PRELIMINARY SITE PLAN EXTENSION FOR LOT 9

OAK GROVE

CITY OF ALEXANDRIA, VIRGINIA

ZONING TABULATION

TAX MAP NUMBER: 51.01-02-01
EXISTING SITE ADDRESS: 1400 JANNEYS LANE, ALEXANDRIA, VA 22302
ZONE: R-20
EXISTING USE: CHURCH
PROPOSED USE: SINGLE FAMILY DWELLINGS
LOT AREA = 6.0706 AC (264,433 S.F.)
EXISTING IMPERVIOUS AREA = 1.49 AC (65,069 SF)
PROPOSED IMPERVIOUS AREA = 1.49 AC (65,015 SF)

R.O.W. TO BE DEDICATED = 0.37 AC (16,120 S.F.)
NUMBER OF DWELLING UNITS – 8
DENSITY – 8 UNITS PER 6.0706 AC = 1.31 UNITS/AC
OPEN SPACE PROVIDED – 4.57 AC (199,133 S.F), (REQUIRED – N/A)
AREA OF DISTURBANCE: 5.35 AC. (232,935 S.F.)

PARKING TABULATION

PARKING REQUIRED:	8 UNITS (2 SP/UNIT)	16 SPS.
	TOTAL REQUIRED	16 SPS.
PARKING PROVIDED:	GARAGE (STANDARD) 8 UNITS (3 SP/UNIT)	24 SPS.
	ONSITE VISITOR (STANDARD)	4 SPS.
	TOTAL PROVIDED	28 SPS.

DEVELOPMENT REQUIREMENTS

LOT REQUIREMENTS.

(A) LOT SIZE. EACH PRINCIPLE USE SHALL BE LOCATED ON A LOT WITH A MINIMUM LAND AREA OF 20,000 SQUARE FEET.

(B) LOT WIDTH. THE MINIMUM LOT WIDTH AT THE BUILDING LINE SHALL BE 100 FEET EXCEPT IN THE CASE OF A CORNER LOT, IN WHICH CASE THE MINIMUM LOT WIDTH SHALL BE 120 FEET.

(C) LOT FRONTAGE. THE MINIMUM LOT FRONTAGE AT THE FRONT LOT LINE SHALL BE 75 FEET, EXCEPT IN THE CASE OF CURVILINEAR STREETS WITH RADIAL LOT LINES, IN WHICH CASE THE MINIMUM LOT FRONTAGE SHALL BE 55 FEET.

BULK AND OPEN SPACE REGULATIONS.

(A) YARD REQUIREMENTS.

(1) FRONT YARD. EACH RESIDENTIAL USE SHALL PROVIDE A FRONT YARD OF AT LEAST 40 FEET. ANY OTHER USE SHALL PROVIDE A FRONT YARD OF AT LEAST 70 FEET.

(2) SIDE YARDS. EACH RESIDENTIAL USE SHALL PROVIDE TWO SIDE YARDS, EACH BASED ON A SETBACK RATIO OF 1:2 AND A MINIMUM SIZE OF 12 FEET. EACH OTHER USE SHALL PROVIDE TWO SIDE YARDS, EACH BASED ON A SETBACK RATIO OF 1:1 AND A MINIMUM SIZE OF 25 FEET.

(3) REAR YARD. EACH RESIDENTIAL USE SHALL PROVIDE A REAR YARD BASED ON A SETBACK RATIO OF 1:1 AND A MINIMUM SIZE OF 12 FEET. EACH OTHER USE SHALL PROVIDE A REAR YARD BASED ON A SETBACK RATIO OF 1:1 AND A MINIMUM SIZE OF 25 FEET.

(B) FAR. THE MAXIMUM PERMITTED FLOOR AREA RATIO SHALL BE 0.25.

(C) HEIGHT. THE MAXIMUM PERMITTED HEIGHT OF A STRUCTURE IS 35 FEET EXCEPT FOR CHURCH OR SCHOOL USE, IN WHICH CASE THE MAXIMUM PERMITTED HEIGHT IS 40 FEET.

