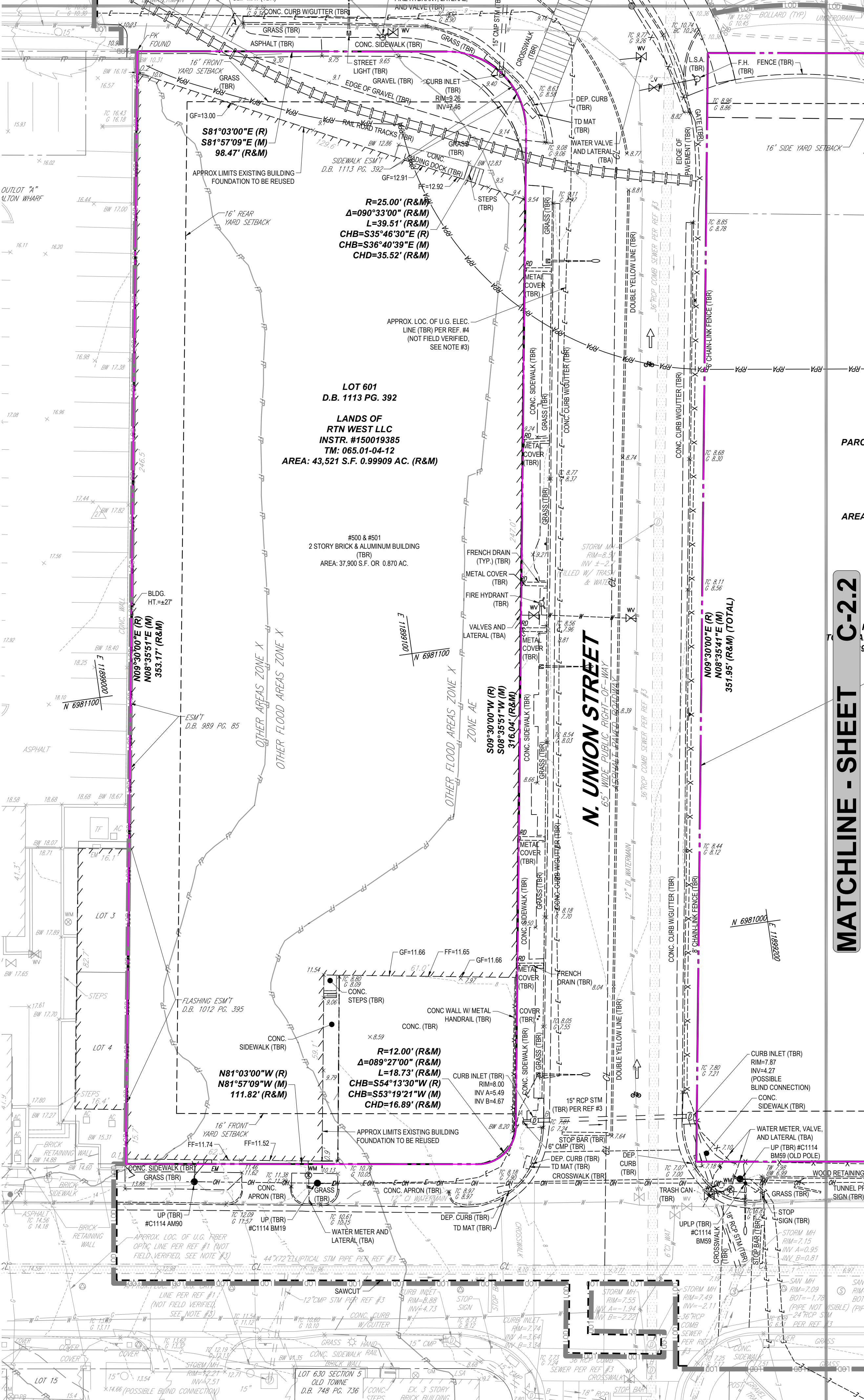
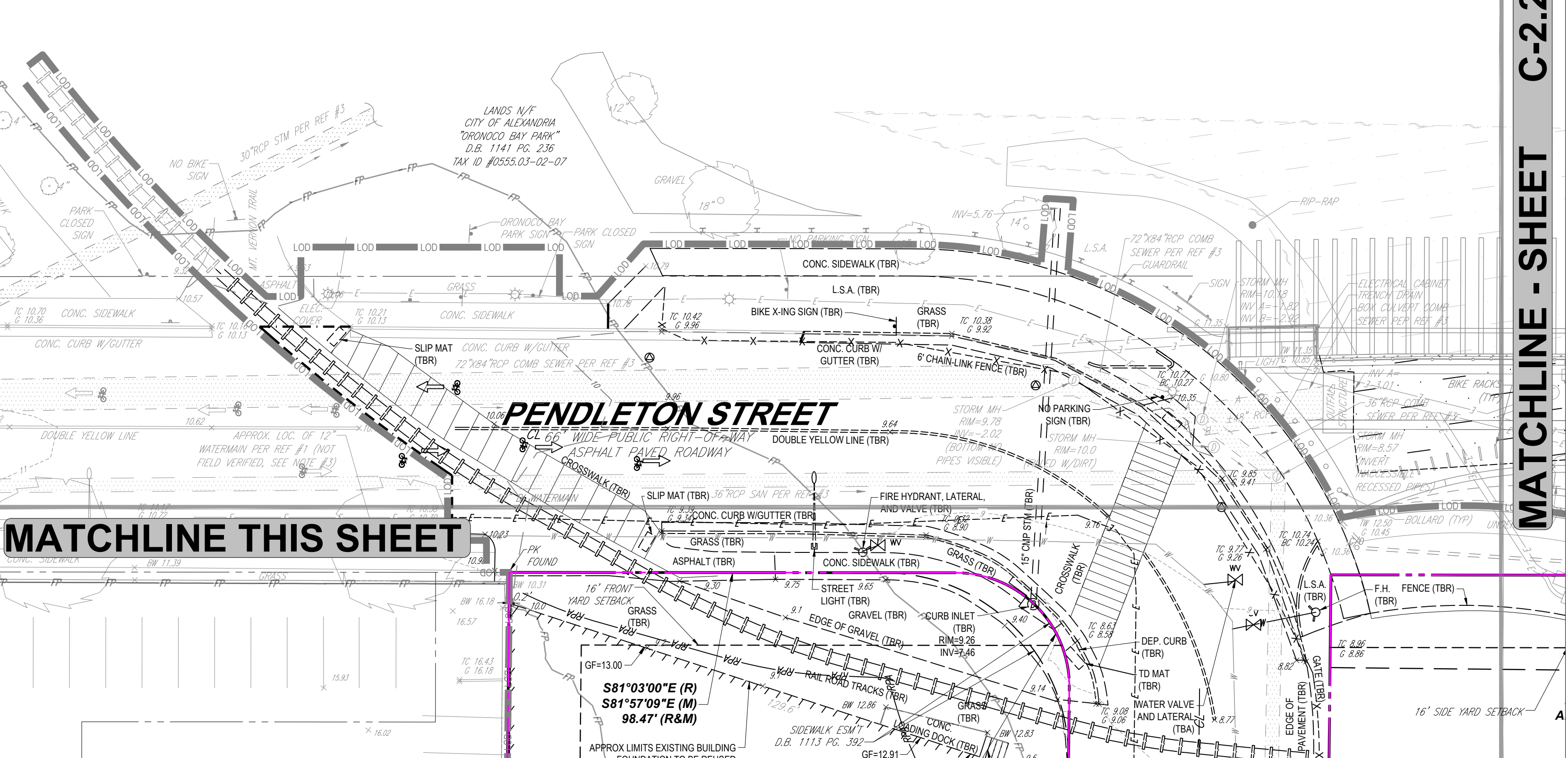


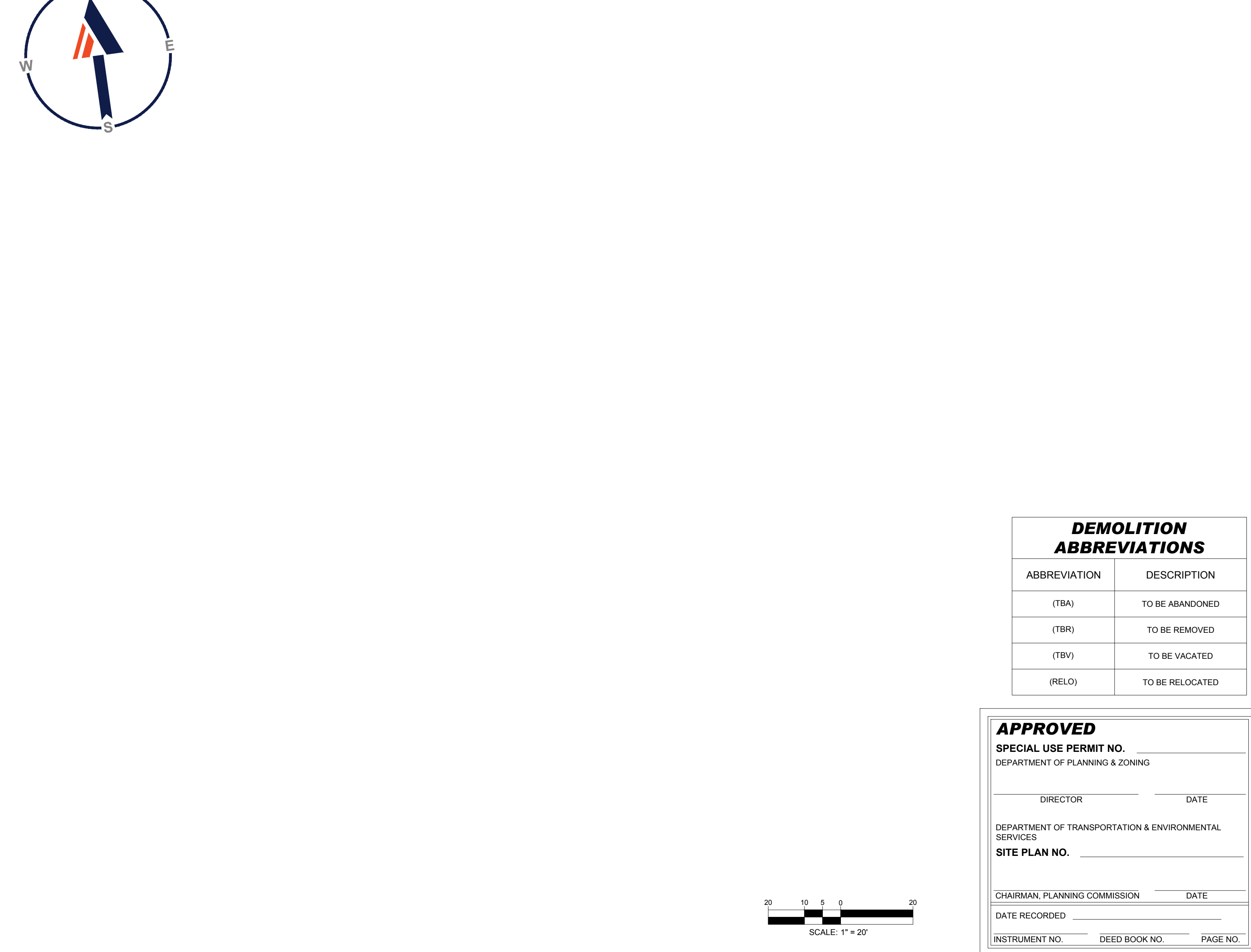
MATCHLINE THIS SHEET



MATCHLINE THIS SHEET



MATCHLINE THIS SHEET



MATCHLINE - SHEET C-2.2

MATCHLINE - SHEET C-2.2

BOHLER DC

SITE CIVIL AND CONSULTING ENGINEERING
 LAND SURVEYING
 PROGRAM MANAGEMENT
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REVISIONS

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PROJECT No.: DCA230074.00
 DRAWN BY: AF
 CHECKED BY: MP
 DATE: 07/05/24
 CAD ID: P-CIVL-EXDM

PROJECT:
**DEVELOPMENT
 PRELIMINARY SITE
 PLAN**
 FOR

**ROBINSON
 TERMINAL NORTH**

500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

BOHLER DC

1331 PENNSYLVANIA AVE., NW,
 STE. 1250 NORTH
 WASHINGTON, DC 20004
 Phone: (202) 524-5700

COMMONWEALTH OF VIRGINIA

MICHAEL J. BIRKLAND
 Lic. No. 031693
 07/26/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
**EXISTING
 CONDITIONS/
 DEMOLITION
 PLAN**

SHEET NUMBER:
C-2.3

ORG. DATE - 07/05/24

DEMOLITION ABBREVIATIONS

ABBREVIATION	DESCRIPTION
(TBA)	TO BE ABANDONED
(TBR)	TO BE REMOVED
(TBV)	TO BE VACATED
(RELO)	TO BE RELOCATED

APPROVED
 SPECIAL USE PERMIT NO. _____
 DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

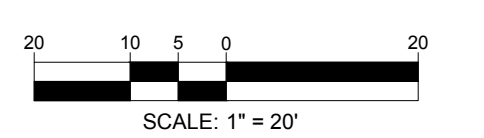
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

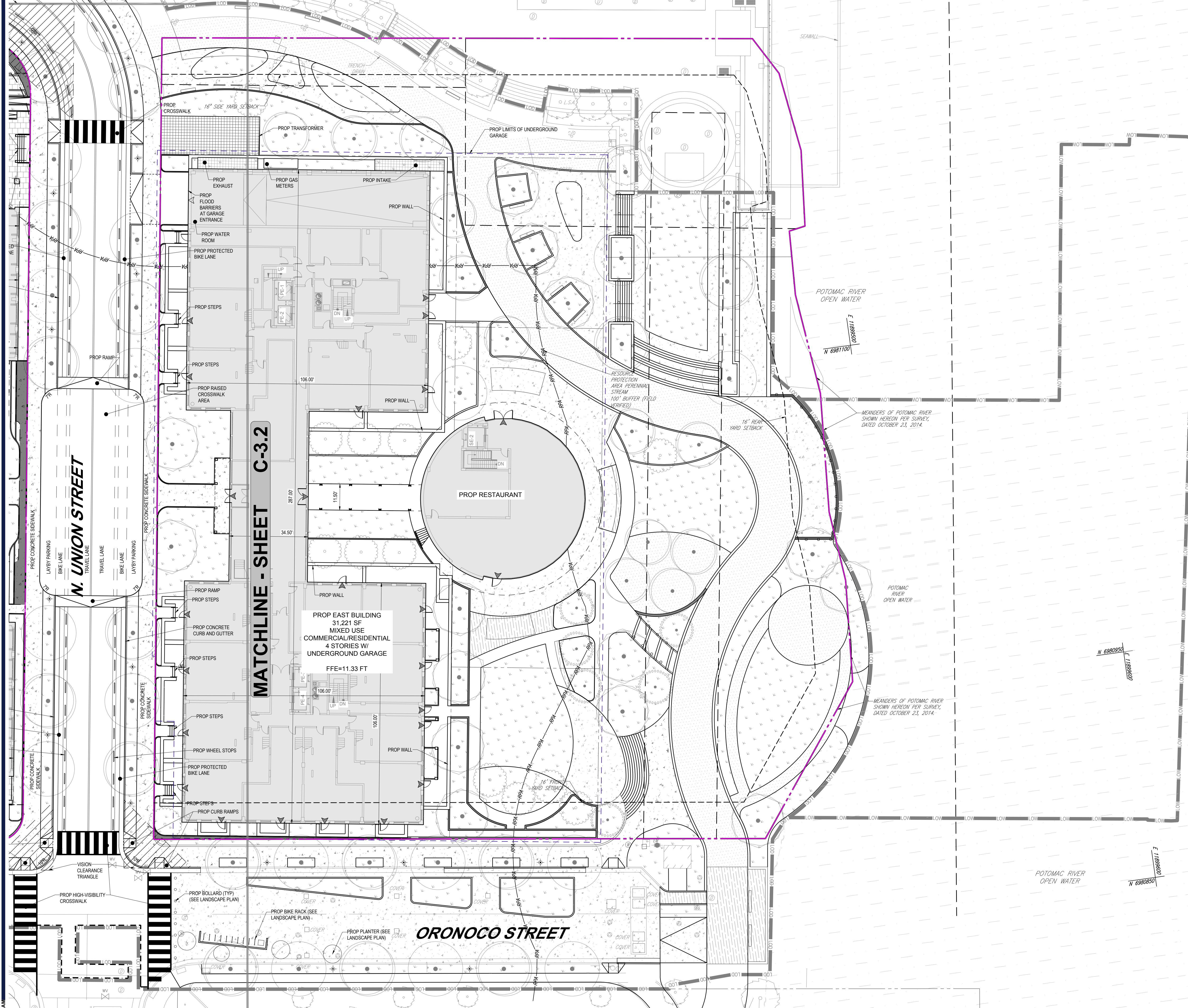
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INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____



