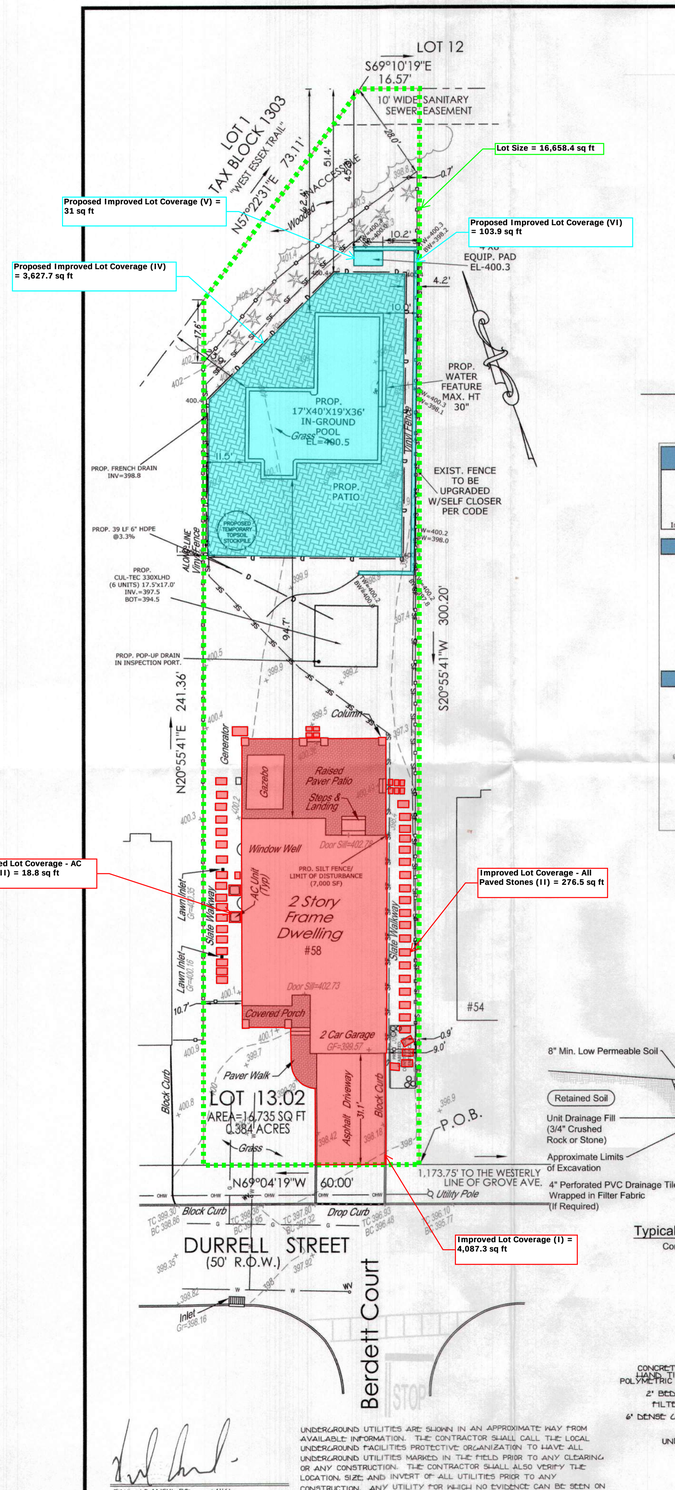
Existing Improved Lot Coverage = 4,382.6 ÷ 16,658.4 = 26.3%

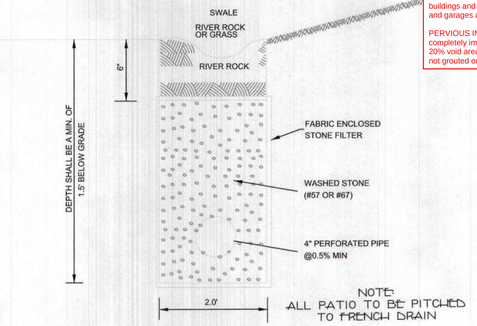
Proposed "Improved Area" = 4,382.6 + 3,627.7 (IV) + 31 (V) + 103.9 (VI) = 8,145.2 ft2

Proposed Improved Lot Coverage = 8,145.2 ÷ 16,658.4 = 48.9%

Definitions:
IMPROVED LOT COVERAGE = The percentage of lot area which is improved with principal and accessory buildings and structures, including all impervious surface areas such as buildings, driveways, parking lots and garages and other man-made improvements, and swimming pools.