LOT AND BUILDING TABULATIONS

LOT #	UNIT TYPE	LOT REQUIREMENTS SIZE (S.F.)	WIDTH (FT)	FRONTAGE (FT)	FAR	HEIGHT *** AFG	PERMITTED	PROPOSED	BUILDING GROSS SF	BUILDING NET SF**	OPEN SPACE
1	N/A	25,625	148.11	364.14	N/A	N/A	35.00	N/A	N/A	N/A	25,625
2	N/A	22,987	117.00	117.01	N/A	N/A	35.00	N/A	N/A	N/A	22,838
3	KENWOOD II	25,438	140.49	310.25	0.25	210.99	35.00	31.72	6,556	6,358	19,929
4	KENWOOD II	25,207	140.48	328.44	0.25	210.93	35.00	32.33	6,494	6,296	19,937
5	STRATFORD	21,669	105.23	94.94	0.24	215.30	35.00	34.22	5,359	5,149	15,540
6	MONTICELLO	25,235	106.99	62.09	0.23	224.59	35.00	33.19	6,007	5,737	19,330
7	KENWOOD II	25,801	103.91	55.00	0.25	226.79	35.00	32.47	6,612	6,414	19,710
8	MONTICELLO	25,255	118.18	118.47	0.25	224.84	35.00	32.00	6,328	5,912	20,486
9	-	22,948	124.59	100.04	0.24	222.15	35.00	31.12	6,293	5,494	17,455
10	KENWOOD	24,688	113.01	91.88	0.25	222.75	35.00	32.12	6,383	6,126	18,020
								TOTAL SF =	50,032	47,486	198,870
											1,195*
											TOTAL OPEN SPACE: 198,870 + 1,195 = 200,065 SF

***BUILDING HEIGHTS ARE CALCULATED FROM THE AVERAGE FINISHED GRADE TO THE MID POINT OF GABLE.

**SQUARE FOOTAGE OF THE STAIR BULKHEADS HAS BEEN SUBTRACTED FROM THE GROSS SF IN ORDER TO OBTAIN NET SF.

*AN ADDITIONAL 1,195 S.F. OF OPEN SPACE IS PROVIDED IN THE ISLAND IN BARECROFT PLACE.

YARD AREAS

Lot		Yard Setback Area	Driveway Areas	Percent of Yard
1	Front Yard (West)	6,910	161	2%
	Front Yard (North)	5,954	481	8%
	Side Yard (South)	1,658	395	24%
	Side Yard (East)	2,871	1,091	38%
2	Front Yard (North)	4,754	480	10%
	Side Yard (East)	2,849	53	2%
	Rear Yard (South)	3,645	1,436	39%
3	Front Yard (East)	5,664	1,230	22%
4	Front Yard (West)	5,189	905	17%
5	Front Yard (West)	4,267	606	14%
	Side Yard (North)	3,269	1,647	50%
	Rear Yard (East)	5,822	984	17%
6	Front Yard (North)	3,130	489	16%
	Side Yard (West)	2,541	1,082	43%
7	Side Yard (North/West)	4,031	636	16%
8	Side Yard (North)	4,168	414	10%
9	Side Yard (South)	2,778	524	19%
	Rear Yard (East)	4,165	650	16%
10	Side Yard (South)	3,180	509	16%