MATCHLINE - SHEET C-3.2



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PROJECT No.: DCA230074.00
 DRAWN BY: AF
 CHECKED BY: MP
 DATE: 07/05/24
 CAD ID: P-CIVL-SITE

DEVELOPMENT PRELIMINARY SITE PLAN
 FOR

ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

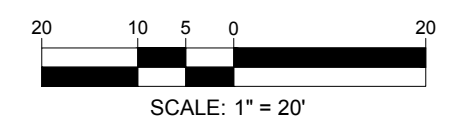
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 STE. 1250 NORTH
 WASHINGTON, DC 20004
 Phone: (202) 524-5700



LEGEND
 PROPOSED

CONCRETE SIDEWALK	
BRICK SIDEWALK	
PLANTING AREA	
HARDSCAPE PAVERS	
HARDSCAPE PAVERS	

*SEE LANDSCAPE PLAN FOR HARDSCAPE DETAILS



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DIRECTOR _____ DATE _____

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

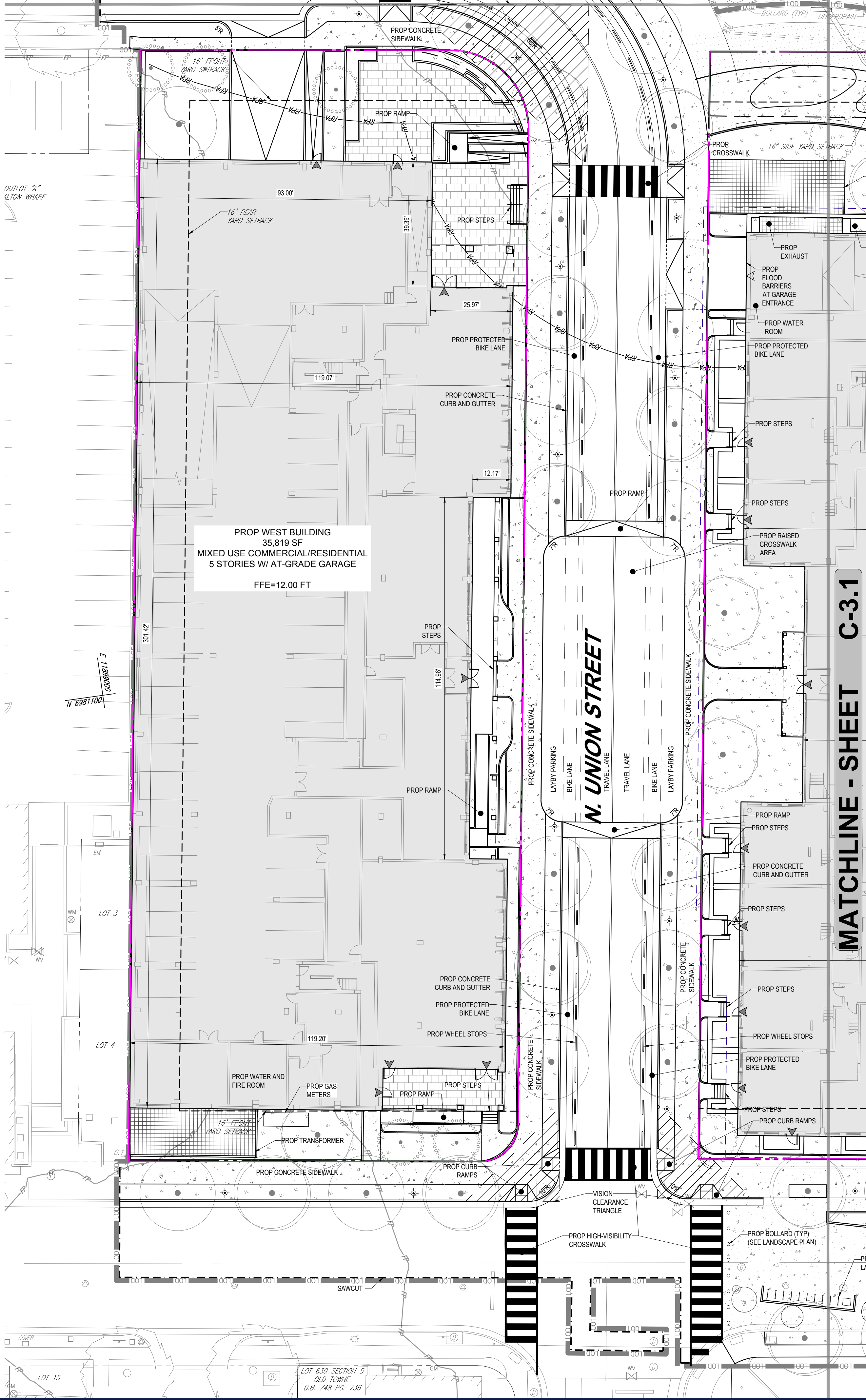
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PRELIMINARY SITE PLAN

SHEET NUMBER:
C-3.1

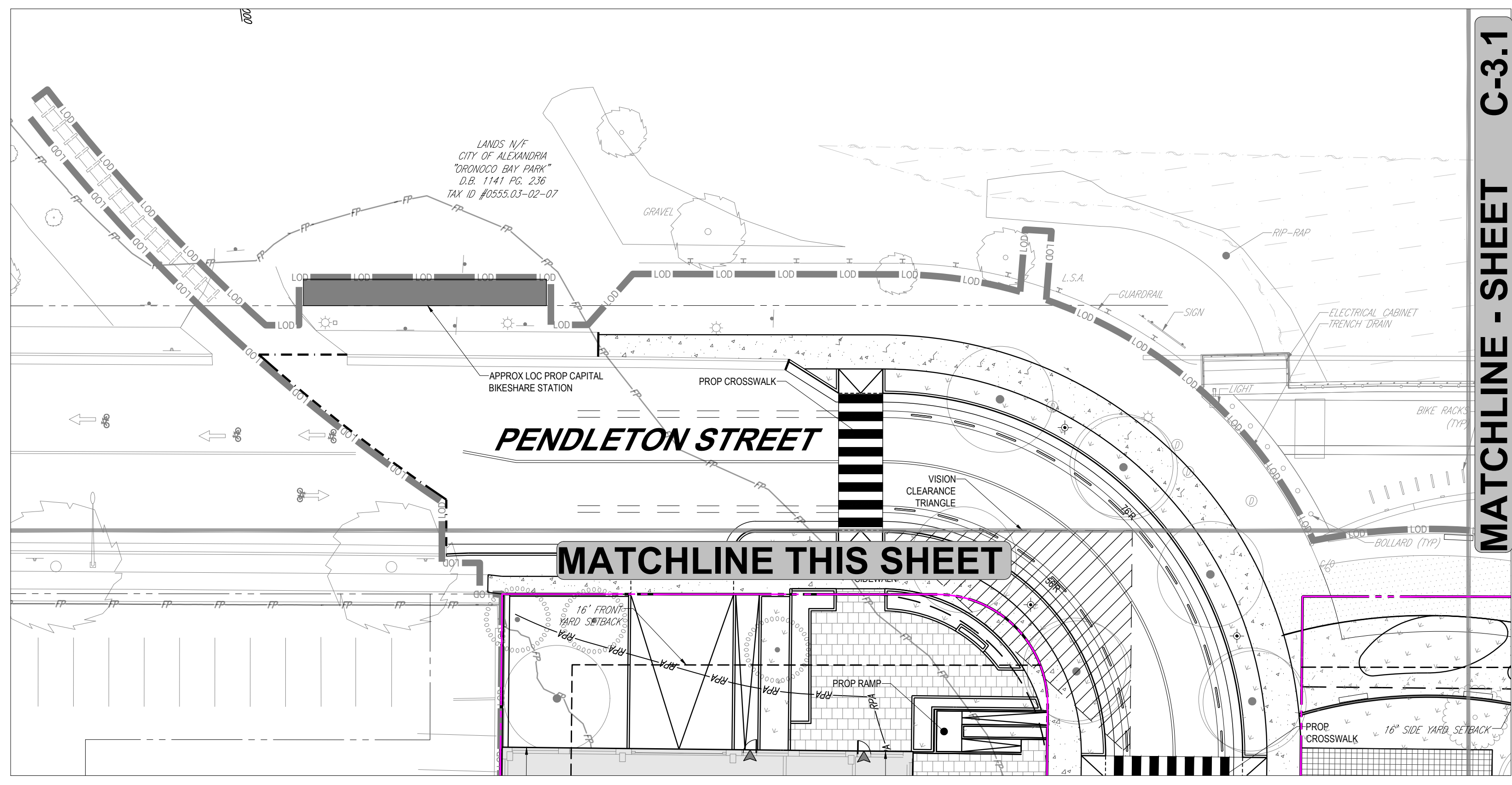
ORG. DATE - 07/05/24

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MATCHLINE - SHEET C-3.1



MATCHLINE - SHEET C-3.1

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DRAWN BY: AF
CHECKED BY: MP
DATE: 07/05/24
CAD ID: P-CIVL-SITE

PROJECT:
**DEVELOPMENT
PRELIMINARY SITE
PLAN**
FOR
**ROBINSON
TERMINAL NORTH**

500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

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WASHINGTON, DC 20004
Phone: (202) 524-5700

COMMONWEALTH OF VIRGINIA
MICHAEL J. BIRKLANDA
Lic. No. 031693
07/26/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
**PRELIMINARY
SITE PLAN**

SHEET NUMBER:
C-3.2

ORG. DATE - 07/05/24

LEGEND

PROPOSED

CONCRETE SIDEWALK	
BRICK SIDEWALK	
PLANTING AREA	
HARDSCAPE PAVERS	
HARDSCAPE PAVERS	

*SEE LANDSCAPE PLAN FOR HARDSCAPE DETAILS

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DIRECTOR _____ DATE _____

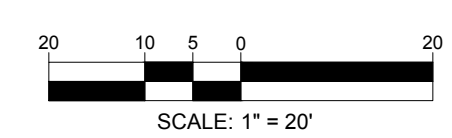
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

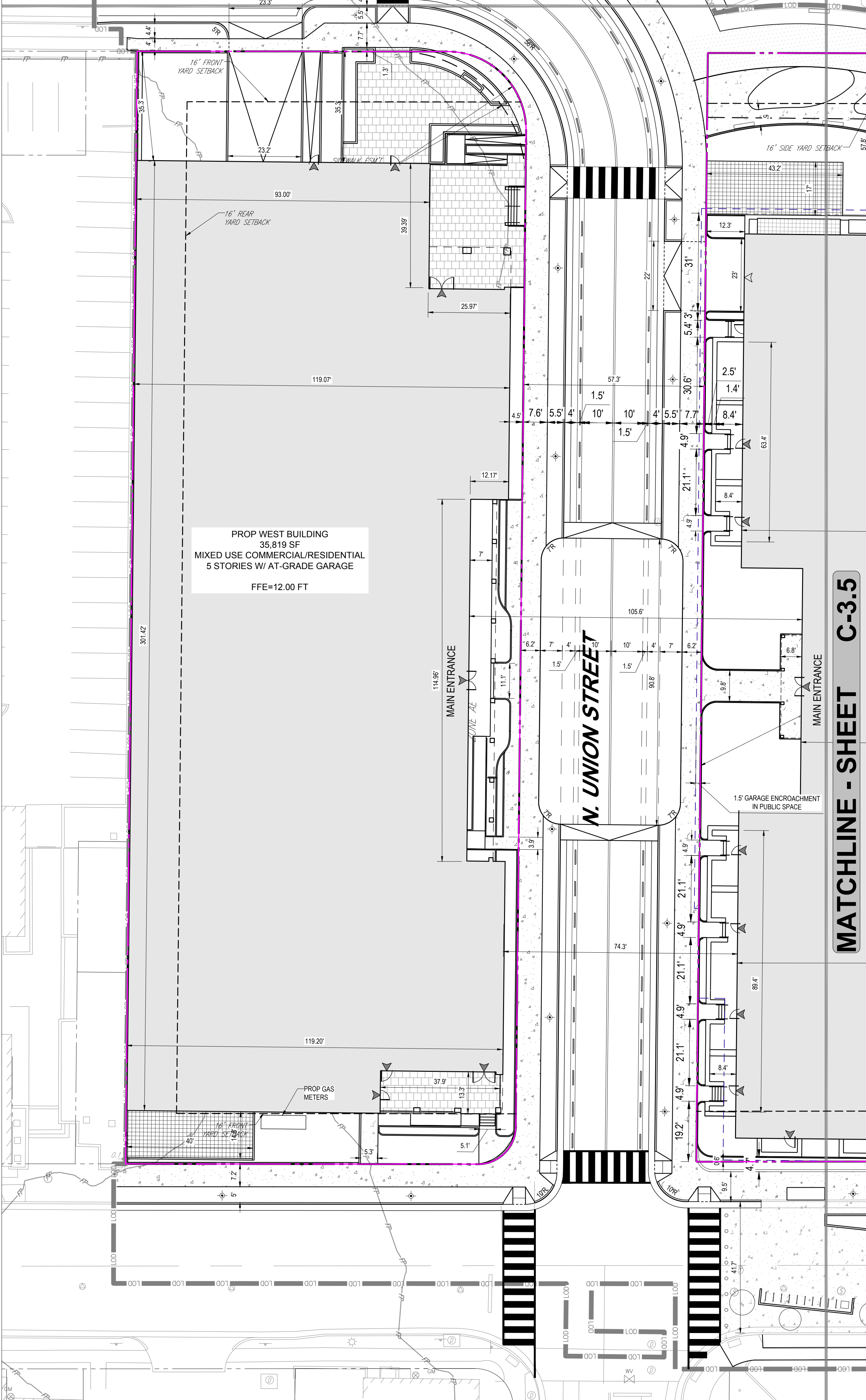
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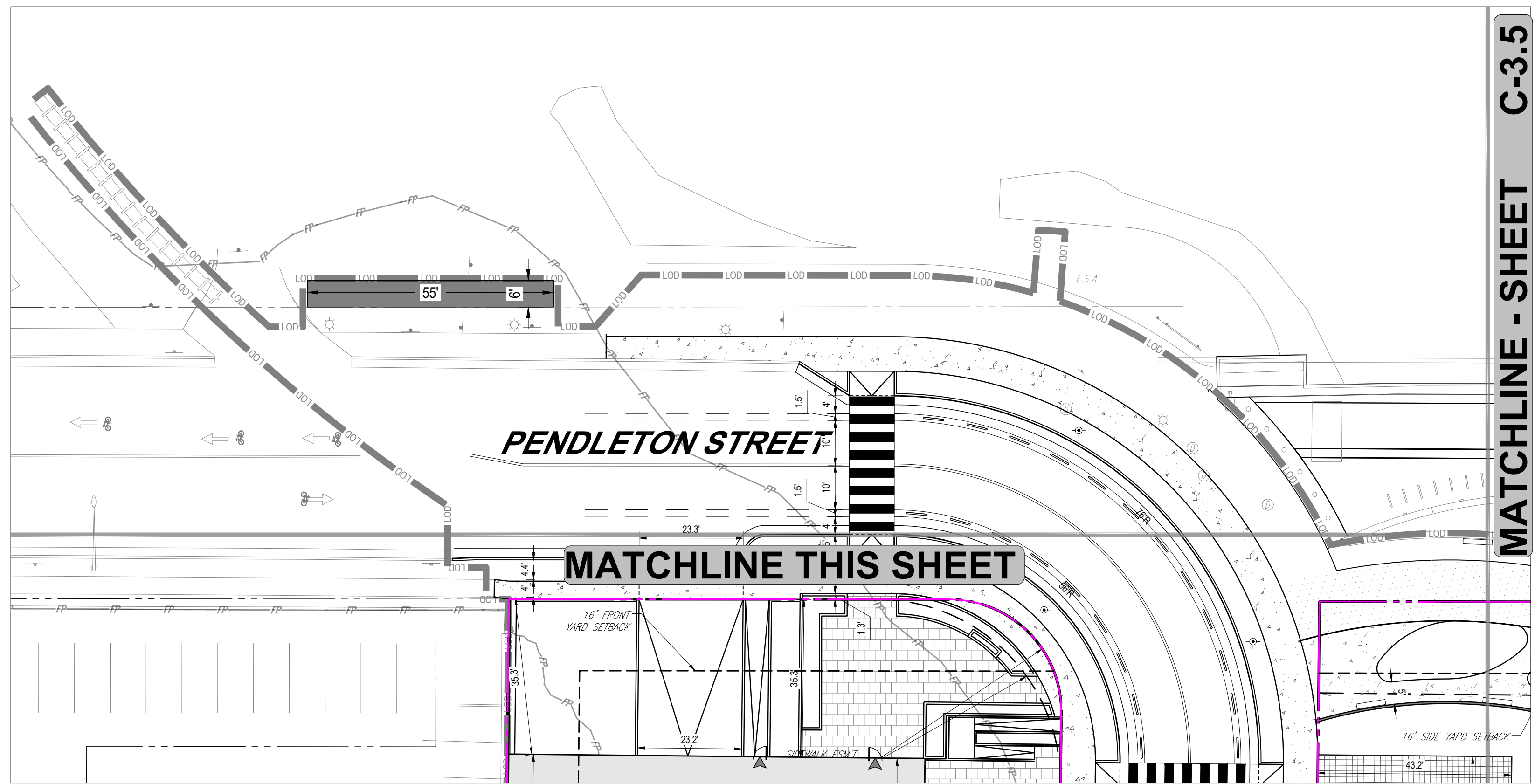