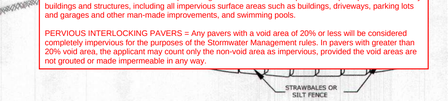
PERVIOUS INTERLOCKING PAVERS = Any pavers with a void area of 20% or less will be considered completely impervious for the purposes of the Stormwater Management rules. In pavers with greater than 20% void area, the applicant may count only the non-void area as impervious, provided the void areas are not grouted or made impermeable in any way.





FRENCH DRAIN

NOT TO SCALE



INSTALLATION NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY & STABLE
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED BY SILT FENCING OR STRAW BALES, THEN STABILIZED WITH VEGETATION OR COVERED
4. SEE SPECIFICATIONS (EROSION CONTROL) FOR INSTALL OF SILT FENCE

STOCK PILE CONTROL DETAIL

SCALE N.T.S.

Recharger 330XLHD Chamber Specifications		
Height	30.5	inches
Width	52.0	inches
Length	8.50	feet
Installed Length	7.00	feet
Bare Chamber Volume	52.21	cu. feet
Installed Chamber Volume	84.22	cu. feet

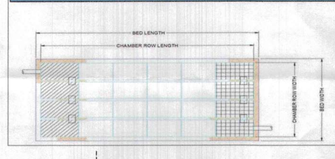
Breakdown of Storage Provided by Recharger 330XLHD Stormwater System		
Within Chambers	346.84	cu. feet
Within Feed Connectors	-	cu. feet
Within Stone	282.72	cu. feet
Total Storage Provided	629.6	cu. feet
Total Storage Required	507.00	cu. feet

Materials List

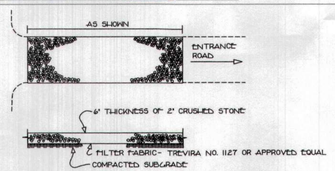
Recharger 330XLHD		
Total Number of Chambers Required	6	pieces
Starter Chambers	3	pieces
Intermediate Chambers	0	pieces
End Chambers	3	pieces
HVLV FC-24 Feed Connectors	0	pieces
CULTEC No. 410 Non-Woven Geotextile	117	sq. yards
CULTEC No. 4800 Woven Geotextile	0	feet
Stone	26	cu. yards

Based on External Pipe Manifold

Bed Detail

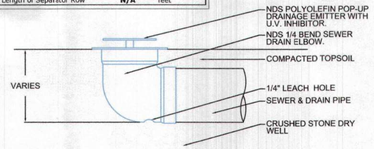


Bed Layout Information		
Number of Rows Wide	3	pieces
Number of Chambers Long	2	pieces
Chamber Row Width	15.00	feet
Chamber Row Length	15.50	feet
Bed Width	17.00	feet
Bed Length	17.50	feet
Bed Area Required	297.50	sq. feet
Length of Separator Row	N/A	feet



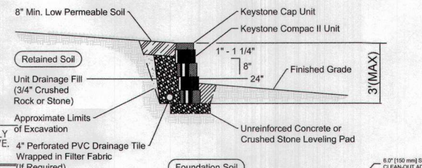
STABILIZED CONSTRUCTION ENTRANCE

N.T.S.



