Basic Elements of Reading Plans
Maps show physical features of the natural or built environment at established scale and orientation.

Plans are engineered drawings made to scale showing existing physical features of a site and proposed changes to accommodate development.
Different levels of maps

- Parcel level
- Town wide maps
- USGS Quad map
- County
- State
“A map is a point in time…”

Maps are 2-dimensional representations of complex landscapes... *at one point in time!*
Plan Review 101 or 1.0

It’s not that complicated
Help is on the Plans

- Location Map
- List of Drawings
- Orientation
- Title Block
- Legend
- Scale
- Zoning Chart
- Notes
- And More….
LIST OF DRAWINGS:

COVER SHEET

SITE

SHEET 1  SITE BOUNDARY AND EXISTING CONDITIONS

LANDSCAPE

L-0.0  OVERALL SITE PLAN
L-1.0  UTILITY DEMOLITION PLAN PHASE 2
L-1.1  SITE DEMOLITION PLAN PHASE 2
L-1.2  SITE DEMOLITION PLAN PHASE 2
L-1.3  SITE LAYOUT PLAN
L-1.4  SITE LAYOUT PLAN
L-1.5  SITE GRADING PLAN
L-1.6  SITE GRADING PLAN
L-1.7  SITE SCORING & SIGNAGE PLAN
L-1.8  SITE SCORING & SIGNAGE PLAN
L-1.9  SITE PLANTING PLAN
L-1.10  SITE PLANTING PLAN
L-1.11  DETAILED ENTRANCE LAYOUT & GRADING
L-1.12  DETAILED HANDICAP SPACE LAYOUT & GRADING
L-1.13  SITE DETAILS
L-1.14  SITE DETAILS

SITE / CIVIL

C-0.0  CIVIL ABBREVIATIONS, LEGEND AND GENERAL NOTES
C-0.1  SITE DEMOLITION, EROSION AND SEDIMENTATION CONTROL PLAN
C-1.0A  SITE UTILITY PLAN
C-1.0B  SITE UTILITY PLAN
C-1.1A  SITE LIGHTING AND SECURITY PLAN
C-1.1B  SITE LIGHTING AND SECURITY PLAN
C-2.0  SITE GRADING PLAN PHASE I
C-2.0A  SITE DRAINAGE PLAN
C-2.0B  SITE DRAINAGE PLAN
C-2.5A  SITE EROSION AND SEDIMENTATION CONTROL PLAN (PHASE I)
C-2.6B  SITE EROSION AND SEDIMENTATION CONTROL PLAN (PHASE II)
C-3.0C  SITE EROSION AND SEDIMENTATION CONTROL PLAN (PHASE III)
C-3.0D  SITE EROSION AND SEDIMENTATION CONTROL PLAN (PHASE IV)
C-3.1  EROSION CONTROL SPECIFICATIONS AND NARRATIVE
C-3.2  EROSION PROTECTION AND SEDIMENT CONTROL DETAILS
C-4.0  SITE DETAILS
C-4.1  SITE DETAILS