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MATCHLINE THIS SHEET



MATCHLINE - SHEET C-3.5



MATCHLINE - SHEET C-3.5

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DATE: 07/05/24
CAD ID: P-CIVL-DIMS

PROJECT:
**DEVELOPMENT
PRELIMINARY SITE
PLAN**
FOR
**ROBINSON
TERMINAL NORTH**

500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

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MICHAEL J. BIRKLANDA
Lic. No. 031693
07/26/2024
PROFESSIONAL ENGINEER

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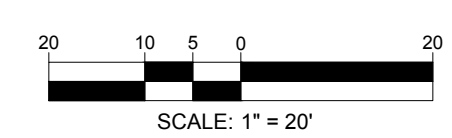
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

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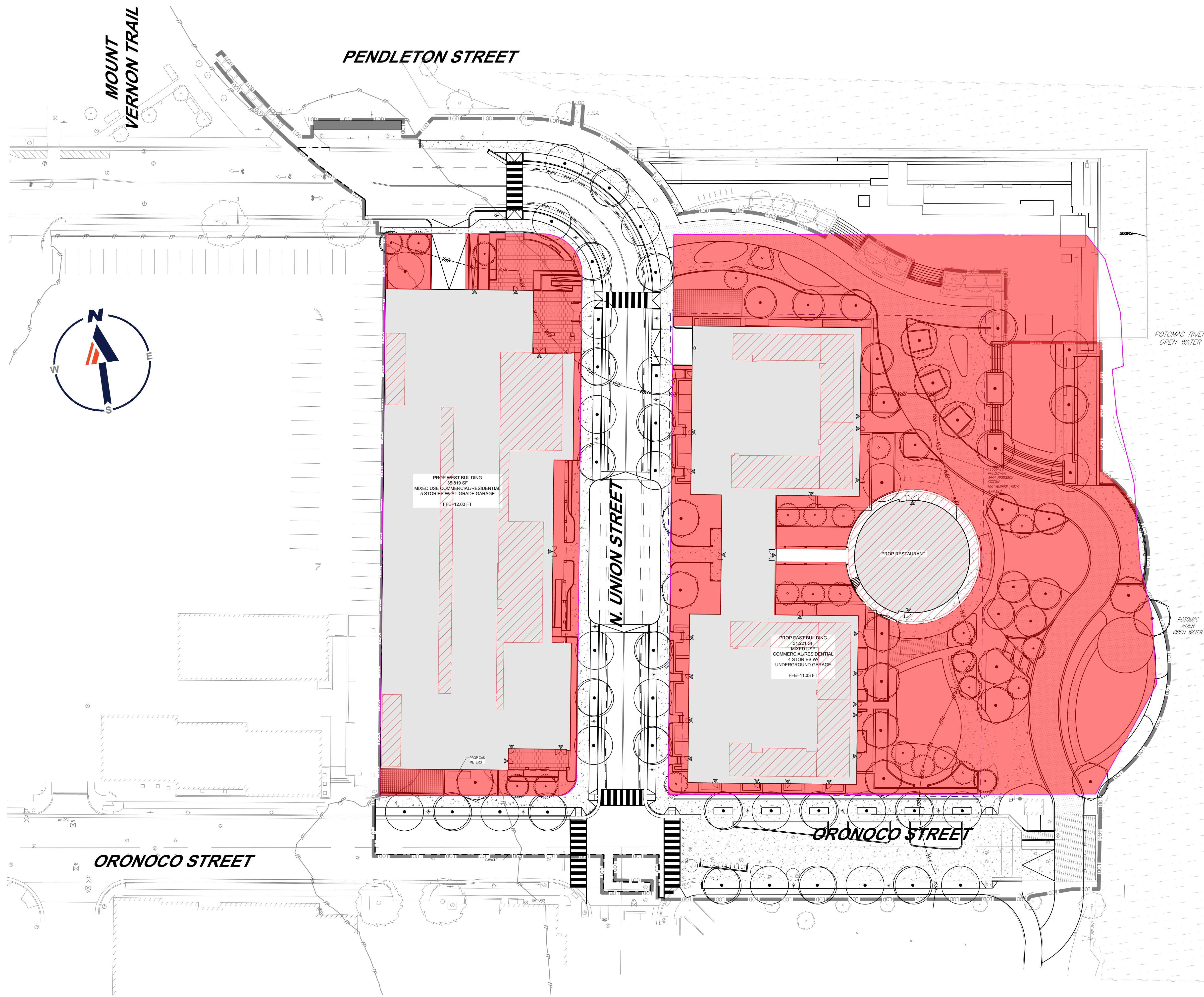
INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____



SHEET TITLE:
**DIMENSION
PLAN**

SHEET NUMBER:
C-3.6

ORG. DATE - 07/05/24



OPEN SPACE PLAN SUMMARY

IN THE W-1 ZONE, THE OPEN SPACE REQUIREMENT IS 300 SF AT-GRADE OPEN SPACE PER UNIT. THIS PROJECT PROPOSES 73 TOTAL UNITS, THEREFORE THE REQUIREMENT IS:

73 TOTAL UNITS * 300 SF AT-GRADE OPEN SPACE/UNIT = 21,900 SF AT-GRADE OPEN SPACE

OPEN SPACE PLAN SUMMARY	
GROUND LEVEL (SF)	77,670
ROOFTOP (SF)	20,643
TOTAL (SF)	98,313

LEGEND

- PROPERTY LINE
- OPEN SPACE AT GROUND LEVEL
- OPEN SPACE ON ROOFTOP

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 DRAWN BY: AF
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 DATE: 07/05/24
 CAD ID: P-CIVIL-OSP-

DEVELOPMENT PRELIMINARY SITE PLAN

FOR
ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

BOHLER DC

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SHEET TITLE:

OPEN SPACE PLAN

SHEET NUMBER:

C-3.7

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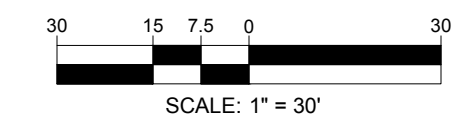
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SITE PLAN NO. _____

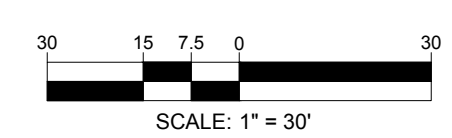
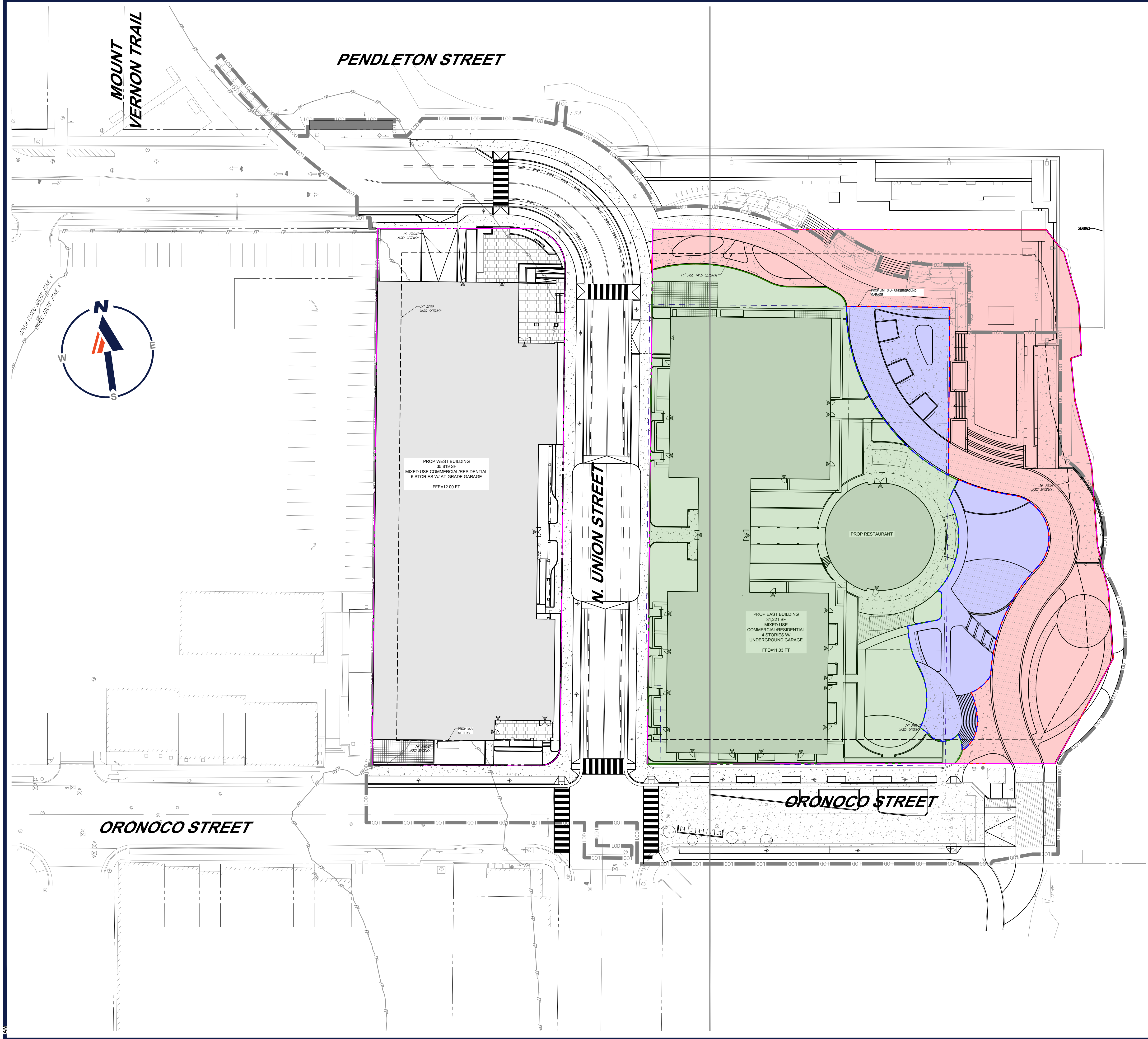
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CAD ID: P-CIVL-DIMS

PROJECT:
DEVELOPMENT PRELIMINARY SITE PLAN
FOR
ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

BOHLER DC

1331 PENNSYLVANIA AVE., NW,
STE. 1250 NORTH
WASHINGTON, DC 20004
Phone: (202) 524-5700



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DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

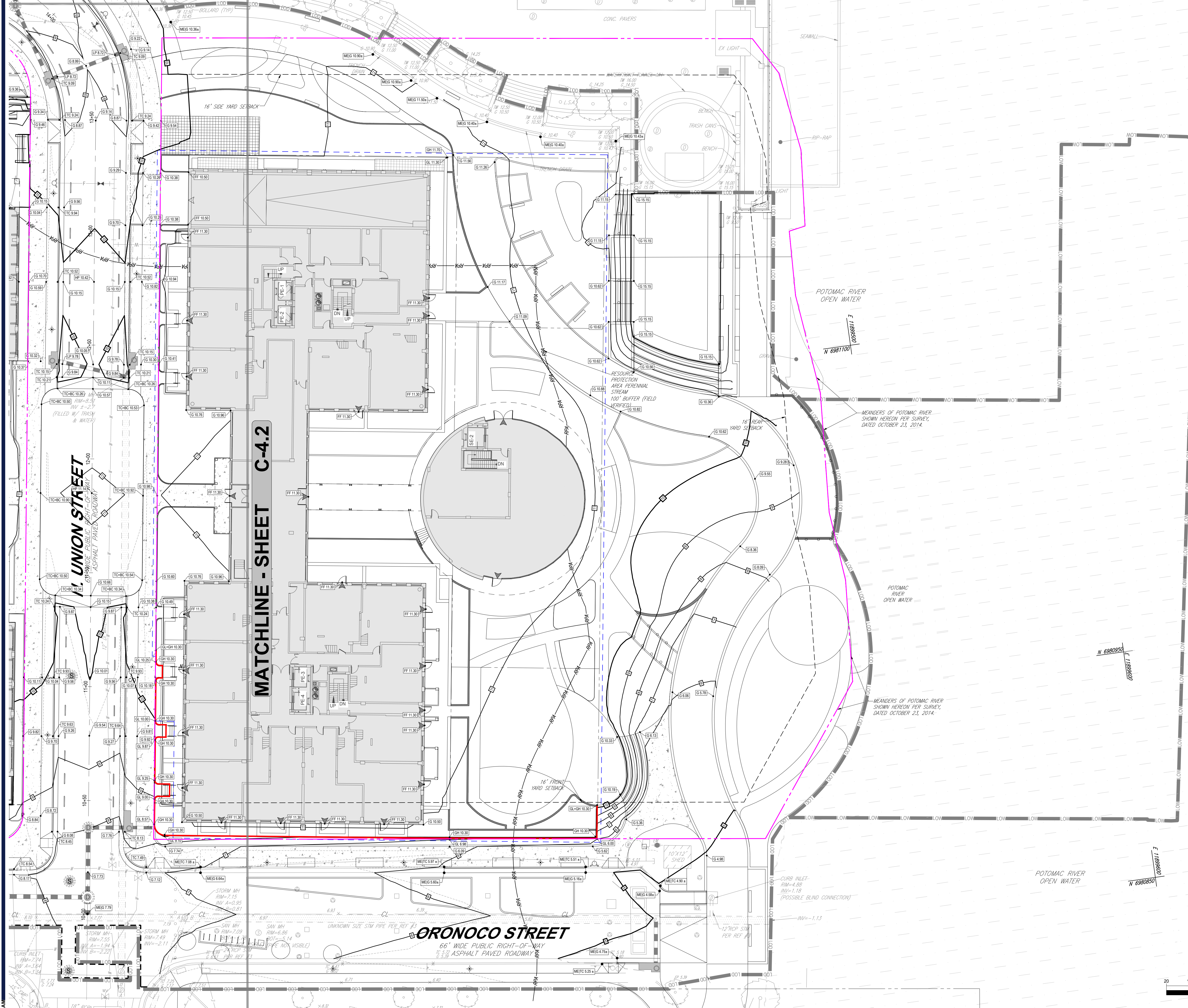
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SHEET TITLE:
PRELIMINARY SUBDIVISION EXHIBIT

SHEET NUMBER:
C-3.8

ORG. DATE - 07/05/24

MATCHLINE - SHEET C-4.2



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 CHECKED BY: MP
 DATE: 07/05/24
 CAD ID: P-CIVL-GRAD