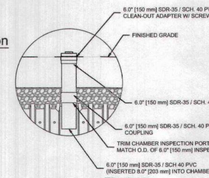
SECTION

POP-UP DRAIN DETAIL



Typical Gravity Wall Section

Compac II Unit - 1" Setback



PATIO DETAIL

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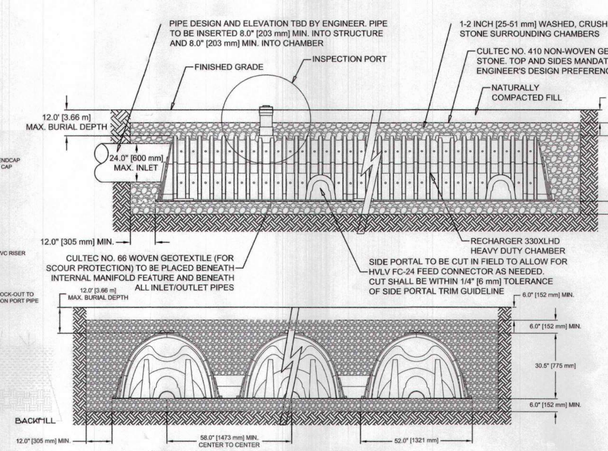
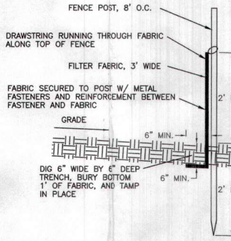


CUL-TEC RECHARGER 330XLHD



SILT FENCE

N.T.S.

POOL PLAN,
SOIL EROSION, SEDIMENT CONTROL PLAN, NOTES & DETAILS
FOR

SILVERBERG

LOCATED IN THE
TOWNSHIP OF VERONA
ESSEX COUNTY, NEW JERSEY
LOT 13.02, BLOCK 1306

HUDSON ESSEX PASSAIC COUNTY SOIL CONSERVATION DISTRICT

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. All soil erosion and sediment control practices on this plan will be constructed in accordance with the **"New Jersey Standards for Soil Erosion and Sediment Control"** 7th Edition **last revised July 2017, effective December 2017.** These measures will be installed prior to any major soil disturbance or in their proper sequence and maintained until permanent protection is established.

2. Soil to be exposed or stockpiled for a period of greater than 14 days, and not under active construction, may be required to be temporarily mulched, and seeded or otherwise provided with vegetative cover as per Appendix A3. This temporary cover shall be maintained until such time whereby permanent restabilization is established.

3. *Seeding Dates:* The following seeding dates are recommended to best establish permanent vegetative cover within most locations in the HEPSCD: Spring - 3/1-5/15 and Fall - 8/15 - 10/1

4. Sediment fences are to be properly trenched and maintained until permanent vegetative cover is established

5. All storm drainage inlets shall be protected by one of the practices accepted in the Standards, and protection shall remain until permanent stabilization has been established. Storm drainage outlet points shall be protected as required before they become functional.

6. Mulch materials shall be un-rotted small grain straw applied at the rate of 70 to 90 pounds per 1,000 square feet and anchored with a mulch anchoring tool, liquid mulch binders, or netting tie down. Other suitable materials may be used if approved by the Soil Conservation District.

7. All erosion control devices shall be periodically inspected, maintained and corrected by the contractor. Any damage incurred by erosion shall be rectified immediately.

8. The Hudson-Essex-Passaic Soil Conservation District will be notified in writing at least 48 hours prior to any soil disturbing activities. Fax - (862) 333-4507 OR email - INFORMATION@HEPSCD.ORG

9. **The applicant must obtain a District issued Report-of-Compliance prior to applying for the Certificate of Occupancy or Temporary Certificate of Occupancy from the respective municipality. NJ - DCA or any other controlling agency.** Contact the District at 862-333-4505 to request a Final Inspection, giving advanced notice upon completion of the restabilization measures. A performance deposit may be posted with the District when winter weather or snow cover prohibits the proper application of seed, mulch, fertilizer or hydro-seed.

10. Paved roadways must be kept clean at all times. Do not utilize a fire or garden hose to clean roads unless the runoff is directed to a properly designed and functioning sediment basin. Water pumped out of the excavated areas contains sediments that must be removed prior to discharging to receiving bodies of water using removable pumping stations, sump pits, portable sedimentation tanks and/or silt control bags.

11. All surfaces having lawn or landscaping as final cover are to be provided topsoil prior to re-seeding, sodding or planting. A depth of 5.0 inches, firmed in place, is **required**, as per the Standards for Topsoiling and Land Grading, effective December 2017.

