

**LEGEND:**  
ALSO LEGEND ON SHEET #1

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**EA OF PARCEL NOT SUBJECT TO THIS APPLICATION**

## **TYPE 4 BUFFER YARD REQUIREMENTS**

PURSUANT TO SECTION 5-621(B)

| <u>FRONT YARD BUFFER</u><br><u>WIDTH NORTH)</u> | <u>REQUIRED PLANT UNITS*</u><br><u>PER 100 LINEAL FEET</u>             | <u>PROVIDED PLANT UNITS*</u><br><u>PER 489.6 LINEAL FEET</u>           |
|---|--|--|
| 20' MINIMUM<br>30' MAXIMUM                      | 4 CANOPY TREES<br>3 UNDERSTORY TREES<br>20 SHRUBS<br>0 EVERGREEN TREES | 0 CANOPY TREES<br>0 UNDERSTORY TREES<br>0 SHRUBS<br>90 EVERGREEN TREES |
| <u>SIDE YARD BUFFER</u><br><u>WIDTH (EAST)</u>  | <u>REQUIRED PLANT UNITS</u><br><u>PER 100 LINEAL FEET</u>              | <u>PROVIDED PLANT UNITS</u><br><u>PER 277.20 LINEAL FEET</u>           |
| 25' MINIMUM<br>30' MAXIMUM                      | 2 CANOPY TREES<br>5 UNDERSTORY TREES<br>10 SHRUBS<br>8 EVERGREEN TREES | 0 CANOPY TREES<br>0 UNDERSTORY TREES<br>0 SHRUBS<br>49 EVERGREEN TREES |
| <u>SIDE YARD BUFFER</u><br><u>WIDTH (WEST)</u>  | <u>REQUIRED PLANT UNITS</u><br><u>PER 100 LINEAL FEET</u>              | <u>PROVIDED PLANT UNITS</u><br><u>PER 277.20 LINEAL FEET</u>           |
| 25' MINIMUM<br>30' MAXIMUM                      | 2 CANOPY TREES<br>5 UNDERSTORY TREES<br>10 SHRUBS<br>8 EVERGREEN TREES | 0 CANOPY TREES<br>0 UNDERSTORY TREES<br>0 SHRUBS<br>46 EVERGREEN TREES |
| <u>REAR YARD BUFFER</u><br><u>WIDTH (SOUTH)</u> | <u>REQUIRED PLANT UNITS</u><br><u>PER 100 LINEAL FEET</u>              | <u>PROVIDED PLANT UNITS</u><br><u>PER 489.6 LINEAL FEET</u>            |
| 25' MINIMUM<br>30' MAXIMUM                      | 2 CANOPY TREES<br>5 UNDERSTORY TREES<br>10 SHRUBS<br>8 EVERGREEN TREES | 0 CANOPY TREES<br>0 UNDERSTORY TREES<br>0 SHRUBS<br>90 EVERGREEN TREES |

**\*SPMI 2013-0010 NOTE:**  
A SIX FOOT HIGH FENCE, WALL, OR BERM PROVIDING A MINIMUM OPACITY OF 95% IS REQUIRED WITH A TYPE 4 BUFFER YARD. IN LIEU OF A 6-FOOT HIGH FENCE OR BERM IN THE BUFFER YARDS, THE APPLICANT REQUESTS APPROVAL TO PROVIDE A BLACK VINYL CHAIN LINK FENCE WITH BARB WIRE AT THE TOP, A MAXIMUM OF 10' HIGH, FOR SECURITY REASONS. FENCING WILL HAVE BLACK WEBBING/SLATS TO ACHIEVE 95% OPACITY. THE FENCE WILL BE LOCATED OUTSIDE THE BUFFER BETWEEN BUFFER LANDSCAPING AND THE WATER STORAGE TANKS. FINAL LOCATION TO BE DETERMINED WITH FINAL ENGINEERING.

AT THE REQUEST OF THE COUNTY, ALL PROPOSE PLANT MATERIAL SHALL CONSIST OF EVERGREENS.

## NOTES:

1. BOWL AND COLUMN DIAMETER WILL BE DETERMINED WITH FINAL ENGINEERING BUT WILL REMAIN IN THE GENERAL LOCATION SHOWN.
  2. BUFFER PLANTINGS MAY BE ADJUSTED AT FINAL DESIGN TO ACCOMMODATE UNDERGROUND UTILITIES AND ACCESS.