DEVELOPMENT PRELIMINARY SITE PLAN
 FOR
ROBINSON TERMINAL NORTH
 500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

BOHLER DC
 1331 PENNSYLVANIA AVE., NW,
 STE. 1250 NORTH
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 Phone: (202) 524-5700

COMMONWEALTH OF VIRGINIA
 MICHAEL J. BIRKLAND
 Lic. No. 031693
 07/26/2024
PROFESSIONAL ENGINEER

GRADING LEGEND

FLOODPROOF WALL	
-----------------	--

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DIRECTOR _____ DATE _____

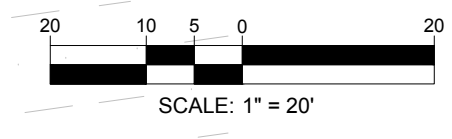
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

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DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____



SHEET TITLE:
GRADING PLAN

SHEET NUMBER:
C-4.1

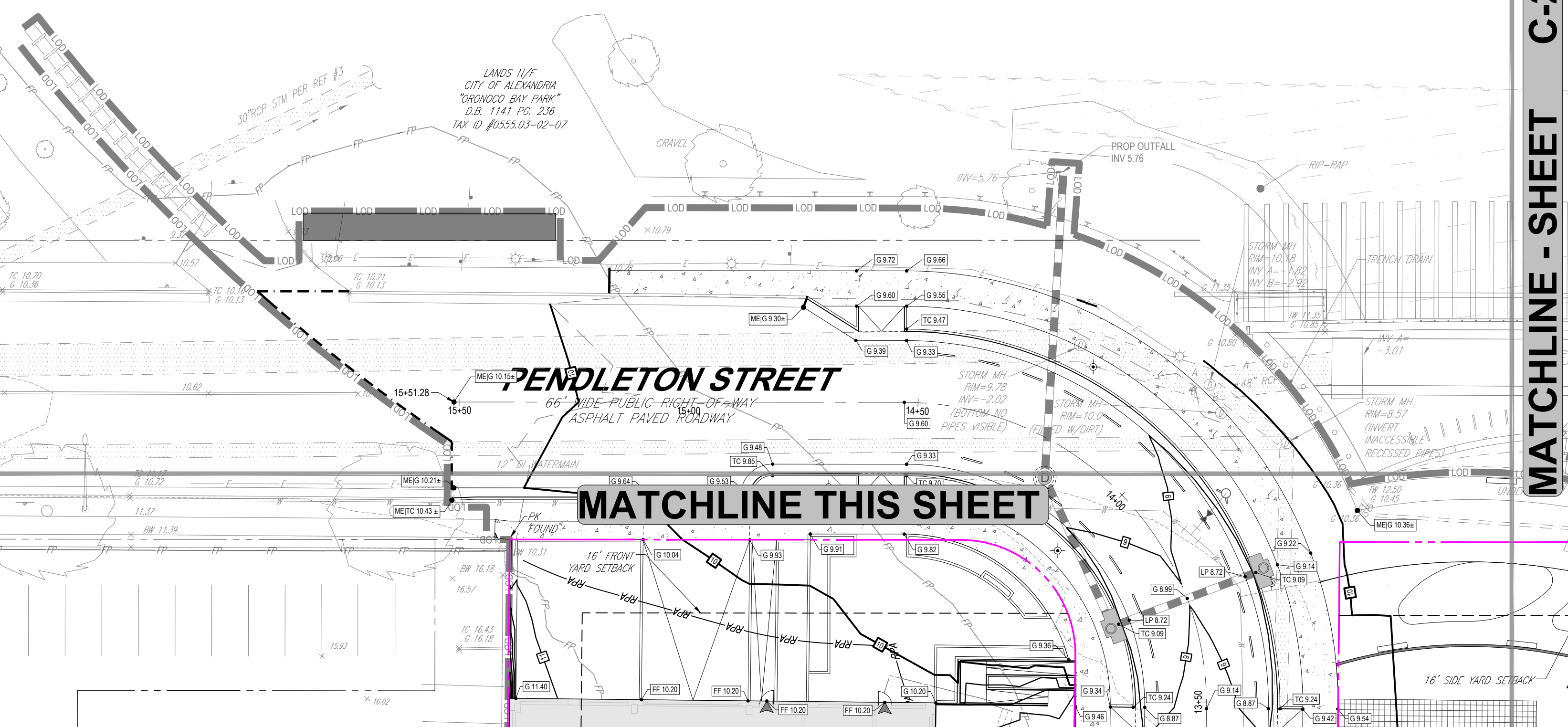
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MATCHLINE - SHEET C-4.1



MATCHLINE - SHEET C-202



GRADING LEGEND

FLOODPROOF WALL	
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CAD ID: P-CIVL-GRAD

DEVELOPMENT PRELIMINARY SITE PLAN
FOR
ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

BOHLER DC

1331 PENNSYLVANIA AVE., NW,
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WASHINGTON, DC 20004
Phone: (202) 524-5700

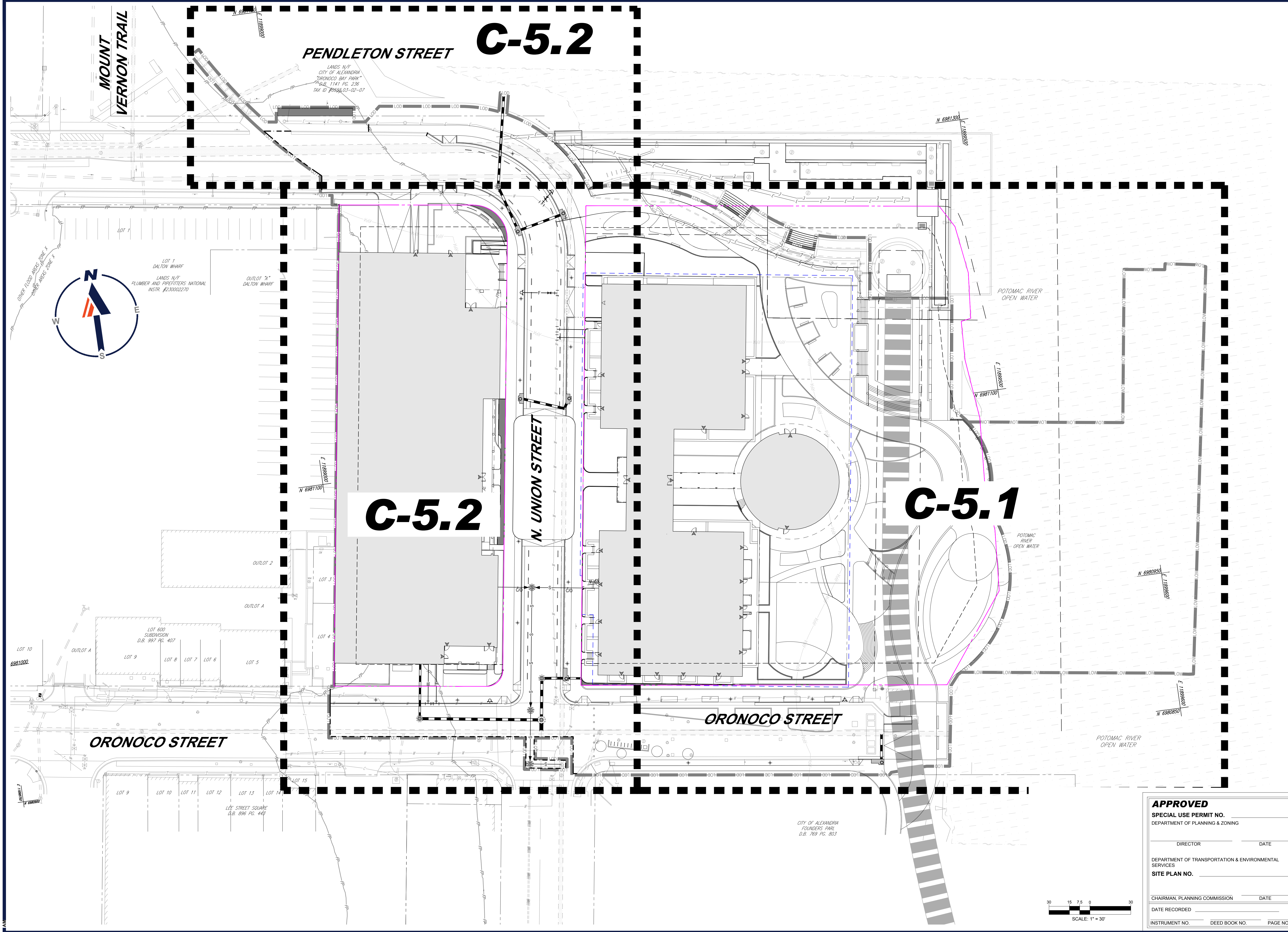
COMMONWEALTH OF VIRGINIA
MICHAEL J. BIRKLAND
Lic. No. 031693
07/26/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
GRADING PLAN

SHEET NUMBER:
C-4.2

ORG. DATE - 07/05/24

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 CHECKED BY: MP
 DATE: 07/05/24
 CAD ID: P-CIVIL-UTIL

DEVELOPMENT PRELIMINARY SITE PLAN FOR

ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

BOHLER DC
 1331 PENNSYLVANIA AVE., NW,
 STE. 1250 NORTH
 WASHINGTON, DC 20004
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SHEET TITLE:
OVERALL UTILITY PLAN
 SHEET NUMBER:
C-5.0
 ORG. DATE - 07/05/24

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DIRECTOR _____ DATE _____

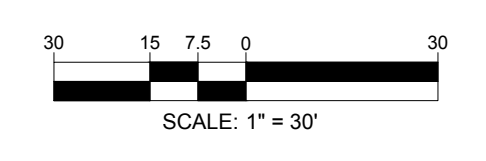
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

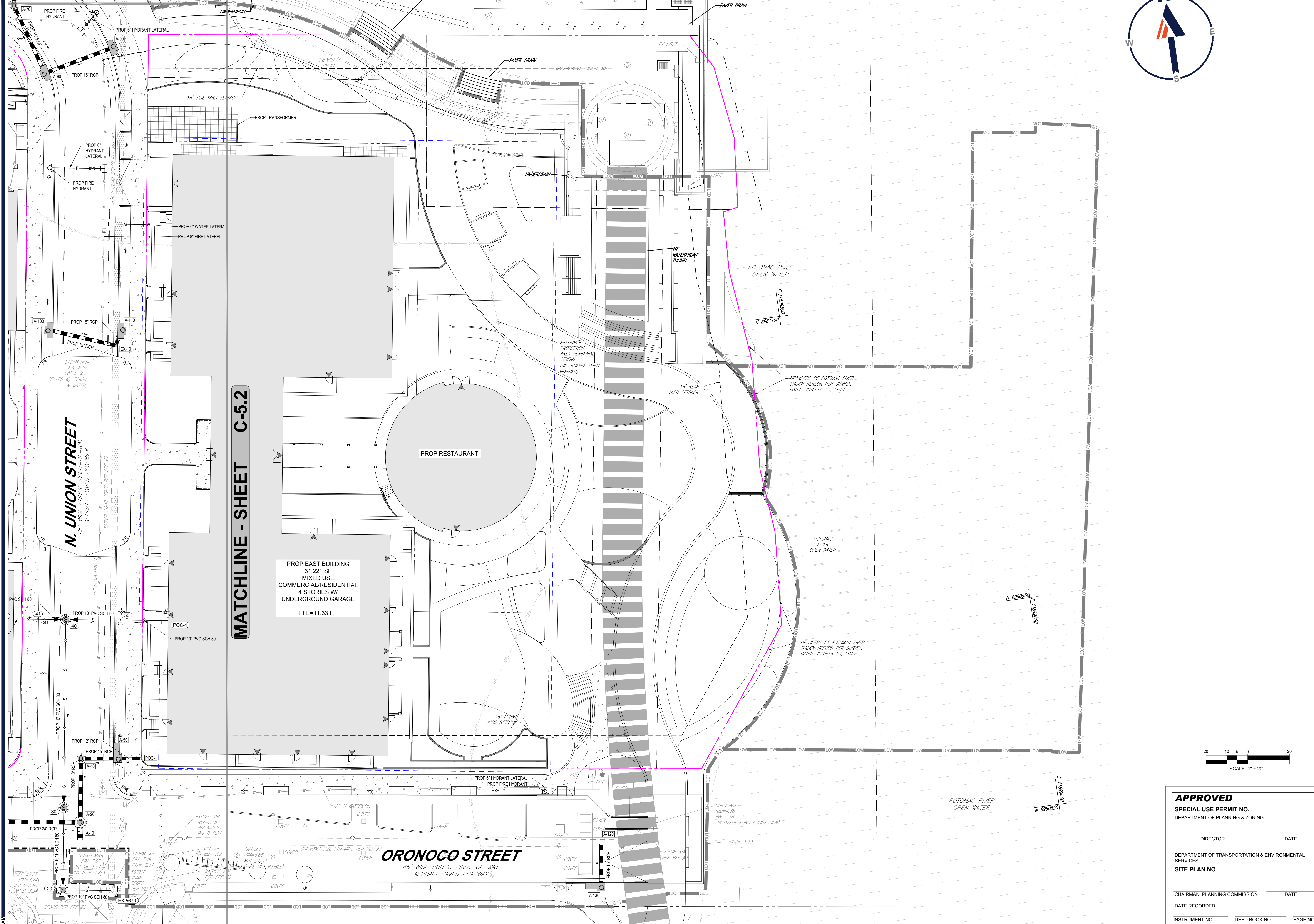
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INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____



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MATCHLINE - SHEET C-5.2



MATCHLINE - SHEET C-5.2

N. UNION STREET
65' WIDE PUBLIC RIGHT-OF-WAY
ASPHALT PAVED ROADWAY

PROP EAST BUILDING
31,221 SF
MIXED USE
COMMERCIAL/RESIDENTIAL
4 STORIES W/
UNDERGROUND GARAGE
FFE=11.33 FT

ORONOCO STREET
66' WIDE PUBLIC RIGHT-OF-WAY
ASPHALT PAVED ROADWAY

PROP RESTAURANT

BOHLER DC
SITE CIVIL AND CONSULTING ENGINEERING
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CAD ID: P-CIVIL-UTIL

DEVELOPMENT PRELIMINARY SITE PLAN
FOR
ROBINSON TERMINAL NORTH
500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

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COMMONWEALTH OF VIRGINIA
MICHAEL J. BIRKLANDA
Lic. No. 031693
07/26/2024
PROFESSIONAL ENGINEER



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SITE PLAN NO. _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