12. All plan revisions must be submitted to the District for proper review and approval.

13. A crushed stone wheel cleaning tracking-pad is to be installed at all site exits using 2 ½ -1" crushed angular stone (ASTM 2 or 3) to a minimum length of 50 feet and minimum depth of 6". All driveways must be provided with crushed stone until paving is complete.

14. Steep slopes incurring disturbance may require additional stabilization measures. These "special" measures shall be designed by the applicant's engineer and be approved by the Soil Conservation District.

15. **The Hudson-Essex-Passaic Soil Conservation District shall be notified, in writing, for the sale of any portion of the project or for the sale of individual lots. New owners' information shall be provided. Additional measures deemed necessary by District officials shall be implemented as conditions warrant.**

SOIL COMPACTION EXEMPTION NOTE:
AS DETERMINED BY THE STATE POLICY MAP, THE PROJECT AREA FALLS WITHIN THE METROPOLITAN PLANNING AREA (PA1), UNDER EXISTING CONDITIONS, THE SITE IS NOT COVERED IN WOODY VEGETATION NOR REGROWTH. IN ACCORDANCE WITH NEW JERSEY STANDARD FOR LAND GRADING (REVISED 2017), NON WOODY VEGETATED PA1 AREAS FALL UNDER THE SOIL COMPACTION EXEMPTION LIST AS A "URBAN REDEVELOPMENT" AND IS DEFINED AS "PREVIOUSLY DEVELOPED".

KEY MAP

(NOT TO SCALE)

ZONING NOTES

ZONE: A-3

	PERMITTED	EXISTING	PROPOSED
MIN. LOT AREA (SF)	8,400	16,735	16,735
MIN. LOT WIDTH (FT)	70.0	60.0*	60.0*
MIN. FRONT YARD (FT.)	30.0	31.1	31.1
MIN. REAR YARD (FT.)	30.0	94.6	94.6
MIN. SIDE YARD (EACH) (FT.)	8.0	9.0	9.0
MIN. SIDE YARD SUM (BOTH) (FT.)	18	19.7	19.7
MAX. BLDG HEIGHT (FT)	2.5/35.0	NA	NA
MAX. LOT COVERAGE (%)	20.0	15.5	15.5
MAX. IMPROVED LOT COVERAGE (%)	35.0	26.4(4422)	48.5(8108)**
MAX. ACCESSORY STRUCTURE COVERAGE (%)	15.0	1.0(157)	8.4(1,399)
MIN. SIDE YARD(POOL)	10.0	NA	10.0
MIN. REAR YARD(POOL)	10.0	NA	62.4
MIN. DIST. TO PRINCIPAL STRUC.	10.0	NA	94.7
MIN. SIDE YARD(PATIO)	5.0	NA	1.2**
MIN. REAR YARD(PATIO)	5.0	NA	51.4

* EXISTING CONDITION
** VARIANCE REQUIRED

CONSTRUCTION SEQUENCE: (SITEWORK)

		DURATION:
1.	CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.	1 DAY
2.	CONSTRUCT EROSION CONTROL DEVICES.	1 DAY
3.	CLEAR SITE WITHIN LIMIT OF DISTURBANCE, STRIP AND STOCKPILE TOPSOIL AND GRADE SITE.	1 DAY
4.	EXCAVATE FOR POOL & DETENTION.	1 WEEK
5.	CONSTRUCT POOL AND APPURTENANCES.	2 MONTHS
6.	CONSTRUCT PATIO AND DETENTION.	2 DAYS
7.	AFTER CONSTRUCTION IS COMPLETE, PERFORM FINAL GRADING, SPREAD TOPSOIL AND INSTALL LANDSCAPING.	1 WEEK
8.	RE-ESTABLISH EXISTING SWALE.	1 DAY
9.	REMOVE SOIL EROSION CONTROL DEVICES WHEN ALL DISTURBED AREAS HAVE BEEN INSTALLED.	1 DAY

DRAINAGE CALCULATIONS

PROPOSED POOL & PATIO = 8108 SF-4422 SF=3,686 SF
(3,686 SF)(2.0" RAINFALL)(1'/12")=614.3 CF
PROP. 6-CULTEC 330XLHD UNITS=104.9 CF PER UNIT WITH 6" STONE (TOTAL PROVIDED = 17x17.5x=629.6 CF STORAGE PROVIDED)