THE JOURNAL OF CLIMATE

**LOUDOUN WATER**  
**600 ZONE WATER STORAGE TANKS**  
BLUE RIDGE ELECTION DISTRICT  
LOUDOUN COUNTY, VIRGINIA

**Urban, Ltd.**

4200-D Technology Court  
Chantilly, Virginia 20151  
Tel. 703.642.2306

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Planners Engineers Landscape Architects Land Surveyors

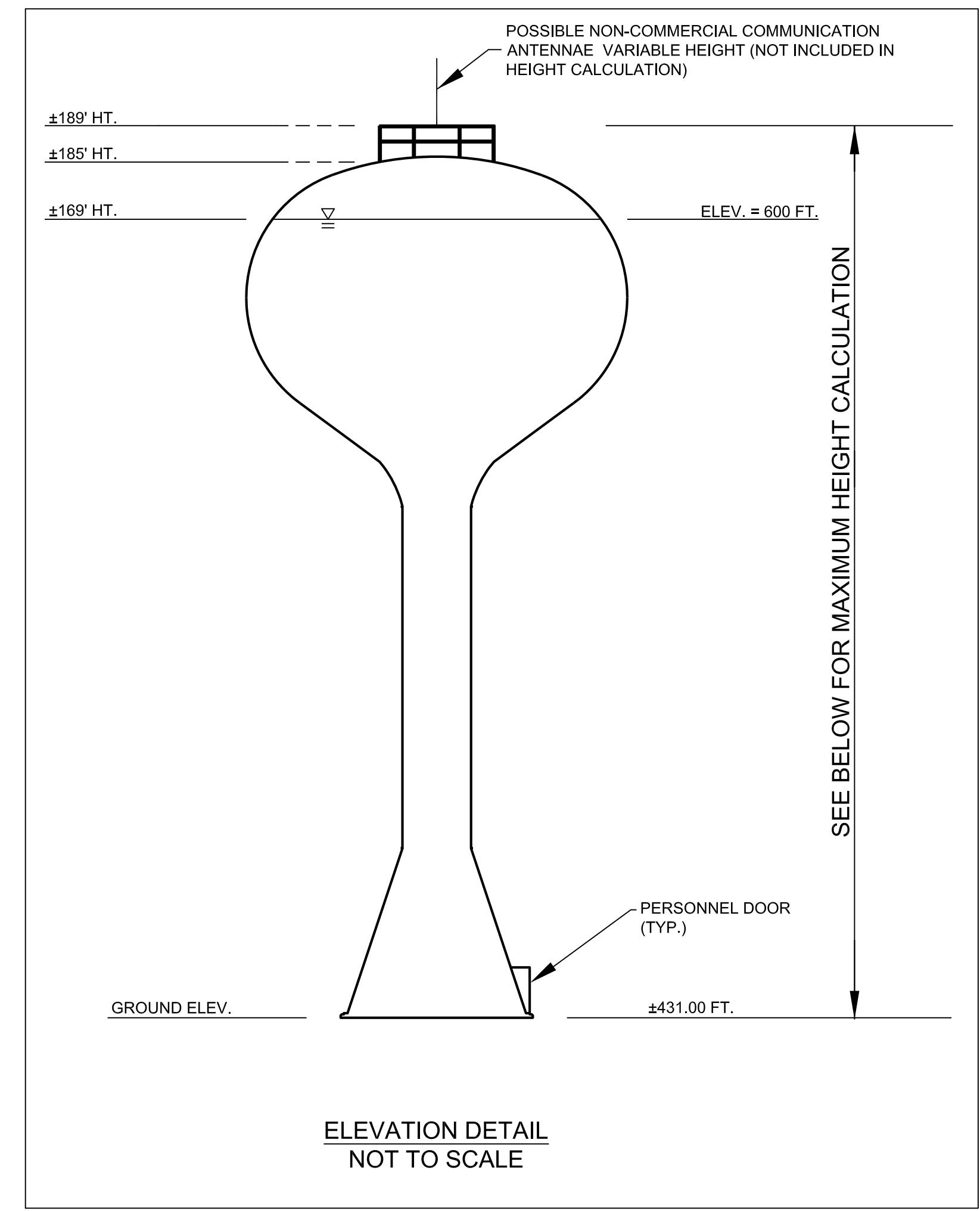