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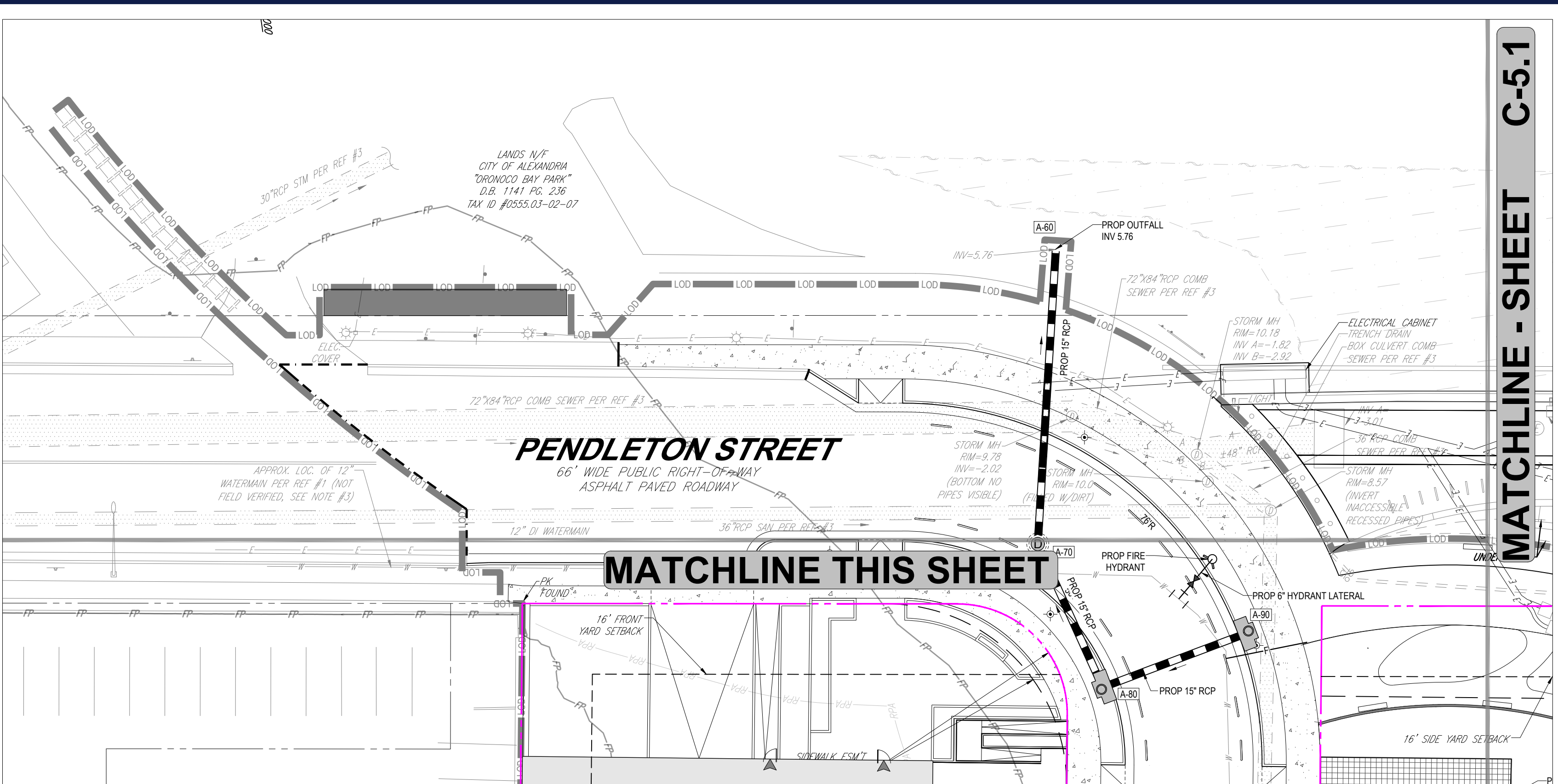
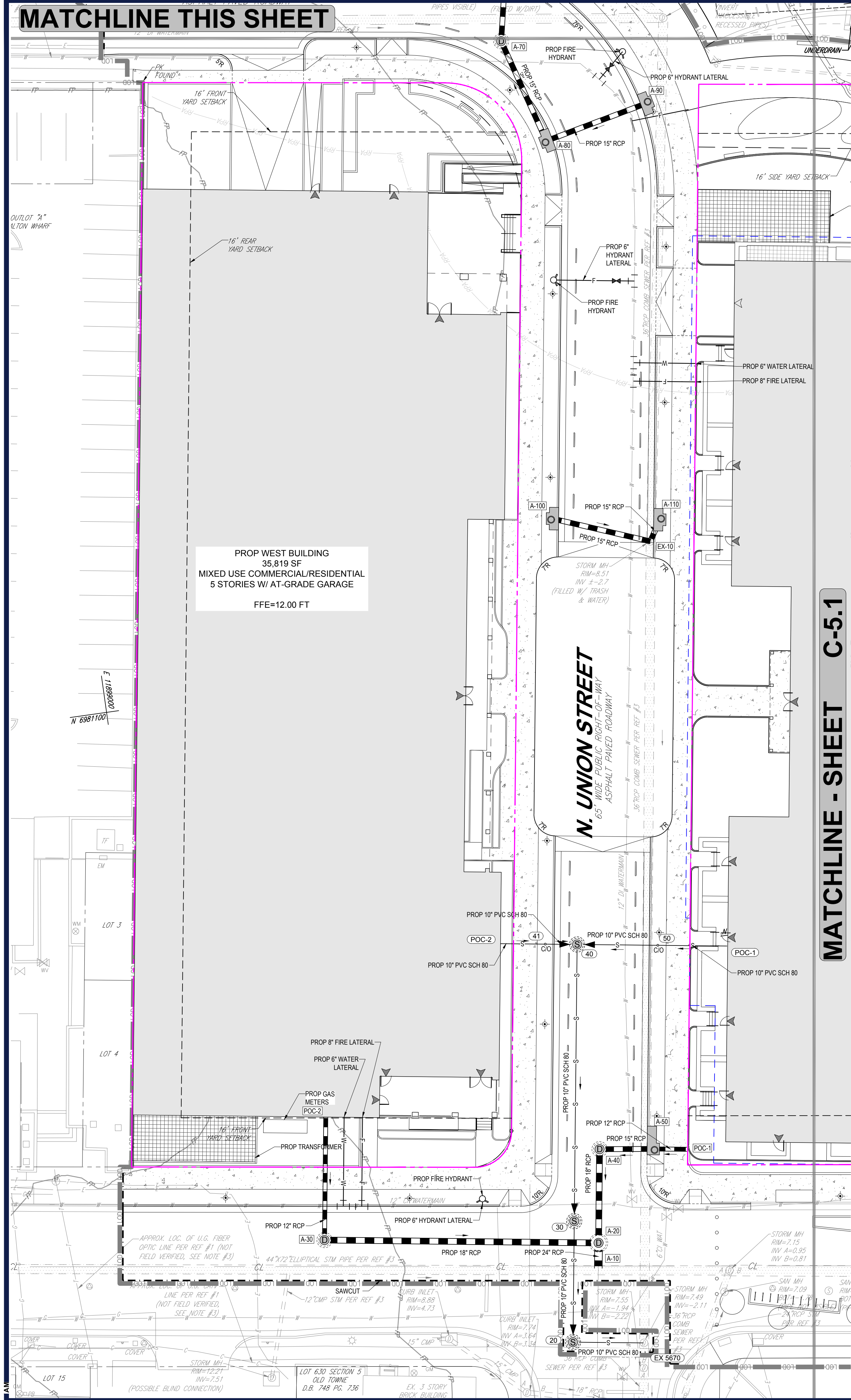
SHEET TITLE:
UTILITY PLAN

SHEET NUMBER:
C-5.1

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PROJECT No.: DCA230074.00
 DRAWN BY: AF
 CHECKED BY: MP
 DATE: 07/05/24
 CAD ID: P-CIVIL-UTIL

PROJECT:
**DEVELOPMENT
 PRELIMINARY SITE
 PLAN**
 FOR
**ROBINSON
 TERMINAL NORTH**
 500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

BOHLER DC

1331 PENNSYLVANIA AVE., NW,
 STE. 1250 NORTH
 WASHINGTON, DC 20004
 Phone: (202) 524-5700

COMMONWEALTH OF VIRGINIA
 MICHAEL J. BIRKLAND
 Lic. No. 031693
 07/26/2024
 PROFESSIONAL ENGINEER

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 DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

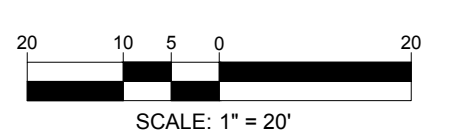
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

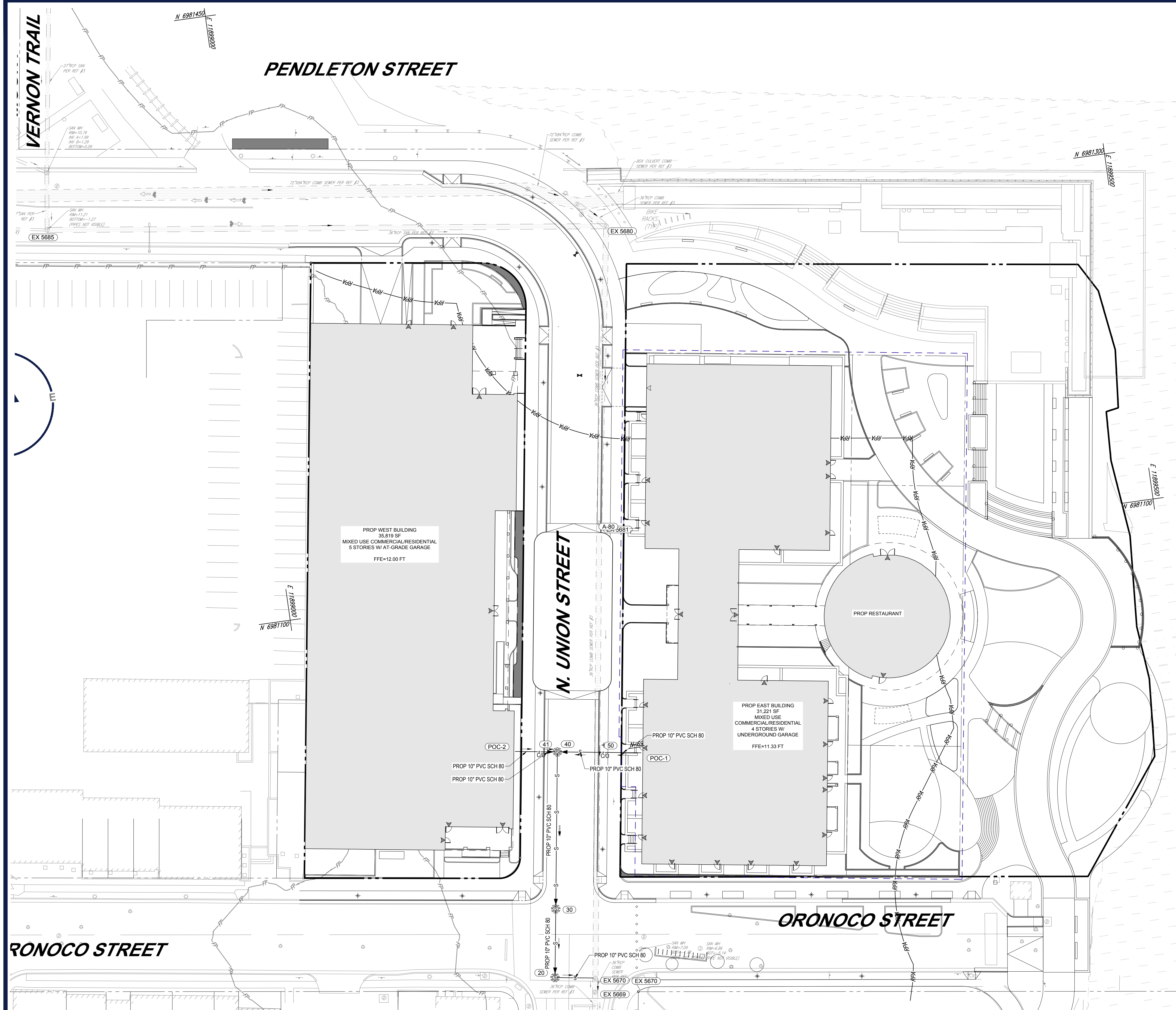
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JUL 26, 2024 11:02:23 DCA230074.00 P-CIVIL-UTIL DCA230074.00 LAYOUT: C-5.2 UTIL



SANITARY SEWER COMPUTATIONS

300 GPD/UNIT (RESIDENTIAL) X 250 UNITS = 75000 GPD
 200 GPD/1000 SF (ARTS) X 6500 SF = 1300 GPD
 200 GPD/1000 SF (RETAIL/RESTAURANT) X 7460 SF = 1492 GPD

SANITARY SEWER OUTFALL NARRATIVE

SANITARY SEWAGE FROM THIS SITE WILL FLOW FROM TWO 10" LATERALS TO PROPOSED SANITARY SYSTEM WITH MHS 40, 30, AND 20. THEN FLOWS EAST TO THE EXISTING COMBINED MH 5670 LOCATED IN ORONOCO STREET. AT THIS PRELIMINARY DESIGN STAGE OF THE PROJECT, THERE IS NO PLUMBING DESIGN FOR THE PROPOSED BUILDING.
 ALL SANITARY SEWAGE FROM THE SITE OUTFALLS INTO THE 36" POTOMAC INTERCEPTOR AT MANHOLE 005680SSMH (GIS SEWER ID). FLOWS AND CAPACITY CALCULATIONS ARE PROVIDED IN THE TABLE ON THIS SHEET. THEREFORE, THE SEWER CONNECTION IS ADEQUATE.

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 CAD ID: P-CIVIL-SAN-

PROJECT:
DEVELOPMENT PRELIMINARY SITE PLAN
 FOR
ROBINSON TERMINAL NORTH
 500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

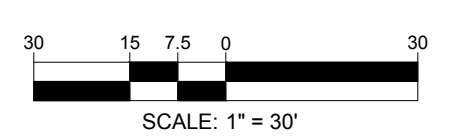
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COMMONWEALTH OF VIRGINIA
 MICHAEL J. BIRKLAND
 Lic. No. 031693
 07/26/2024
 PROFESSIONAL ENGINEER

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Sanitary Sewer Design Computation Table

Pipe Characteristics	Capacity Information										
	Total Incremental Flow (gpd)	Total Cumulative Flow (gpd)	Peak Flow Factor	Peak Hour Flow (MGD)	Full Capacity of Pipe (MGD)	% full	Actual Depth (m)	Pv (ft)	A (sq ft)	Hydraulic Radius	Velocity in pipe (fps)
Upstream MH	949,567	949,567	4	3.7983	20.64	18%	10.46	3.42	1.71	0.4994	3.45
Downstream MH	10,000	10,000	4	0.04	0.8274	5%	1.20	0.53	0.03	0.0617	2.28
	10,000	10,000	4	0.04	0.8622	5%	1.17	0.52	0.03	0.0606	2.34
	10,000	10,000	4	0.04	0.846	5%	1.18	0.53	0.03	0.0611	2.31
	10,000	10,000	4	0.04	0.846	5%	1.18	0.53	0.03	0.0611	2.31
	20,000	10,000	4	0.08	1.4654	5%	1.27	0.55	0.04	0.0652	4.18
	20,000	20,000	4	0.08	0.6059	13%	1.96	0.69	0.07	0.0962	2.24
	20,000	20,000	4	0.08	0.5851	14%	2.00	0.70	0.07	0.0976	2.19
	969,567	969,567	4	3.8783	66.403	6%	5.90	2.50	0.76	0.3022	7.95



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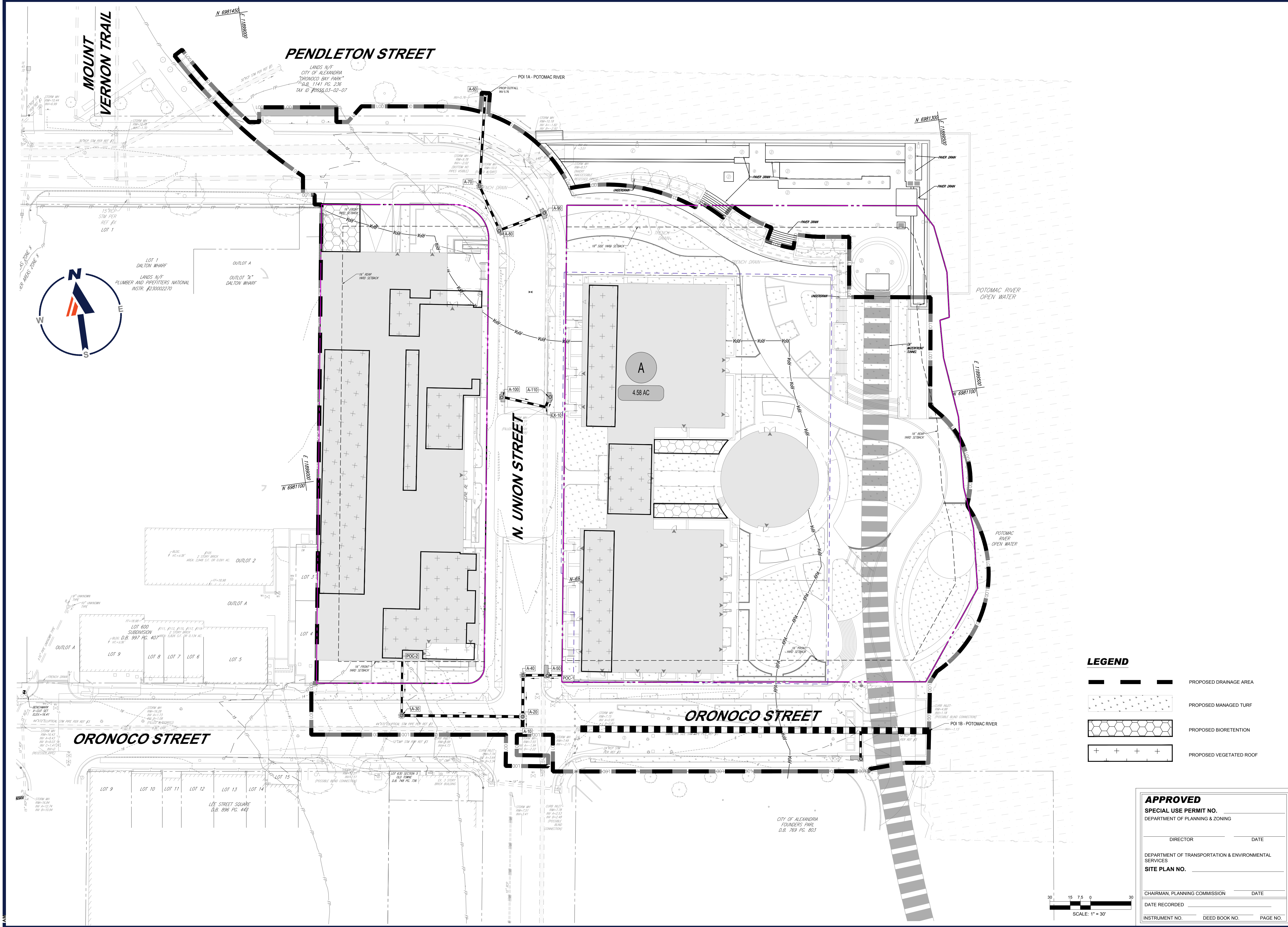
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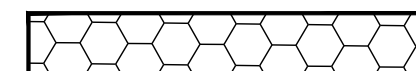
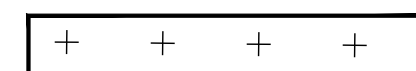
SHEET TITLE:
SANITARY OUTFALL ANALYSIS