ACCESSORY LOT COVERAGE
GAZEBO=157 SF
PROP. POOL=1,242 SF
TOTAL=1,399 SF
COV=1,399 SF/16,735 SF=8.4%

LOT COVERAGE CALCULATIONS

DWELLING & COV. PORCH=2,439 SF
GAZEBO= 157 SF
TOTAL = 2,596 SF
2,596 SF / 16,735 SF = 15.5%

IMPROVED LOT COVERAGE
LOT COVERAGE=2,596 SF
DRIVEWAY & WALK=691 SF
RAISED PATIO=823 SF
GEN. PAD=11 SF
AC=19 SF
STEPPERS=282 SF
PROP. POOL=1,242 SF
PROP. PATIO=2,412 SF
PROP. EQ PAD=32 SF
TOTAL=8,108 SF
COV=8,108 SF/16,735 SF=48.5%

SOIL MOVEMENT CALCULATIONS:

FILL BY WALL= 3,000 SF X 1.0 FT AVG=3,000 CF FILL
POOL = 1,242 SF X 3.0 FT AVG=3,726 CF CUT
PATIO/EQ PAD = 2,444 SF X 1.0 FT AVG=2,444 CF CUT
CULTEC = 17'X17.5X4.5'=1,338.75 CF CUT

NET EXPORT FROM SITE = 4,508.75 CF=167.0 CY

TOTAL SOIL MOVEMENT = 10,508.75 CF=389.2 CY

NOTES:
1. SET CULTECS IN 17'X17.5' OVERALL EXCAVATION, BACKFILL WITH ALL CLEAN STONE.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING SEASONAL HIGH WATER TABLE. NO CULTECS AND/OR STONE SHALL BE SET BELOW SEASONAL HIGH WATER, AND ENGINEER MUST BE CONTACTED IN WRITING SHOULD WATER BE ENCOUNTERED.

CULTEC MAINTENANCE NOTES
1. CULTECS SHALL BE MAINTAINED BY THE OWNERS OF THE LOTS ON WHICH THEY ARE SITUATED.
2. SAID OWNERS SHALL INSPECT CULTECS ON A TWICE YEARLY BASIS AND REMOVE ANY ACCUMULATED SEDIMENT (OR AFTER ANY SIGNIFICANT STORM).
3. IF EVIDENCE PERSISTS THAT THE CULTECS ARE NOT FUNCTIONING PROPERLY (I.E. WATER BACKING-UP IN SYSTEM, ETC.), THE OWNERS SHALL INSPECT THE CULTECS AS SOON AS REASONABLY POSSIBLE AND MAKE NECESSARY REPAIRS TO ENSURE PROPER FUNCTION OF THE SYSTEM.