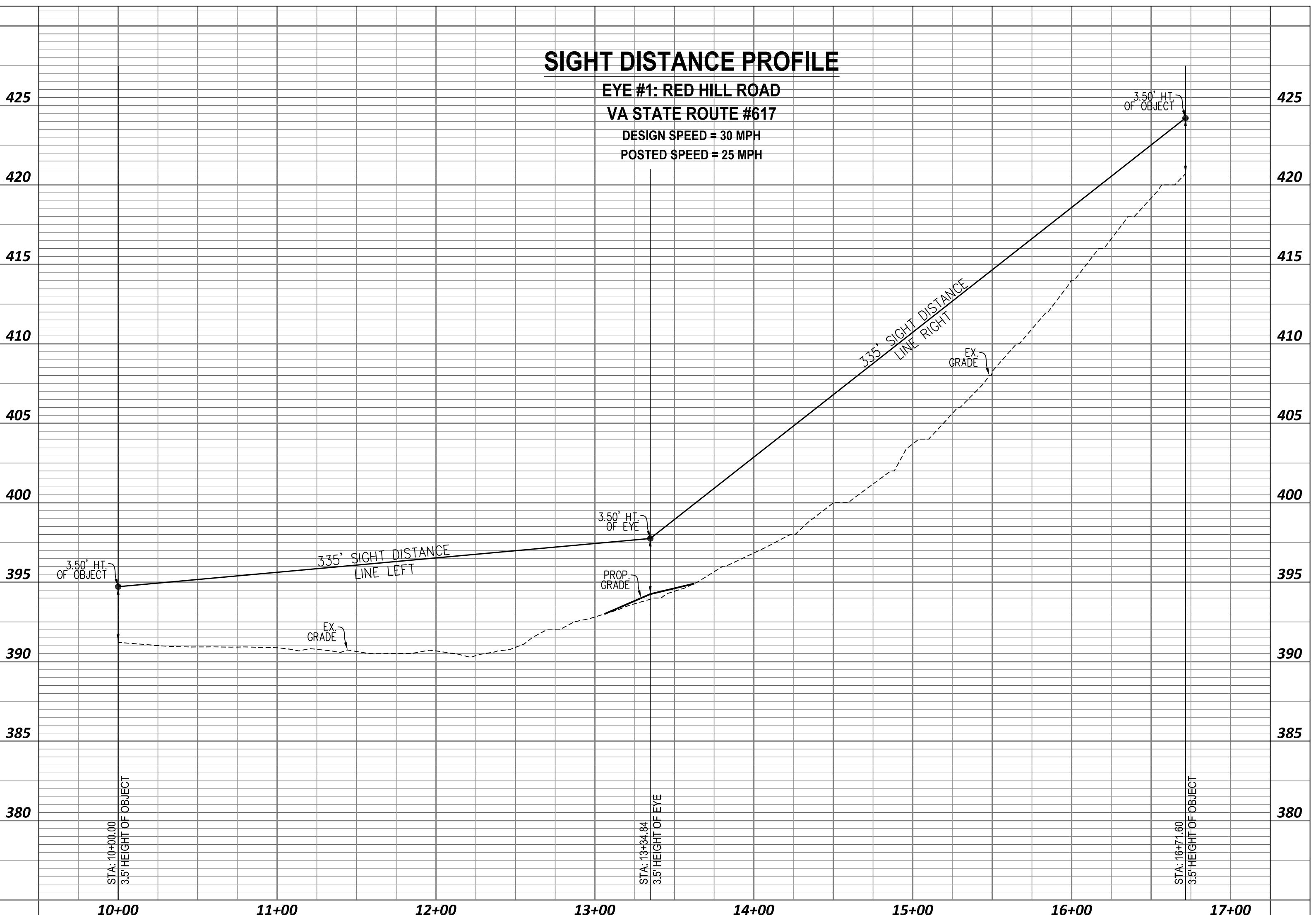
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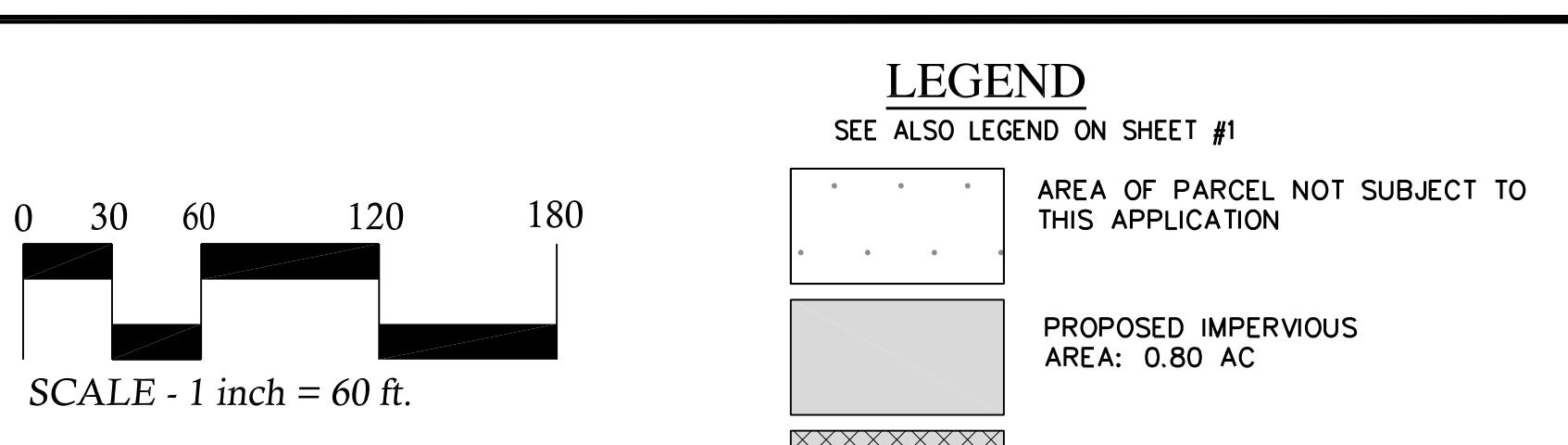
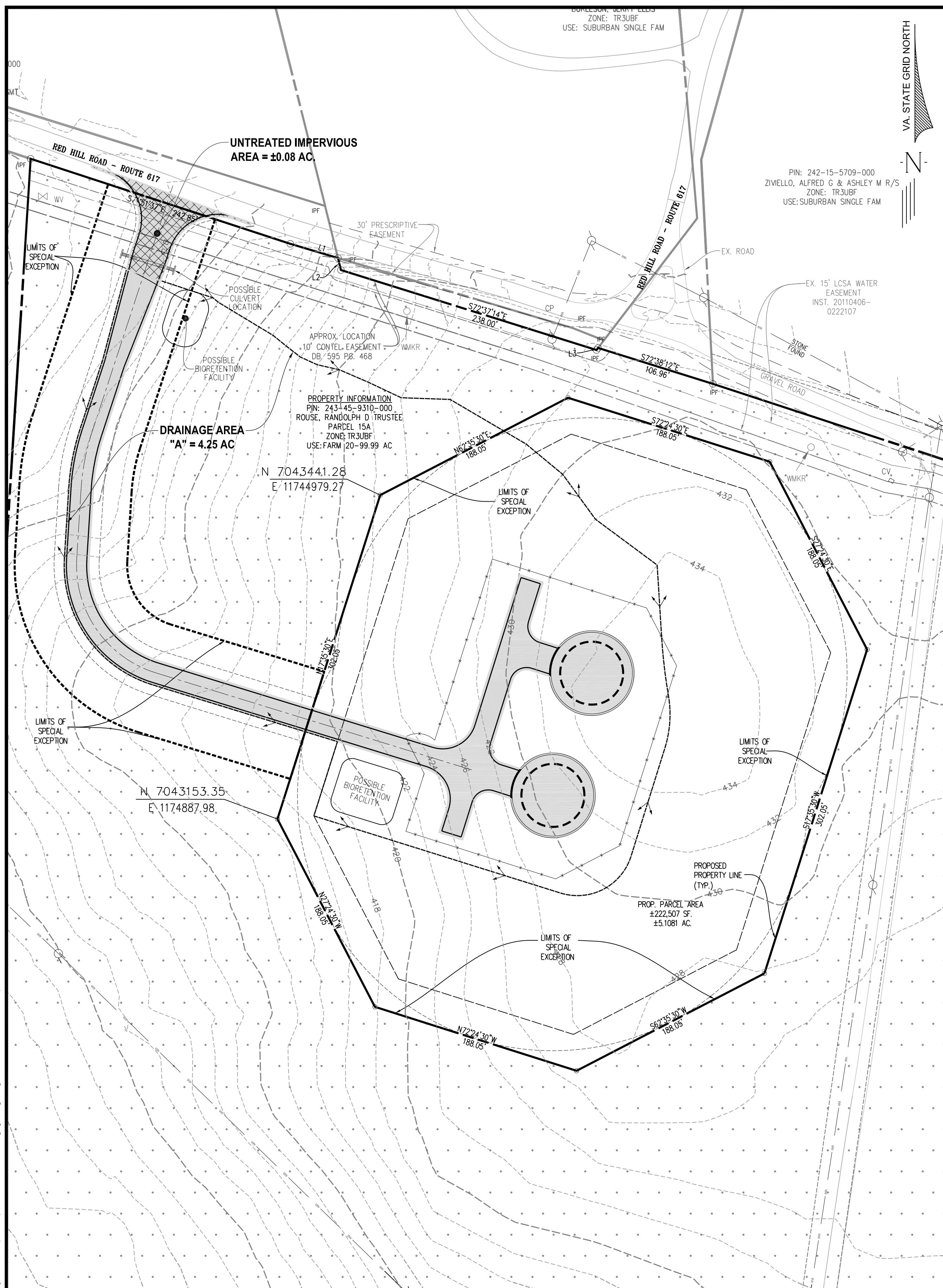