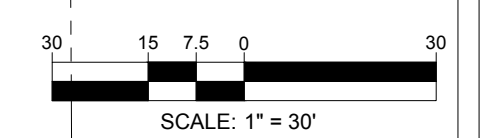
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C-6.0

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LEGEND

-  PROPOSED DRAINAGE AREA
-  PROPOSED MANAGED TURF
-  PROPOSED BIORETENTION
-  PROPOSED VEGETATED ROOF



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DEVELOPMENT PRELIMINARY SITE PLAN

FOR ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314

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1331 PENNSYLVANIA AVE., NW,
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POST-DEVELOPMENT STORMWATER MANAGEMENT PLAN

C-7.1

ORG. DATE - 07/05/24

JUL 26, 2024
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Project Name: **Robinson Terminal North**
 Date: **7/11/2024**
 Linear Development Project? **No**

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → **4.58**

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0
Post-Development TP Load Reduction for Site (lb/yr):	0.78

Pre-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/inrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				0.20	0.20
Impervious Cover (acres)				4.38	4.38
					4.58

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/inrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				0.82	0.82
Impervious Cover (acres)				3.76	3.76
Area Check	OK.	OK.	OK.	OK.	4.58

Nitrogen Loads (Informational Purposes Only)

Pre-Development TN Load (lb/yr)	55.85	Final Post-Development TN Load	53.79
---------------------------------	-------	--------------------------------	-------

STORMWATER MANAGEMENT NARRATIVE

THE LIMITS OF DISTURBANCE OF THIS SITE IS 4.58 ACRES. THE EXISTING LAND COVER IS 4.38 AC OF IMPERVIOUS AREA AND 0.20 AC OF MANAGED TURF. WHILE THE PROPOSED LAND COVER IS 3.76 AC OF IMPERVIOUS AREA AND 0.82 AC OF MANAGED TURF. THIS PROJECT WILL UTILIZE VEGETATED ROOF AND BIOTENTION FACILITIES TO COMPLY WITH STORMWATER MANAGEMENT REQUIREMENTS.

IN ORDER TO MEET THE PHOSPHOROUS REMOVAL REQUIREMENT OF 0.78 LB/YEAR, 0.44 AC OF LEVEL #1 VEGETATED ROOF WILL BE PROVIDED AND 1.10 AC OF THE SITE WILL DRAIN TO URBAN BIOTENTION FACILITIES. THE VEGETATED ROOF AND URBAN BIOTENTION FACILITIES WILL REMOVE A TOTAL OF 0.80 LB/YR, THUS MEETING THE REQUIREMENT.

STORMWATER MANAGEMENT FACILITIES ARE NOT FEASIBLE ALONG ANY OF THE ADJACENT PUBLIC STREETS DUE TO EXISTING UTILITIES AND THE SHALLOW DEPTH OF THE EXISTING STORM SYSTEM DUE TO THE CLOSE PROXIMITY TO THE POTOMAC RIVER.

THE PROPOSED VEGETATED ROOF AND BIOTENTION FACILITIES WILL MEET THE REQUIREMENTS OF THE MEMORANDUM OF THE INDUSTRY NO. 01-2018 - USE OF MANUFACTURED/PROPRIETARY STORMWATER BMPs, AS THEY REMOVE A MINIMUM OF 65% OF THE TOTAL PHOSPHOROUS (TP) REMOVAL REQUIRED BY THE VIRGINIA STORMWATER MANAGEMENT PROGRAM AND ARE NON-PROPRIETARY SURFACE BMPs APPROVED BY THE VIRGINIA STORMWATER BMP CLEARINGHOUSE. SEE STORMWATER QUALITY CALCULATIONS FROM THE VIRGINIA RUNOFF REDUCTION SPREADSHEET ON SHEETS C-7.2-7.3 FOR ADDITIONAL DETAILS.

FINAL STORMWATER MANAGEMENT SHALL BE DETERMINED DURING THE FINAL ENGINEERING PHASE.

THIS SITE DRAINS TO ONE POINT OF ANALYSIS, THE POTOMAC RIVER, THROUGH TWO OUTFALLS LABELED ON SHEET C-7.1 AS POI #1A/B. CHANNEL AND FLOOD PROTECTION CALCULATIONS ARE SHOWN IN THE ENERGY BALANCE SPREADSHEET ON SHEET C-7.3. POI #1 DOES NOT REQUIRE STORMWATER STORAGE, AS THE POST DEVELOPMENT FLOW RATES FROM THE SITE FOR THE 1- AND 10-YEAR STORM EVENTS ARE LESS THAN THE ALLOWABLE FLOW RATES.

Post-Development Requirement for Site Area	
TP Load Reduction Required (lb/yr)	0.78

Site Compliance Summary

Maximum % Reduction Required Below Pre-ReDevelopment Load	20%
-----------------------------------------------------------	-----

Total Runoff Volume Reduction (ft ³)	2,541
Total TP Load Reduction Achieved (lb/yr)	0.80
Total TN Load Reduction Achieved (lb/yr)	13.06
Remaining Post Development TP Load (lb/yr)	3.12
Remaining TP Load Reduction (lb/yr) Required	0.00

**** TARGET TP REDUCTION EXCEEDED BY 0.03 LB/YEAR ****

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.82	0.00	0.00	0.00	0.00	0.82
Impervious Cover (acres)	3.76	0.00	0.00	0.00	0.00	3.76
Total Area (acres)	4.58	0.00	0.00	0.00	0.00	4.58

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Reduced (lb/yr)	0.80	0.00	0.00	0.00	0.00	0.80
TN Load Reduced (lb/yr)	13.06	0.00	0.00	0.00	0.00	13.06

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-Development	Listed	Adjusted ¹
Forest Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
Weighted Loading Rate(forest)	0.00	0.00
% Forest	0%	0%
Mixed Open Cover (acres)	0.00	0.00
Weighted Rv(mixed)	0.00	0.00
Weighted Loading Rate(mixed)	0.00	0.00
% Mixed Open	0%	0%
Managed Turf Cover (acres)	0.20	0.20
Weighted Rv(turf)	0.25	0.25
Weighted Loading Rate(turf)	0.85	0.85
% Managed Turf	4%	4%
Impervious Cover (acres)	4.38	4.38
Rv(impervious)	0.95	0.95
Weighted Loading Rate(impervious)	0.86	0.86
% Impervious	96%	96%
Total Site Area (acres)	4.58	4.58
Site Rv	0.92	0.92

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)		Land Cover Summary-Post		Land Cover Summary-Post	
Post ReDev. & New Impervious		Post-ReDevelopment		Post-Development New Impervious	
Forest Cover (acres)	0.00	Forest Cover (acres)	0.00		
Weighted Rv(forest)	0.00	Weighted Rv(forest)	0.00		
Wgt. Ld. Rate(forest)	0.00	Wgt. Ld. Rate(forest)	0.00		
% Forest	0%	% Forest	0%		
Mixed Open Cover (acres)	0.00	Mixed Open Cover (acres)	0.00		
Weighted Rv(mixed)	0.00	Weighted Rv(mixed)	0.00		
Wgt. Ld. Rate(mixed)	0.00	Wgt. Ld. Rate(mixed)	0.00		
% Mixed Open	0%	% Mixed Open	0%		
Managed Turf Cover (acres)	0.82	Managed Turf Cover (acres)	0.82		
Weighted Rv (turf)	0.25	Weighted Rv (turf)	0.25		
Wgt. Ld. Rate(turf)	0.85	Wgt. Ld. Rate(turf)	0.85		
% Managed Turf	18%	% Managed Turf	18%		
Impervious Cover (acres)	3.76	ReDev. Impervious Cover (acres)	3.76	New Impervious Cover (acres)	0.00
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)	--
Wgt. Ld. Rate(imperv.)	0.86	Wgt. Ld. Rate(imperv.)	0.86		
% Impervious	82%	% Impervious	82%		
Final Site Area (acres)	4.58	Total ReDev. Site Area (acres)	4.58		
Final Post Dev Site Rv	0.82	ReDev Site Rv	0.82		

Treatment Volume and Nutrient Load

	Pre-Development	Post-Development
Pre-Development Treatment Volume (acre-ft)	0.3510	0.3510
Pre-Development Treatment Volume (cubic feet)	15,288	15,288
Pre-Development TP Load (lb/yr)	3.93	3.93
Pre-Development TP Load per acre (lb/acre/yr)	0.86	0.86
Baseline TP Load (lb/yr) (0.26 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		1.19

Treatment Volume and Nutrient Load

	Pre-Development	Post-Development
Final Post-Development Treatment Volume (acre-ft)	0.3149	0.3149
Final Post-Development Treatment Volume (cubic feet)	13,715	13,715
Final Post-Development TP Load (lb/yr)	3.92	3.92
Final Post-Development TP Load per acre (lb/acre/yr)	0.86	0.86
Max. Reduction Required (Below Pre-Development Load)		20%

TP Load Reduction Required for Redeveloped Area (lb/yr)	0.78
TP Load Reduction Required for New Impervious Area (lb/yr)	0

Runoff Volume and CN Calculations

Target Rainfall Event (in)	1-year storm	2-year storm	10-year storm
	2.56	3.09	4.76

Drainage Areas	RV & CN	Drainage Area A	Drainage Area B	Drainage Area C	Drainage Area D	Drainage Area E
CN		95	0	0	0	0
RR (ft ³)		2,541	0	0	0	0
1-year return period	RV wo RR (ws-in)	2.02	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	1.87	0.00	0.00	0.00	0.00
	CN adjusted	93	0	0	0	0
2-year return period	RV wo RR (ws-in)	2.54	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	2.38	0.00	0.00	0.00	0.00
	CN adjusted	93	0	0	0	0
10-year return period	RV wo RR (ws-in)	4.18	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	4.03	0.00	0.00	0.00	0.00
	CN adjusted	94	0	0	0	0

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DEVELOPMENT PRELIMINARY SITE PLAN
 FOR
ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314



SHEET TITLE:
STORMWATER MANAGEMENT CALCULATIONS

SHEET NUMBER:
C-7.2

ORG. DATE - 07/05/24

POI #1 (AIB) - POTOMAC RIVER

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P
Forest (acres)					0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00
Managed Turf (acres)				0.82	0.82	0.25	0.85
Impervious Cover (acres)				3.76	3.76	0.95	0.86
Total					4.58		

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft ³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)														
1.a. Vegetated Roof #1 (P-FIL-02)	45			0.44		688	840	1,528	0		0.38	0.17	0.21	6.a. Bioretention #1
6. Bioretention (RR)														
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40			1.10	840	1,853	2,779	4,632	25	0.21	0.94	0.63	0.52	

Drainage Area Curve Numbers and Runoff Depths*

Drainage Area	A Soils	B Soils	C Soils	D Soils	Total Area (acres)	Runoff Reduction Volume (ft ³)
Forest -- undisturbed, protected forest or reforested land	0.00	0.00	0.00	0.00	4.58	2,541
CN	30	55	70	77		
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	0.00	0.00	0.00	0.00		
CN	34	59	72	79		
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.82		
CN	39	61	74	80		
Impervious Cover	0.00	0.00	0.00	3.76		
CN	98	98	98	98		
CN_(D.A.A)						
					95	

	1-year storm	2-year storm	10-year storm
RV_{Developed} (watershed-inch) with no Runoff Reduction*	2.02	2.54	4.18
RV_{Developed} (watershed-inch) with Runoff Reduction*	1.87	2.38	4.03
Adjusted CN*	93	93	94

POI #1 (AIB) - POTOMAC RIVER - ENERGY BALANCE

SWM Water Quantity Energy Balance Worksheet

SITE AREA (acre)	1-year		10-year	
	PRE	POST (adjusted)	PRE	POST (adjusted)
P	2.56	2.56	4.76	4.76
CN	97	93	97	94
S=1000/CN-10	0.31	0.72	0.31	0.68
0.2S	0.06	0.14	0.06	0.14
RV=(P-0.2S) ² /(P-0.2S)+S	2.22	1.86	4.41	4.03

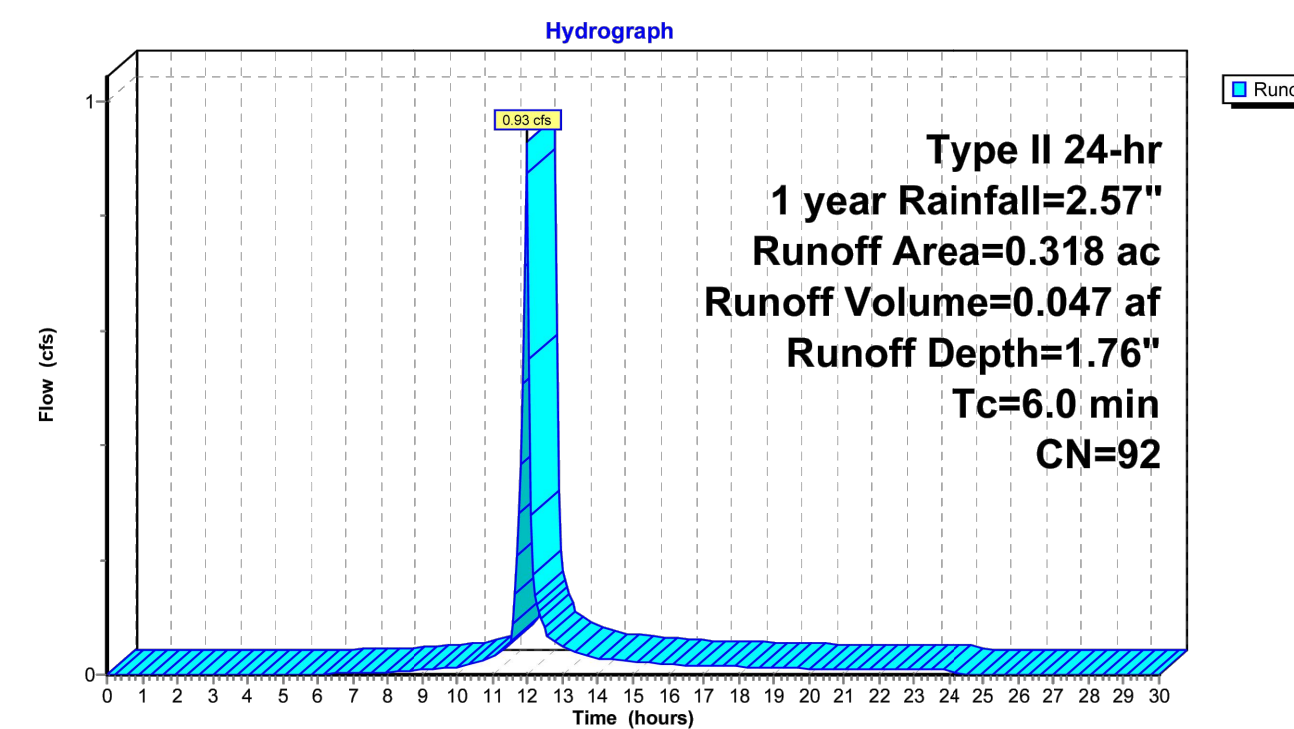
QPost Development <= I.F. * (Qpre-development * RVpre-development)/RVDeveloped	
I.F.	0.8
CHANNEL PROTECTION	
Qpre-development	15.76
QPost Development	13.94
RVPost Development (with runoff reduction)	1.8686
Qallowable	15.00