NOTES:
1. PROPERTY KNOWN AS LOT 13.02 IN BLOCK 1306 TAX MAP SHEET 13 OF THE TOWNSHIP OF VERONA.
2. PROPERTY OWNER/APPLICANT: SILVERBERG 58 DURRELL STREET VERONA, N.J. 07044
3. ZONE = A-3 ZONE
4. TOTAL AREA OF LOT: 16,735 SF OR 0.384 AC.
5. TO THE BEST OF MY KNOWLEDGE AND INFORMATION, THERE ARE NO EASEMENTS, DEED RESTRICTIONS, OR COVENANTS AFFECTING THE SITE EXCEPT AS SHOWN HEREON.
6. APPLICANT TO PERFORM SOIL BORINGS/TEST PITS PRIOR TO CONSTRUCTION TO CONFORM THE DEPTH OF SEASONALLY HIGH GROUND WATER & SOIL TYPE.
7. REMOVED
8. SURVEY INFORMATION SHOWN HEREON HAS BEEN TAKEN FROM A SURVEY PREPARED BY FIRST SIGHT SURVEYING LLC DATED MAY 4, 2023.
9. CULTEC MAINTENANCE, ONCE PER YEAR (MINIMUM). CULTECS SHALL BE OPENED AND CLEANED OF ACCUMULATED LEAVES AND/OR SEDIMENT.
10. REMOVED
11. THERE ARE 0 TREES TO BE REMOVED.
12. STORMWATER DESIGN CALCULATIONS PROVIDES STORAGE CAPACITY FOR A TWO INCH PER HOUR RAINFALL OVER ALL IMPERVIOUS AREAS.
13. CONTRACTOR TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
14. ELEVATIONS SHOWN HEREON ARE BASED ON AN ASSUMED DATUM.
15. EXISTING DRAINAGE PATTERNS MUST BE MAINTAINED DURING & AFTER CONSTRUCTION TO ENSURE NO IMPACTS TO OTHER RESIDENTS.
16. CULTEC INSTALLATION MUST BE INSPECTED PRIOR TO BACKFILL. GROUNDWATER ELEVATION MUST BE DETERMINED PRIOR TO INSTALLATION. MUST BE 10' FROM PL.
17. SWALES SHALL BE EXTENDED AS NECESSARY TO DRAIN ALL RUN-OFF TO THE REAR OF THE PROPERTY, AND NOT ONTO ADJACENT LOTS.
18. ALL PIPE TO BE HDPE. ALL AREAS ADJACENT TO PATIO MUST BE DIRECTED TO YDS/ DRAINS.
19. ALL PATIO AND COVERED PATIO MUST DRAIN TO DRAINAGE SYSTEM.
20. ALL EXCAVATED MATERIAL IS TO BE REMOVED FROM SITE UNLESS DISCUSSED WITH BOROUGH ENGINEER PRIOR TO FINAL GRADING.
21. POOL IS TO REMAIN WITH WATER IN IT. A CARTRIDGE FILTER WILL BE USED FOR BACKWASH.
22. NO RUN-OFF FROM THIS PROPERTY SHALL AFFECT ANY ADJACENT PROPERTIES BOTH DURING & SUBSEQUENT TO CONSTRUCTION. IN THE EVENT A DRAINAGE PROBLEM PERSISTS, THE APPLICANT SHALL REMEDY THE MATTER AT HIS/HER COST.
23. ANY SOIL TRACKED ONTO THE STREET MUST BE IMMEDIATELY REMOVED. IF TRACKED SOIL REMAINS OVERNIGHT, THE DPW SHALL REMOVED IT AND ASSESS THE APPLICANT FOR THOSE COSTS.
24. ANY ROADWAY, CURBING OR STORM INLETS ALONG THE PROPERTY FRONTAGE DAMAGED DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE APPLICANT TO THE SATISFACTION OF THE BOROUGH'S CONSTRUCTION AND ENGINEERING DEPARTMENTS.
25. NO TREES TO REMAIN ARE WITHIN THE LIMIT OF DISTURBANCE.
26. AN INSPECTION OF ALL SOIL EROSION CONTROL MEASURES INCLUSIVE OF SILT FENCING, TREE PROTECTION FENCING, STABILIZED CONSTRUCTION ACCESS, ETC. PRIOR TO THE START OF CONSTRUCTION IS REQUIRED.
27. 48 HOURS NOTICE IS NEEDED FOR INSPECTION OF THE DRAINAGE IMPROVEMENTS BY THE ENGINEERING DEPARTMENT.
28. MAINTENANCE OF ON-SITE STORMWATER INFILTRATION SYSTEM SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER & SHALL TRANSFER TO AN FUTURE OWNER.
29. A CONSERVATION EASEMENT, DEED RESTRICTION, OR OTHER APPLICABLE LEGAL MEASURE SHALL BE DONE PRIOR TO BE COMPLETION FOR THE STORMWATER MANAGEMENT FEATURE.
30. ALL DISTURBED AREAS ARE TO BE STABILIZED WITH TOPSOIL, SEED, HAY AND STRAW MULCH TO ENSURE LAWN GROWTH.
31. ANY IMPORTED TOPSOIL SHALL NOT BE INFERIOR QUALITY TO THE ORIGINAL SOIL. ALL SOILS MUST MEET NJDEP RESIDENTIAL STANDARDS. CERTIFICATION SHALL BE PROVIDED FOR ANY IMPORTED SOILS.
32. THE APPLICANT SHALL ENSURE THAT STORMWATER RUNOFF DOES NOT NEGATIVELY AFFECT NEIGHBORING PROPERTIES, DURING AND AFTER CONSTRUCTION. ANY NEGATIVE IMPACTS TO ADJACENT PROPERTIES CAUSED BY AN INCREASE IN RUNOFF OR IMPROPER DRAINAGE SHALL BE ADDRESSED BY THE APPLICANT AT NO COST TO THE AFFECTED PROPERTY OWNERS. ADDITIONALLY, ANY DAMAGES INCURRED TO SURROUNDING PUBLIC OR PRIVATE PROPERTY AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED BY THE APPLICANT AT NO COST TO THE AFFECTED PROPERTY OWNERS.

UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY FROM AVAILABLE INFORMATION. THE CONTRACTOR SHALL CALL THE LOCAL UNDERGROUND FACILITIES PROTECTIVE ORGANIZATION TO HAVE ALL UNDERGROUND UTILITIES MARKED IN THE FIELD PRIOR TO ANY CLEARING OR ANY CONSTRUCTION. THE CONTRACTOR SHALL ALSO VERIFY THE LOCATION, SIZE AND INVERT OF ALL UTILITIES PRIR TO ANY CONSTRUCTION. ANY UTILITY FOR WHICH NO EVIDENCE CAN BE SEEN ON THE SURFACE OF THE LANDS MAY NOT BE SHOWN ON THIS DRAWING.

PAUL GDANSKI, P.E. #41161

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FILE #	58DURELL
DATE	5/28/23
SCALE	1"=20'
SHEET	1 OF 1

Verona Environmental Commission

Low Impact Checklist: Construction

This suggested list has been compiled by the Verona Environmental Commission based on best available practices. This is not a requirement of the uniform construction code. It is intended to be beneficial to all residents considering renovations and new construction. The purposes of this list are to 1) assist those planning construction projects to do so in a manner that causes the least disruption to the environment; 2) establish a healthy setting for those occupying the new or renovated space; and 3) reduce waste and save resources. Implementing environmentally friendly practices can be economical when considered at pre-construction stages and are often beneficial in the long term.

General Construction

- ☐ Recycle and/or salvage non-hazardous construction and demolition debris
- ☐ Use renewable building material and products
- ☐ Incorporate renewable energy (i.e. geothermal, solar)
- ☐ Use local products (i.e. local and sustainable woods)
- ☐ Use local construction products and companies
- ☐ Conserve energy and reduce electricity use as much as possible

Grounds & Landscaping

- ☐ Create a sedimentation control plan to prevent sediment from moving off site.
- ☐ Use native plantings (Native plans are adapted to thrive in local conditions)
- ☐ Use captured rainwater or recycled grey water for irrigation
- ☐ Provide bicycle parking to help reduce overcrowded streets and CO2 emissions.

Storm Water Management

- ☐ Avoid runoff to other properties by installing an underground cistern or rain garden. This will keep water on your own property and out of the sewer system.
- ☐ Limit impervious surfaces – use an open grid pavement system (at least 50% pervious)
- ☐ Promote infiltration that captures and treats storm water runoff from rainfall
- ☐ Use a water retention system (i.e. rain barrel) to collect rainwater for non-potable uses

Lighting

- ☐ Choose LED lights (the most environmentally-efficient option)
- ☐ Purchase renewable electricity, either directly from your power supplier, from an independent clean power generator, or through renewable energy certificates.
- ☐ Use skylights or solo tubes for natural daytime lighting. Use sensor controls in commercial or industrial settings and solar lighting outdoors.