NOTE: THIS ELEVATION SHOWN IS ILLUSTRATIVE AND IS INTENDED TO CONVEY THE GENERAL ELEVATION CONCEPT OF THE FACILITY. THOUGH THE DETAILS OF THE ARCHITECTURAL DESIGN MAY BE MODIFIED AS THE PROJECT PROGRESSES THROUGH FINAL DESIGN, THE FINAL DESIGN WILL BE SIMILAR TO THAT SHOWN. THE MAXIMUM HEIGHT WILL NOT EXCEED: 189 FEET.

MAXIMUM HEIGHT CALCULATION:  
620' TOP OF RAILING - 431' GROUND ELEV. = 189' MAX. HT.

\*NON-COMMERCIAL COMMUNICATIONS ANTENNAE ATTACHED TO TOP OF HANDRAIL. MAX. HEIGHT 11-FEET (NOT INCLUDED IN HEIGHT CALCULATION)

|   |  |   |  |
|---|--|---|--|
| TANK ELEVATION DETAIL AND SIGHT DISTANCE EXHIBIT  |  |   |  |
| <b>LOUDOUN WATER<br/>600 ZONE WATER STORAGE TANKS<br/>BLUE RIDGE ELECTION DISTRICT<br/>LOUDOUN COUNTY, VIRGINIA</b> |  | <b>SCALE: AS SHOWN</b><br><b>C.I. : 2'</b><br><b>DATE: MAR, 2014</b>  |  |
|   |  | <i>Robert Brown</i><br><b>ROBERT W. BROWN</b><br>Lic. No. 037041<br><b>PROFESSIONAL ENGINEER</b><br><i>8/5/14</i> |  |
|   |  | Urban, Ltd.<br>4200-D Technology Court<br>Chantilly, Virginia 20151<br>Tel. 703.642.2306<br>TM www.urban-ltd.com  |  |
|   |  | <b>PLAN DATE</b>  |  |
|   |  | 12-12-13<br>01-13-14<br>03-28-14<br>08-05-14<br>-<br>-<br>-   |  |
|   |  | <b>No. DATE DESCRIPTION</b>   |  |
|   |  | <b>REVISI</b><br><b>ONS</b>   |  |



**Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment Site Data**

**Project Name: 600 Zone Water Storage Tanks Special Exception**  
**Date: 3/28/2014**

## Post-Development Project & Land Cover Information

## Constants

|  |      |
|--|------|
| Annual Rainfall (inches)                   | 43   |
| Target Rainfall Event (inches)             | 1.00 |
| Phosphorus EMC (mg/L)                      | 0.26 |
| Target Phosphorus Target Load (lb/acre/yr) | 0.41 |
| Pj   | 0.90 |

### **Pre-Development Land Cover (acres)**

|  | A soils | B Soils | C Soils | D Soils | Totals |
|--|---------|---------|---------|---------|--------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | 0.00    | 0.00    | 0.00    | 0.00    | 0.00   |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed    | 0.00    | 1.88    | 2.45    | 0.00    | 4.33   |
| Impervious Cover (acres)   | 0.00    | 0.00    | 0.00    | 0.00    | 0.00   |
|  |         |         |         | Total   | 4.33   |