FLOOD CONTROL	
Qpre-development	30.08
QPost Development	28.67
RVPost Development (with runoff reduction)	4.0292
Qallowable	32.91
Qallowable/QPost Development	1.15
Vs/Vr	-0.01
Vs	-0.06
Storage required (cf)	N/A

Required storage volume may also be calculated using the following equation:
 $V_s/V_r = 0.682 - 1.43 (q_o/q_p) + 1.64 (q_o/q_p)^2 - 0.804 (q_o/q_p)^3$
 where:
 V_s = required storage volume, acre-feet
 V_r = runoff volume, acre-feet
 q_o = peak outflow discharge, cfs
 q_p = peak inflow discharge, cfs

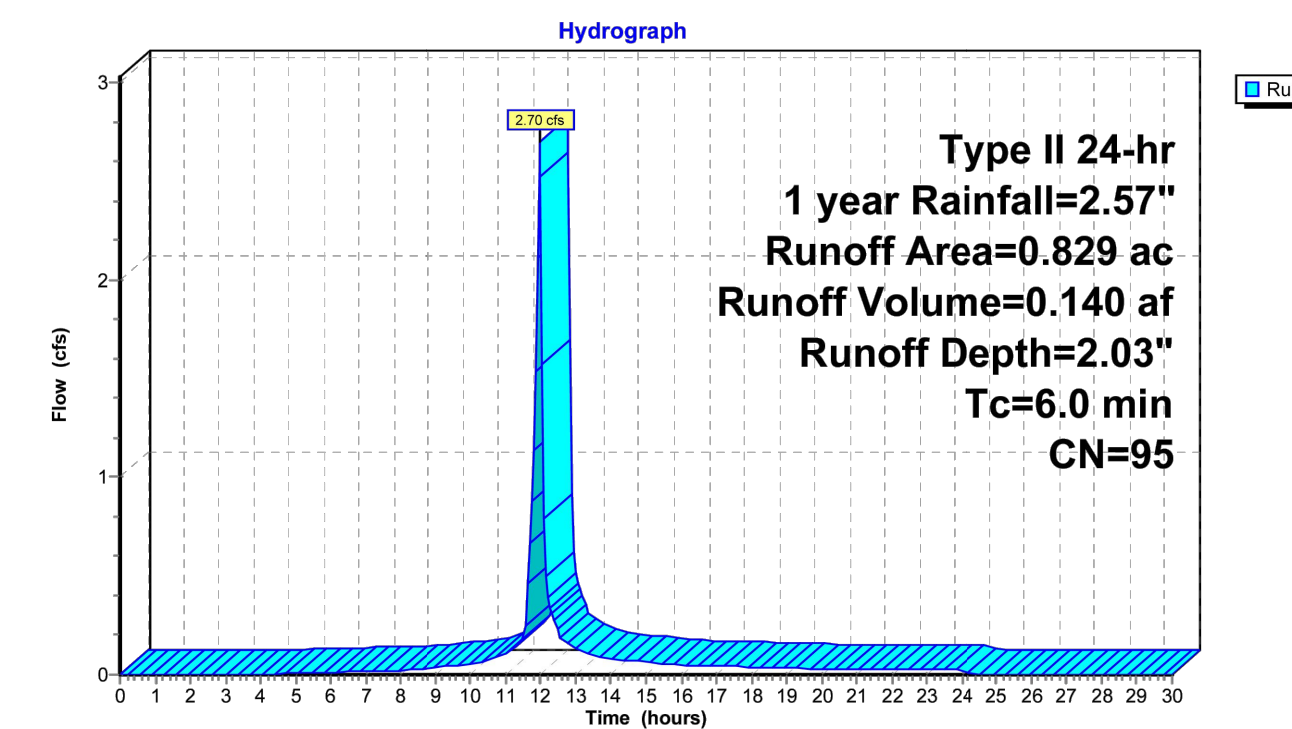
DC2021541 - Vault HydroCAD Type II 24-hr 1 year Rainfall=2.57"
 Prepared by Bohler Engineers Printed 7/25/2024
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Subcatchment C: Uncaptured Site Area - Eads St



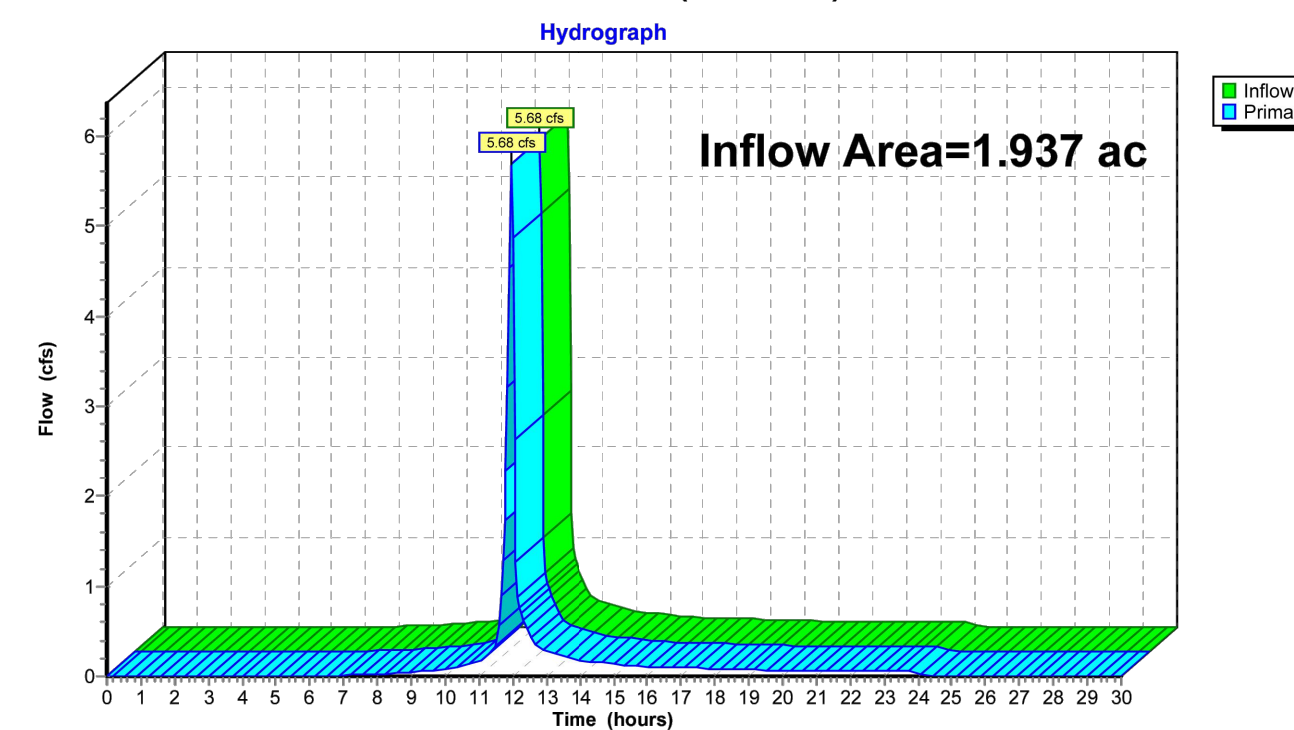
DC2021541 - Vault HydroCAD Type II 24-hr 1 year Rainfall=2.57"
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Subcatchment A: Captured site area w/ GR and Bio



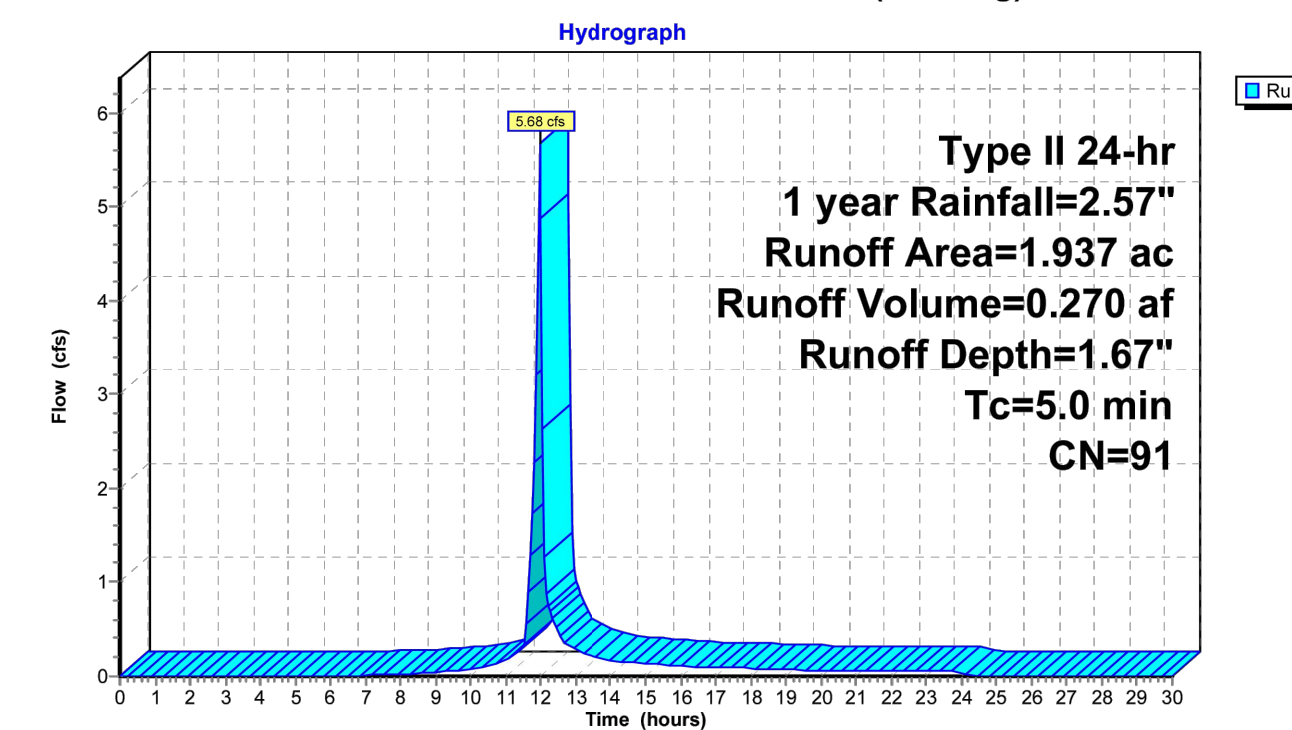
DC2021541 - Vault HydroCAD Type II 24-hr 1 year Rainfall=2.57"
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Link 29L: (new Link)



DC2021541 - Vault HydroCAD Type II 24-hr 1 year Rainfall=2.57"
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Subcatchment EX A: Site Area (Existing)



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PROJECT No.: LC-DC230074.00
 DRAWN BY: AF
 CHECKED BY: MP
 DATE: 07/05/24
 CAD ID: P-CIVIL-SWMC

DEVELOPMENT PRELIMINARY SITE PLAN

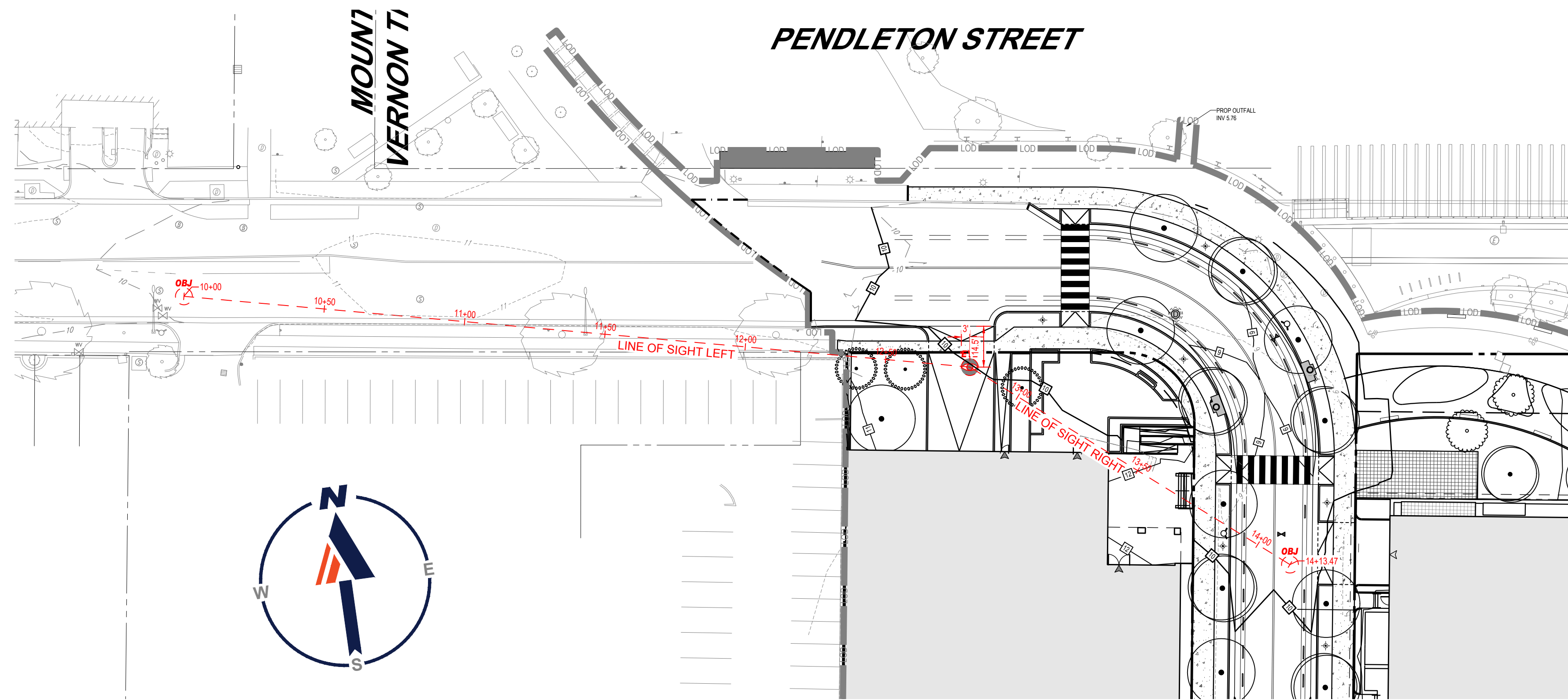
FOR
ROBINSON TERMINAL NORTH
 500/501 NORTH UNION STREET
 CITY OF ALEXANDRIA, VA 22314