ARCHITECTURAL

A-1.1  FIRST FLOOR PLAN
A-1.2  SECOND FLOOR PLAN
A-2.1  BUILDING ELEVATIONS
Orientation

North Arrow
Title Block

Information on who/what/when etc

EXCAVATION PLAN
PREPARED FOR

Cartography Road
Mapville, CT

JUNE 01, 2004

XYZ GROUP/
ABC ASSOCIATES

500 Longitude Boulevard
Mapville, Connecticut 06001
860-555-5555

Title
Creation & Revision Dates
Source
Legends

Provide a guide to the symbols used

<table>
<thead>
<tr>
<th>Watershed Basins</th>
<th>□ Basins</th>
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</thead>
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<tr>
<td>Town</td>
<td>□ Town</td>
</tr>
<tr>
<td>Migratory Fish Runs</td>
<td>Fish Runs</td>
</tr>
<tr>
<td>Tidal Wetlands</td>
<td>□ Tidal Wetlands</td>
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<tr>
<td>Eelgrass</td>
<td>Eelgrass</td>
</tr>
<tr>
<td>Water Features</td>
<td>□ Streams □ Lakes — Water — Shore</td>
</tr>
<tr>
<td>Urban Growth</td>
<td>Developed before 1985</td>
</tr>
<tr>
<td></td>
<td>Turf and Grass before 1985</td>
</tr>
<tr>
<td></td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>Undeveloped</td>
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<tr>
<td></td>
<td>Developed 1985-1990</td>
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<td>Turf and Grass 1985-1990</td>
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<td>Developed 1990-1995</td>
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<td>Turf and Grass 1990-1995</td>
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<tr>
<td></td>
<td>Developed 1995-2002</td>
</tr>
<tr>
<td></td>
<td>Turf and Grass 1995-2002</td>
</tr>
</tbody>
</table>

LEGEND

DTP LOCATION
PERC TEST LOCATION
WETLAND LINE PER FIELD INVESTIGATION
BUILDING LOT SETBACK
WETLAND FLAG NUMBER
SOIL TYPE DESIGNATION
APPROX. LIMIT OF SOIL TYPES
SOIL EROSION CONTROL BARRIER
EXISTING CONTOURS
PROPOSED CONTOURS
EXISTING SPOT ELEVATION
PROPOSED SPOT ELEVATION
100' REVIEW ZONE
LIMIT OF VEGETATION
EXISTING LEDGE OUTCROPPINGS
EXISTING 20% SLOPE
PROBE HOLE LOCATION
NO DRAINAGE OR SEWERS TO BE ENCOUNTERED IN PROBE HOLES
Scale

Shows relative size of objects

20'!

35'

clayons
Key Elements of Plans

**Scale**

**Written Scale**

1:12,000 (ratio)

1” = 1,000’ (equivalent)

**Graphical Scale**

Graphic scales are the most reliable!

Beware of Xerox Distortion
Measuring Distances

Engineering Scales

Map Scale | Meaning
---|---
10 | 1 inch = 10 ft
20 | 1 inch = 20 ft
30 | 1 inch = 30 ft
40 | 1 inch = 40 ft
50 | 1 inch = 50 ft
60 | 1 inch = 60 ft
# Zoning Compliance Chart

**Zone District: R-40**

**Flag Lot**

<table>
<thead>
<tr>
<th></th>
<th><strong>Required</strong></th>
<th><strong>Lot 6</strong></th>
<th><strong>Lot 7</strong></th>
<th><strong>Lot 9</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Lot Area</strong></td>
<td>40,000 S.F.</td>
<td>47,407 S.F.</td>
<td>62,094 S.F.</td>
<td>50,810 S.F.</td>
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<tr>
<td><strong>Lot Width</strong></td>
<td>125 FT.</td>
<td>127 FT.</td>
<td>150 FT.</td>
<td>170 FT.</td>
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<tr>
<td><strong>Frontage</strong></td>
<td>25.00 FT.</td>
<td>25.00 FT.</td>
<td>25.00 FT.</td>
<td>25.00 FT.</td>
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<tr>
<td><strong>Side Yard Setback</strong></td>
<td>25 FT.</td>
<td>38 FT.</td>
<td>49 FT.</td>
<td>33 FT.</td>
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<tr>
<td><strong>Front Yard Setback</strong></td>
<td>50 FT.</td>
<td>150 FT.</td>
<td>184 FT.</td>
<td>214 FT.</td>
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<tr>
<td><strong>Rear Yard Setback</strong></td>
<td>50 FT.</td>
<td>184 FT.</td>
<td>243 FT.</td>
<td>177 FT.</td>
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<tr>
<td><strong>Minimum Square</strong></td>
<td>125 FT.²</td>
<td>125 FT.²</td>
<td>125 FT.²</td>
<td>125 FT.²</td>
</tr>
<tr>
<td><strong>Access Stair Area</strong></td>
<td>2,052 S.F.</td>
<td>9,296 S.F.</td>
<td>7,403 S.F.</td>
<td>7,403 S.F.</td>
</tr>
<tr>
<td><strong>Minimum Buildable Square</strong></td>
<td>50 FT.²</td>
<td>50 FT.²</td>
<td>50 FT.²</td>
<td>50 FT.²</td>
</tr>
<tr>
<td><strong>Minimum Buildable Area</strong></td>
<td>2,500 S.F.</td>
<td>45,355 S.F.</td>
<td>52,788 S.F.</td>
<td>43,407 S.F.</td>
</tr>
</tbody>
</table>
NOTES:

1. THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS FOR STATE AGENCIES “STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT” AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC.
   A. TYPE OF SURVEY: BOUNDARY & TOPOGRAPHIC SURVEY
   B. BOUNDARY DETERMINATION CATEGORY: RESURVEY
   C. HORIZONTAL ACCURACY: CLASS A-2
      VERTICAL ACCURACY: CLASS V-2
      TOPOGRAPHIC ACCURACY: CLASS T-2
   D. INTENT: PROVIDE BASE MAP FOR FUTURE DEVELOPMENT

2. FIELD WORK PERFORMED IN MARCH 2004 BY CLA ENGINEERS INC.

3. HORIZONTAL AND VERTICAL DATUM ARE BASED ON TOWN OF WATERFORD MONUMENTS, TOW 264-W AND TOW 265-W.

4. SUBJECT LOT IS IN ZONE DISTRICT R-20.

5. WETLANDS WERE DELINEATED BY ROBERT RUSSO AND LOCATED IN THE FIELD.

6. SUBSURFACE AND ENVIRONMENTAL CONDITIONS EXCEPT FOR WETLANDS DELINEATION WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT.

7. THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVEGROUND STRUCTURES AND RECORD DRAWINGS PROVIDED TO THE SURVEYOR. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES.

8. NO FLOOD HAZARD AREAS AS PER FIRM 090107 0015F, TOWN OF WATERFORD, CT., NEW LONDON COUNTY, REVISED SEPT. 6, 1995.

9. SURVEY IS VALID ONLY IF PRINT OR MYLAR HAS THE EMBOSSED SEAL AND LIVE SIGNATURE OF THE SURVEYOR.
Your planner, if you have one, will have reviewed the plans and may issue a pre-meeting memo highlighting any issues. Use your planner as a resource to help you focus in on issues or problems.

This is a team effort will all staff being part of the team.
City of Groton - Site Plan Checklist

A complete Site Plan under Section 6.6 shall contain the following:

☐ A complete statement of the proposed use of the building structure or use for which the application is made.

☐ A certificate by a registered engineer, qualified scientist, or other recognized authority as to his/her best estimate as to the impact of the proposed use from the standpoint of the standards set forth in Section 4.56 of these Regulations, and what, if any, environmental protection measures will be taken.

☐ Building plans, floor plans, and elevations for all proposed buildings and structures on the site or for alterations of existing buildings and structures on the site, where applicable.

☐ A location sketch showing the approximate locations and use of structures in any residential zone contiguous to or lying immediately across the street from the site of the proposed use and within 100 feet thereof and the approximate distance of any street intersections within 500 feet of the site of the proposed use.

☐ All applications shall include an accurate Class A-2 survey of the property prepared by a land surveyor registered in the State of Connecticut. All plans shall be prepared, signed, and sealed by a Connecticut registered engineer, architect, or landscape architect, whichever is appropriate.

☐ Scale of not more than 40 feet to 1 inch.

☐ Name and address of the applicant, owner of record and all adjoining property owners, as listed on the City’s tax rolls.

☐ Date, north arrow, and numerical and graphical scale.

☐ The words “Approved by City of Groton Planning and Zoning Commission” with designated places for the title and signature of the Commission Chairperson and the date.

☐ Location, width, and purpose of all existing and proposed easements, building setback lines, yard requirements, and dedicated areas on and within 100 feet of the site within the zone.

☐ Other agency/official approval as required by the Planning and Zoning Commission.
Contours: an imaginary line that connects points of equal elevation
Cross-sections are sometimes used to represent 3-D objects in 2 dimensions.
Cross-sections are sometimes used to represent 3-D objects in 2 dimensions.