Foundation & Basement

- ☐ Use environmentally friendly foundation sealants (rather than black tar)
- ☐ Prevent sump pump water from flowing into the sewer system

Roofing

- ☐ Use light color roofing materials to limit heat absorption created by darker roofs
- ☐ Use roofing material with a solar reflectance index (SRI) equal to or greater than 78 for low roofs and 29 for steep-sloped roofs
- ☐ Install tile or metal roofs
- ☐ Consider installing a vegetated roof

Heating & Cooling

- ☐ Use 2 x 6 studs instead of 2 x 4 to increase amount of insulation
- ☐ Install programmable thermostats that adjust temperatures throughout the day
- ☐ Use occupant sensing and/or remote control thermostat technologies
- ☐ Install heat pumps to transfer energy heat and cold Use high-efficiency boilers/furnaces
- ☐ Use attic fans to regulate heating and cooling

Windows

- ☐ Choose ultraviolet window protection to protect against sun damage
- ☐ Install triple pane windows or windows with Argon or Kryton gas between panes

Products

- ☐ Choose products with low VOCs (VOCs are found in adhesives, interior paints, cabinets, etc)
- ☐ Avoid products that contain hazardous chemicals such as formaldehyde and cyanide
- ☐ Choose ENERGY STAR® appliances
- ☐ Install dual flush toilets Install low flow shower heads
- ☐ Avoid garbage disposals and make provisions for composting

Verona Environmental Commission

Low Impact Checklist: Planning

This suggested list has been compiled by the Verona Environmental Commission based on best available practices. This list is intended to assist individuals involved in planning and building projects in Verona Township towards submitting low impact plans. The goal of a low impact plan is not only to increase cost savings and add value to your project but to make environmentally responsible choices and eliminate project delays in early stages of the planning process.

General Construction & Design

- ☐ Provide occupants with connection to outdoor space through increased natural light and views
- ☐ Orient buildings facing southwest to maximize potential solar installation
- ☐ Use orientation and design to maximize passive solar heat/cooling
- ☐ Use proper planning to prevent damage to surrounding properties and public spaces
- ☐ Minimize disturbance to soils and vegetation
- ☐ Recycle and/or salvage non-hazardous construction and demolition debris
- ☐ Use renewable building materials and products
- ☐ Use local and sustainable woods
- ☐ Incorporate renewable energy and reduce energy use

Grounds & Landscaping

- ☐ Create a sedimentation control plan Limit altering steep slope areas
- ☐ Encourage landscaping that requires limited moving, trimming, and watering
- ☐ Create landscapes that limit the need for lawn chemicals and maintenance
- ☐ Position evergreens to the north to shield wind/ Position deciduous trees to the south to cool buildings
- ☐ Use native plantings (Native plans are adapted to thrive in local conditions)
- ☐ Place parking spaces in shaded areas
- ☐ Place bicycle parking racks in secure areas near entrances
- ☐ Use paving materials with an SRI value >29. This will reflect, not absorb solar heat.

Storm Water Management

- ☐ Limit impervious surfaces – use an open grid pavement system (at least 50% pervious)
- ☐ Reduce impervious cover to promote infiltration that captures and treats storm water
- ☐ Use a water retention system (i.e. rain barrel) to collect rainwater or recycled gray water for non-potable uses

Foundation & Basement

- ☐ Use alternative practices (rather than black tar) for foundation sealants
- ☐ Encourage aeration and ventilation
- ☐ Draw sunlight into basement areas through access windows

Roofing

- ☐ Use light color roofing materials to limit heat absorbed by dark colored roofs
- ☐ Use roofing material with a solar reflectance index (SRI) equal to or greater than 78 for low roofs and 29 for steep sloped roofs
- ☐ Consider Tile or Metal roofs
- ☐ Construct roofs that can support solar installations

Lighting

- ☐ Use solar lighting outdoors
- ☐ Use skylights or solo tubes for natural daytime lighting
- ☐ Use motion sensor lighting where applicable
- ☐ Choose energy-efficient light bulbs

Products

- ☐ Avoid products that contain hazardous chemicals such as formaldehyde and cyanide
- ☐ Use local products (i.e. local and sustainable woods)
- ☐ Use local construction equipment and companies when possible

For more information and resources please see:

The Native Plant Society of New Jersey - http://www.npsnj.org
The Association of New Jersey Environmental Commissions - http://www.anjec.org
US Green Building Council NJ Chapter - http://usgbc.org
New Jersey Green Building Manual - http://greenmanual.rutgers.edu
The New Jersey Department of Transportation Master Plan - http://njbikepedplan.com
Rutgers Center for Green Building - http://greenbuilding.rutgers.edu
The Verona Environmental Commission - http://www.veronaec.org