### **Post-Development Land Cover (acres)**

|  | A soils | B Soils | C Soils | D Soils | Totals |
|--|---------|---------|---------|---------|--------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | 0.00    | 0.00    | 0.00    | 0.00    | 0.00   |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed    | 0.00    | 1.54    | 1.99    | 0.00    | 3.53   |
| Impervious Cover (acres)   | 0.00    | 0.34    | 0.46    | 0.00    | 0.80   |
|  |         |         |         | Total   | 4.33   |

## Rv Coefficients

|                   | A soils | B Soils | C Soils | D Soils |
|-------------------|---------|---------|---------|---------|
| Forest/Open Space | 0.02    | 0.03    | 0.04    | 0.05    |
| Managed Turf      | 0.15    | 0.20    | 0.22    | 0.25    |
| Impervious Cover  | 0.95    | 0.95    | 0.95    | 0.95    |

## Land Cover Summary

## **Pre-Development**

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|   |        |
|---|--------|
| Forest/Open Space Cover (acres)               | 0.00   |
| Weighted Rv(forest)                           | 0.00   |
| % Forest                                      | 0%     |
| Managed Turf Cover (acres)                    | 4.33   |
| Weighted Rv(turf)                             | 0.21   |
| % Managed Turf                                | 100%   |
| Impervious Cover (acres)                      | 0.00   |
| Rv(impermeable)                               | 0.95   |
| % Impervious                                  | 0%     |
| <b>Total Site Area (acres)</b>                | 4.33   |
| <b>Site Rv</b>                                | 0.21   |
|   |        |
| Pre-Development Treatment Volume (acre-ft)    | 0.0763 |
| Pre-Development Treatment Volume (cubic feet) | 3,321  |
| Pre-Development Load (TP) (lb/yr)             | 2.09   |

Maximum % Reduction Required Below Pre-Development Load 20%

Total Load (TP) Reduction Required (lb/yr) 1,660

|                                   |       |
|-----------------------------------|-------|
| Pre-Development Load (TN) (lb/yr) | 14.93 |
|-----------------------------------|-------|

**Drainage Area A Land Cover (acres)**

### Drainage Area A Land Cover (ac)

| Drainage Area A Land Cover (acres)   | A soils | B Soils | C Soils | D Soils | Totals |
|--|---------|---------|---------|---------|--------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | 0.00    | 0.00    | 0.00    | 0.00    | 0.00   |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed    | 0.00    | 1.46    | 1.99    | 0.00    | 3.45   |
| Impervious Cover (acres)   | 0.00    | 0.34    | 0.46    | 0.00    | 0.80   |
|  |         |         |         | Total   | 4.25   |

#### **Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A**

| Credit  | Unit                                      | Description of Credit       | Credit | Credit Area (acres) | Volume from Upstream RR Practice (cf) | Runoff Reduction (cf) | Remaining Runoff Volume (cf) | Phosphorus Efficiency (%) | Phosphorus Load from Upstream RR Practices (lbs.) | Untreated Phosphorus Load to Practice (lbs.) | Phosphorus Removed By Practice (lbs.) | Remaining Phosphorus Load (lbs.) | Downstream Treatment to be Employed |
|---|---|-----------------------------|--------|---------------------|---------------------------------------|-----------------------|------------------------------|---------------------------|---|--|---------------------------------------|----------------------------------|-------------------------------------|
| <b>6.Bioretention</b>                             |   |                             |        |                     |                                       |                       |                              |                           |   |  |                                       |                                  |                                     |
| 6.a. Bioretention or Urban Bioretention (Spec #9) | impervious acres draining to bioretention | 40% runoff volume reduction | 0.40   | 0.80                | 0                                     | 1104                  | 1655                         | 25                        | 0.00  | 1.73   | 0.95                                  | 0.78                             |                                     |
|   | turf acres draining to bioretention       | 40% runoff volume reduction | 0.40   | 3.45                | 0                                     | 1059                  | 1588                         | 25                        | 0.00  | 1.66   | 0.91                                  | 0.75                             |                                     |

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**PRELIMINARY BMP COMPUTATIONS**

**LOUDOUN WATER**

**600 ZONE WATER STORAGE TANK**

**BLUE RIDGE ELECTION DISTRICT**

**LOUDOUN COUNTY, VIRGINIA**

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