Vertical scale sometimes exaggerated to better show change.
Topography

**Contours** always connect, but not always within the map boundaries...

This could be the edge of a presented map.
Is it a Hill or a Hole?
Topography

Slope direction is calculated perpendicular to the contour lines.

Water flows downhill...

...so the direction of flow is always perpendicular to the contour lines, since this is the steepest slope.
Many maps are in the form of topographical maps aka ‘topo’

Interpreting a 3D world in 2D
a contour interval is the vertical distance b/w contours. 10’ on topos; 2-5’ on site plans.

every 5th contour is an index contour shown in bold.

contours far apart show a gentle slope.

a series of concentric contours ending in a small closed circle or oval shows a local hilltop.

contour lines of a ridge are in a “U” that always points downhill.

contours at a stream form a “V” that always points uphill.

contours close together show a steep slope.

contours very close together show a cliff.

a spot elevation is a point of known elevation used as a pt of reference for surveys.

a benchmark (BM): point of known position & elevation used as a pt of reference for surveys.

green areas show forest cover; white areas denote fields.

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Contour Drawing #1

a. A
b. B
c. C
d. D
e. E
f. F
Contour Drawing #2

a. A
b. B
c. C
d. D
e. E
f. F
Contour Drawing #3

a. A
b. B
c. C
d. D
e. E
f. F
Contour Drawing #4

a. A
b. B
c. C
d. D
e. E
f. F
Contour Drawing #5

a. A
b. B
c. C
d. D
e. E
f. F
Contour Drawing #6

a. A
b. B
c. C
d. D
e. E
f. F
Why is Slope Important?

If too Steep:
- potential erosion
- soil stability
- safety
Why is Slope Important?

If too flat:
- storm water may not drain
- may flood
Subdivision Plans

Plan to divide one lot into 3 or more
Town regulates lot size, frontage, setbacks, road construction, etc
Planning Commission’s Role

Once approved, each home builder submits construction documents for building permit; once complete a CO is issued (Certificate of Occupancy)
Site Plans

Zoning Commission for administrative review to see if it meets regulations

If it doesn’t meet regulations, must go to Zoning Board of Appeals for variance

ZBA can only grant variances if there is a hardship with the ‘land’
Site Plan Reading

FHA Pharmacy
Survey
Layout Plan
Grading Plan
Utility S&E Control
Elevation
Planting Plan
Details

Let’s go through this set of plans, page by page.
Plan Reading

who?  what?  where?  when?

- Where is it?
- What’s the project name?
- Where’s north?
- What’s the scale?
- When drawn?
- What kind of map?
- Who made the map?
- Are they qualified?
- What’s it all Mean?

Date: 03/12/05
Where’s the steepest and the flattest areas?
Plan Reading

Where are the high and low points?

More Level

Steeper

LP

HP
What direction does the water flow on the road?
Plan Reading

Is this a copy? Is that really the scale?
What's the lot size? Regulations: 1 ac.

Lot is 1.34 ac.
Plan Reading

Is that enough frontage? Regulations: 100’ min.

Double Frontage

122’

40
Is the building within setbacks? Regulations: 40’ front 10’ side
Plan Reading

How many parking spaces?  
Regulations: 41 + 2

9  4  5  8  8  2

34 + 2
What’s the distance from the intersection? Regulations: 75’
Plan Reading

GRADING LEGEND

- PROPERTY LINES
- EXISTING CONTOURS
- EXISTING SPOT ELEVATIONS
- PROPOSED SPOT ELEVATIONS
- PROPOSED CONCOUR
Grade changes **MUST** be within property boundary

Original grade is shown as dashed line 610

Proposed Grade is shown as a solid line and as 610
Grade changes **MUST** be within property boundary