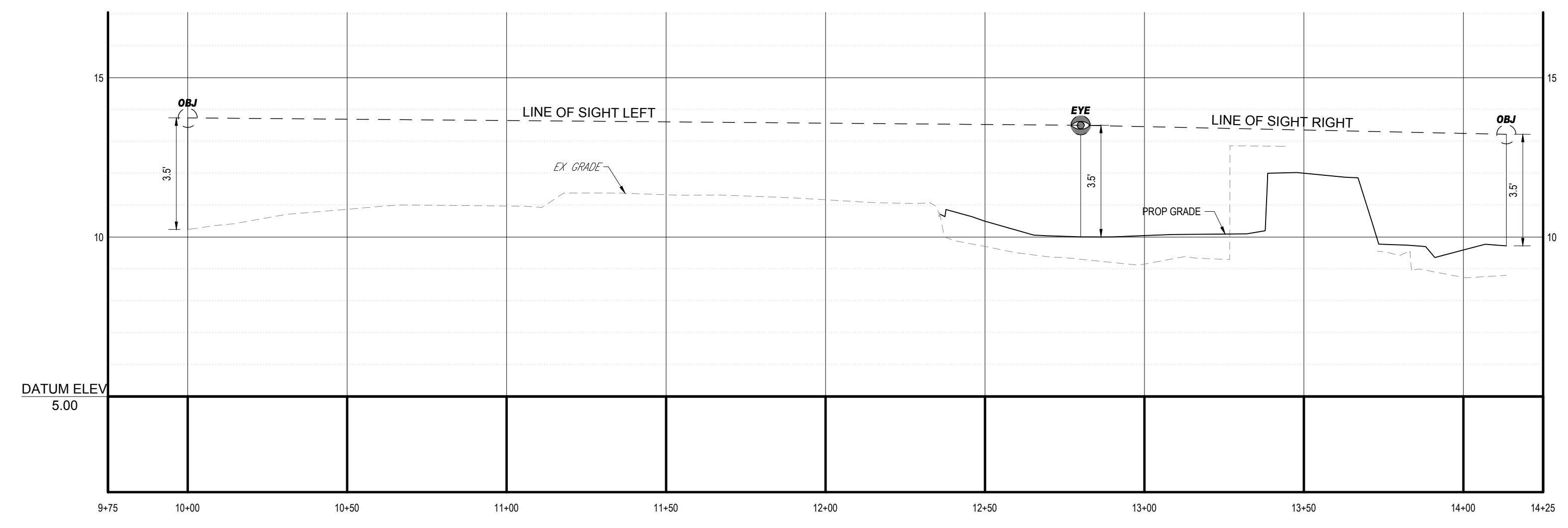
STORMWATER MANAGEMENT CALCULATIONS

SHEET NUMBER:
C-7.3

ORG. DATE - 07/05/24

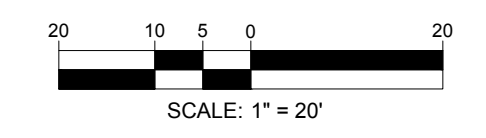


PLAN VIEW
SCALE: 1" = 30'



WEST BUILDING ENTRANCE - SIGHT DISTANCE PROFILE - PENDELTON STREET
SCALE: 1" = 30' HORIZONTAL
1" = 3' VERTICAL

NOTE:
MODIFICATION TO BE REQUESTED BECAUSE THE RIGHT LINE OF SIGHT IS LOWER THAN THE VDOT STANDARD 280' DUE TO THE PROPOSED WEST BUILDING.



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DRAWN BY: AF
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DATE: 07/05/24
CAD ID: P-CIVIL-PL05

PROJECT:
DEVELOPMENT PRELIMINARY SITE PLAN
FOR
ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

BOHLER DC
1331 PENNSYLVANIA AVE., NW,
STE. 1250 NORTH
WASHINGTON, DC 20004
Phone: (202) 524-5700



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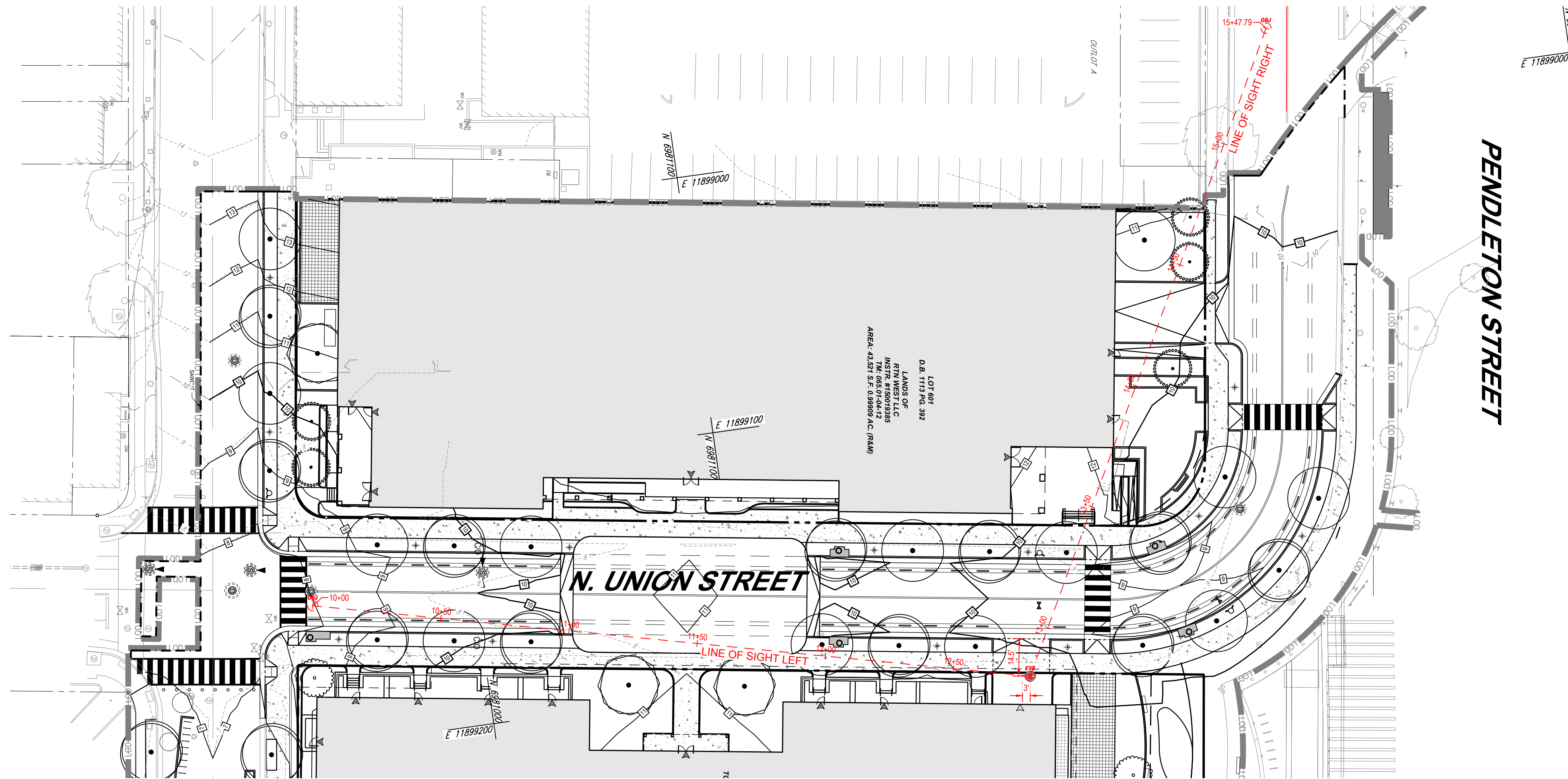
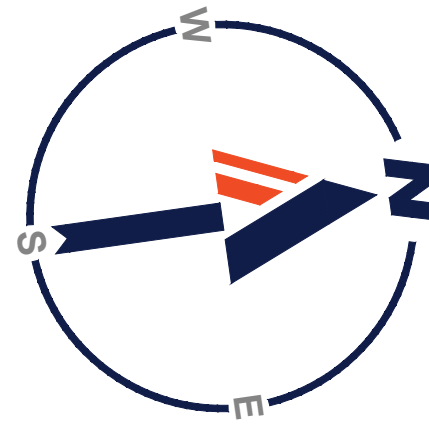
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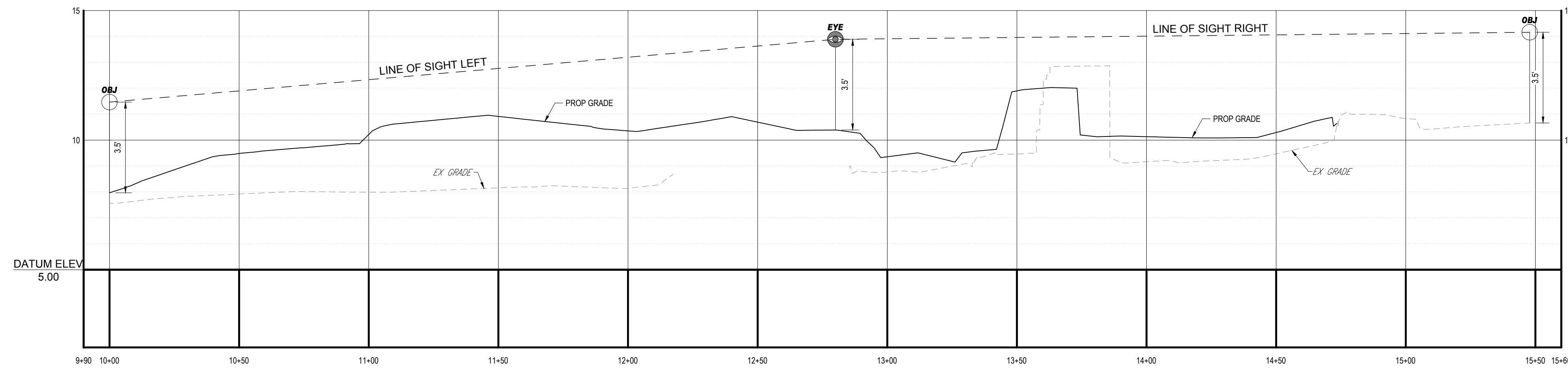
SHEET TITLE:
SIGHT DISTANCE PROFILE

SHEET NUMBER:
C-8.0

ORG. DATE - 07/05/24

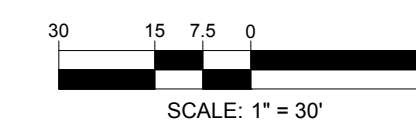


PLAN VIEW
SCALE: 1" = 30'



EAST BUILDING ENTRANCE - SIGHT DISTANCE PROFILE - N. UNION STREET

SCALE: 1" = 30' HORIZONTAL
1" = 3' VERTICAL



NOTE:

MODIFICATION TO BE REQUESTED BECAUSE THE RIGHT LINE OF SIGHT IS LOWER THAN THE VDOT STANDARD 280' DUE TO THE PROPOSED WEST BUILDING.

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SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES

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DEVELOPMENT PRELIMINARY SITE PLAN

FOR
ROBINSON TERMINAL NORTH

500/501 NORTH UNION STREET
CITY OF ALEXANDRIA, VA 22314

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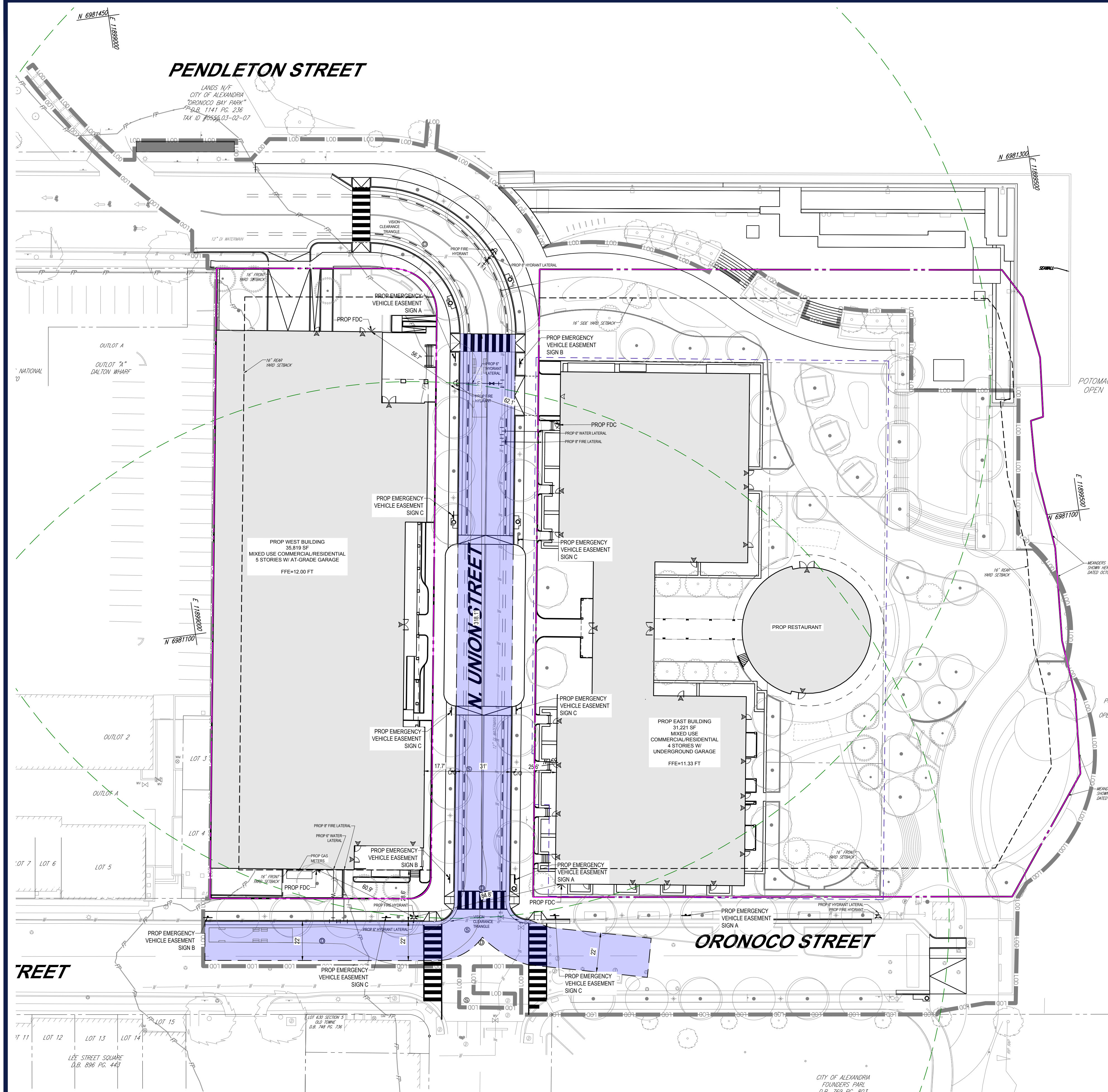
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SHEET TITLE:
SIGHT DISTANCE PROFILE

SHEET NUMBER:
C-8.1

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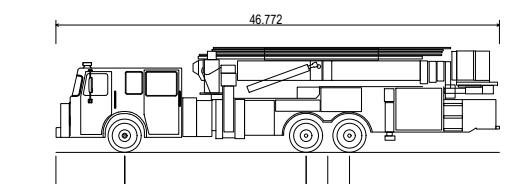
EMERGENCY VEHICLE EASEMENT SIGN A



EMERGENCY VEHICLE EASEMENT SIGN B



EMERGENCY VEHICLE EASEMENT SIGN C



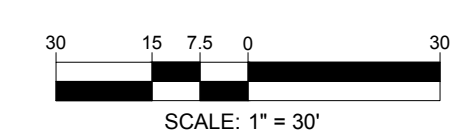
CITY OF ALEXANDRIA FIRE TRUCK
 Overall Length: 46.772'
 Overall Width: 8.000'
 Overall Body Height: 11.050'
 Min Body Ground Clearance: 1.250'
 Track Width: 8.000'
 Lock-to-lock time: 6.000'
 Curb to Curb Turning Radius: 36.500'

EMERGENCY VEHICLE ACCESS PLAN NOTES

1. A LADDER TRUCK WILL HAVE ACCESS TO AT LEAST 48% OF THE BUILDING PERIMETER BY PUBLIC ROADS OR RECORDED EMERGENCY VEHICLE EASEMENTS.
2. A KNOX BOX RAPID ENTRY KEY ACCESS SYSTEM SHALL BE INSTALLED TO FACILITATE BUILDING ENTRY BY FIRE DEPARTMENT PERSONNEL DURING AN EMERGENCY.

LEGEND

- PROPERTY LINE
- 22' MINIMUM WIDE EMERGENCY VEHICLE ACCESS
- 300' FIRE HYDRANT RADIUS



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SHEET TITLE:
FIRE SERVICE PLAN

SHEET NUMBER:
C-10.0

ORG. DATE - 07/05/24

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 H:\2023\DC\3207\06\CAD\DRAWINGS\PLAN SET\SDSUPP\CIVIL\FIRE\DC\3207\06\---LAYOUT.C-10.0.FIRE