Original grade is shown as dashed line 610

Proposed Grade is shown as a solid line and as 610

New Spot Elevations are indicated with an arrow to the exact spot

B C Bottom of Curb

T C Top of Curb

T S Top of Stair

B S Bottom of Stair
Grade changes **MUST** be within property boundary

**Original grade is shown as dashed line 610**

**Proposed Grade is shown as a solid line and as 610**

**New Spot Elevations are indicated with an arrow to the exact spot**

**Bottom of Curb (B C)**

**Top of Curb (T C)**

**Top of Wall (T W)**

**Bottom of Wall (B W)**
Site Plan Review

How does water flows across the front parking lot?
Question: How can you ‘see’ the change from the original topo to the proposed?
Look at the site in section
Site Plan Review – Changing Topo

Is there the right amount of soil to smooth the site out?
Why should you be concerned with the amount of cut and fill?
Site Plan Review  Stormwater System
**Site Plan Review**

**Stormwater System**

**STORM SEWER SCHEDULE**

<table>
<thead>
<tr>
<th>CB #</th>
<th>TF</th>
<th>INV</th>
<th>OUT</th>
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<tbody>
<tr>
<td>CB #1</td>
<td>609.10</td>
<td>604.95</td>
<td>603.95</td>
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<td>CB #2</td>
<td>609.30</td>
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<td>602.68</td>
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<td>609.9</td>
<td>602.08</td>
<td>603.08</td>
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<td>608.0</td>
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<tr>
<td>CB #6</td>
<td>605.5</td>
<td>602.25</td>
<td>601.25</td>
</tr>
</tbody>
</table>

**TF** Top of Flange, or aka Rim or CBR

**INV** or Invert where storm water enters catch basin

**OUT** or Outlet where storm water leaves catch basin

Bottom of Invert pipe usually *is even* with top of Outlet pipe

**Question:** Why are the pipes so deep?
Site Plan Review  Stormwater System

System Schematic

TF 609.10

EO 600.50

BP 559

Question: Any concerns?

Question: What does this mean?
Utility connections
Site Plan Review  Construction Activity
Site Plan Review

Sediment and Erosion Control

Construction Activity
Site Plan Review Details

Gradation Table

<table>
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<tr>
<th>SQUARE MESH SIEVES</th>
<th>% FINER</th>
<th>% FINER</th>
<th>% FINER</th>
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<tr>
<td>2 1/2 INCHES</td>
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<td>90-100</td>
<td>100</td>
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<tr>
<td>2 INCHES</td>
<td>95-100</td>
<td>35-70</td>
<td>95-100</td>
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<tr>
<td>1 1/2 INCHES</td>
<td>35-70</td>
<td>0-15</td>
<td>35-70</td>
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<tr>
<td>1 1/4 INCHES</td>
<td>0-25</td>
<td>---</td>
<td>0-25</td>
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<tr>
<td>1 INCHES</td>
<td>0-10</td>
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<td>0-15</td>
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<td>3/4 INCHES</td>
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<tr>
<td>1/2 INCHES</td>
<td>---</td>
<td>0-5</td>
<td>0-5</td>
</tr>
<tr>
<td>3/8 INCHES</td>
<td>---</td>
<td>---</td>
<td>---</td>
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</tbody>
</table>


Anti-Tracking Pad (Construction Entrance)
Site Plan Review Details S&E

Silt Fence

Anti-Tracking Pad

Hay-Bales
Once approved, Construction drawings will be submitted to the building inspector for approval and oversight.

Not for design review.
And now—It’s your turn

Great Neck School, Waterford, CT
Dry Swale  L-1.5
Flush Concrete Curb  L-1.3
Flush Concrete Curb

13

Not to Scale

1-1.13

Finishing grade of adjacent material
Poured concrete curb
Roll bit. conc. surface course down to top of curb
Fin. grade of bit. conc. road pavement
Provide expansion joint at 20 foot intervals. Provide two 3/4" dia., 2' long dowels (smooth) at each expansion joint. Wrap "free end" of dowel in tar paper or heavy grease to prevent adheses
Processed aggregate
Bank run gravel
Compacted subgrade
SWALE TO BE OVER-EXCAVATED BY 8 INCHES. 8 INCHES OF ORGANIC RICH TOPSOIL, APPROVED BY THE WETLAND SCIENTIST OR SOIL SCIENTIST WITH A 48 HOUR NOTICE, WILL BE APPLIED TO BRING THE SWALE UP TO FINAL GRADE.
Questions

• What is the first floor elevation at the southwest corner of the existing school? Sheet 1
• When were the plans last revised? Sheet 1
• What is the setback line from Great Neck Road? Sheet 1
• How many lawn drains are there in the swales adjacent to the parking lots? L-1.5
• What is the elevation of the bottom of the wet swale? L-1.5
• What is the approximate elevation of wetland flag #21? C-2.0A
• What is the distance from catch basin #1 (CB01) to catch basin #2 (CB02)? C-2.0A
• On which detail sheet would you find the details of the basketball court? L-1.3
• What material is sidewalk at the entrance to the school made from? L-1.3
• What type of trees are planted along Great Neck Rd. L-1.9
• What type of plants are planted in the wet swale? L-1.9
• Follow the rain
#1 FF Elevation of Existing School

Existing School #6

FF ELEV = 91.53

SHED

PAVED AREA

PLAY AREA
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Revision</th>
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<tbody>
<tr>
<td>1</td>
<td>4/3/07</td>
<td>Seabock Lines</td>
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<tr>
<td>2</td>
<td>1/30/08</td>
<td>Additional Sewer Inverts</td>
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</tbody>
</table>
#3  Setback from Great Neck Rd
#4--How Many Lawn Drains
#5 Elevation at Bottom of Wet Swale
#6 Elevation of Wetlands Flag #21
#7 Distance from CB01 to CB02

90'
#9 Sidewalk Treatment at Entrance
#10 Trees Along Great Neck Rd.
#11 Plants in Wet Swale

WETLAND PLANTING AREA.
PLANTS CC, CL, LC, JE, & VH WILL BE LOCATED IN THE SWALE BY THE SOIL OR WETLAND SCIENTIST ON-SITE. SWALE TO BE SEEDED WITH NEW ENGLAND WETMIX, FROM NEW ENGLAND PLANTS, AMHERST, MA AT 1 lb PER 2000 SQ. FT.

WETLAND AREA

PLANT LIST

<table>
<thead>
<tr>
<th>KEY</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>QTY.</th>
<th>SIZE</th>
<th>REMARKS</th>
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</thead>
<tbody>
<tr>
<td>CC</td>
<td>Carex comosa</td>
<td>Bearded Sedge</td>
<td>36</td>
<td>1 QT.</td>
<td>2' O.C.</td>
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<tr>
<td>CL</td>
<td>Carex lupulina</td>
<td>Hop Sedge</td>
<td>45</td>
<td>1 QT.</td>
<td>2' O.C.</td>
</tr>
<tr>
<td>LC</td>
<td>Lobelia cardinalis</td>
<td>Cardinal Flower</td>
<td>50</td>
<td>1 QT.</td>
<td>2' O.C.</td>
</tr>
<tr>
<td>VH</td>
<td>Verbena hastata</td>
<td>Blue Vervain</td>
<td>112</td>
<td>1 QT.</td>
<td>3' O.C.</td>
</tr>
<tr>
<td>JE</td>
<td>Juncus effuses</td>
<td>Soft Rush</td>
<td>35</td>
<td>1 QT.</td>
<td>4' O.C.</td>
</tr>
<tr>
<td>MG</td>
<td>Myrica gale</td>
<td>Sweetgale</td>
<td>127</td>
<td>18&quot;-24&quot; SPD.</td>
<td>4'-6' O.C.</td>
</tr>
</tbody>
</table>

## Diagram Notes
- Plants CC, CL, LC, JE, & VH will be located in the swale by the soil or wetland scientist on-site.
- Swale to be seeded with New England Wetmix from New England Plants, Amherst, MA at 1 lb per 2000 sq. ft.

## Diagram Details
- Wetland planting area marked with specific plant locations.
- Diagram illustrates the layout of the swale and wetland area with plant symbols.
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