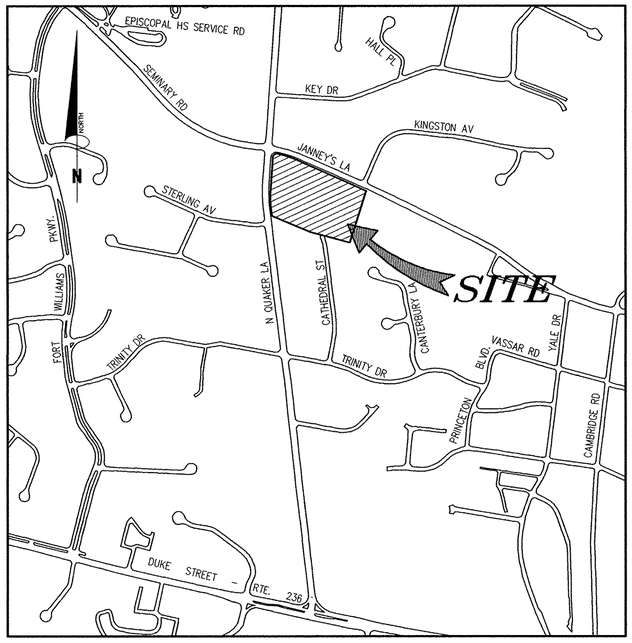
YARD TABULATIONS

Lot	Required Front	Required Side	Required Rear	Provided Front	Provided Side	Provided Rear
1	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A
3	40.00	16.18	N/A	40.00	16.18	N/A
4	40.00	16.08	N/A	40.00	16.08	N/A
5	40.00	17.41	34.81	40.00	17.41	34.81
6	40.00	16.03	32.06	40.00	16.03	32.06
7	40.00	16.25	32.50	40.00	16.25	32.50
8	40.00	15.85	31.70	40.00	15.85	31.70
9	40.00	15.54	31.08	43.93	36.40	38.26
10	40.00	16.08	32.12	40.00	16.08	32.12

Trip Generation

Use	ITE Code	Amount	Unit	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Existing Site				25	18	43	20	20	42
Daycare	565	8	Employees	22	18	40	20	22	42
Church	N/A	3	Employees	3	0	3	0	3	3
Proposed Single-Family Homes	210	8	DU	4	11	15	4	11	11
Numerical Difference				-21	-7	-28	-13	-21	-34
Percent Difference				-84%	-39%	-65%	-65%	-84%	-76%

NOTES:
–TRIP GENERATION FOR THE SINGLE FAMILY HOMES AND DAYCARE BASED ON ITE'S TRIP GENERATION, 6TH ED.
–TRIP GENERATION FOR THE ETHIOPIAN CHURCH BASED ON SITE SPECIFIC INFORMATION FROM THE CHURCH.



VICINITY MAP

SCALE : 1" = 500'

NARRATIVE

THIS SITE, COMPRISING OF AN EXISTING 1–STORY BRICK CHURCH AND A 2 STORY HOUSE, WILL BE REDEVELOPED INTO A 10–LOT SUBDIVISION, CONTAINING 8 SINGLE FAMILY DWELLINGS. AS A FUNCTION OF THESE IMPROVEMENTS, 16,120 S.F. (0.37 AC.) OF THE 6.071 AC SITE WILL BE DEDICATED TO THE CITY OF ALEXANDRIA AS A PUBLIC STREET. IN ADDITION, 48,612 SF (1.12 ACRES) WILL BE DEDICATED IN THE FORM OF OPEN SPACE.

NOTES

1. THE PROPERTY SHOWN HEREON IS SHOWN ON THE CITY OF ALEXANDRIA TAX ASSESSMENT MAP AS T. M. PARCEL 51.01–02–01 AND IS CURRENTLY ZONED R–20.
2. NEW CONSTRUCTION MUST COMPLY WITH THE CURRENT EDITION OF THE UNIFORM STATEWIDE BUILDING CODE. (USBC)
3. THE SUBJECT PROPERTY IS NOT LOCATED WITHIN A RESOURCE PROTECTION AREA.
4. THE SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE "X" (AREA DETERMINED TO BE OUTSIDE THE 500–YEAR FLOODPLAIN) AS SHOWN BY THE FLOOD INSURANCE RATE MAP FOR THE CITY OF ALEXANDRIA AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
5. PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL COMPLY WITH CITY OF ALEXANDRIA STANDARDS AND WILL CONFORM TO SEC. 13–13–3 OF THE CODE OF THE CITY OF ALEXANDRIA, AS OF 1981, AS AMENDED.
6. ALL NEW UTILITIES SERVICING THIS DEVELOPMENT WILL BE PLACED UNDERGROUND.
7. ALL NEW TRANSFORMERS WILL BE SCREENED.
8. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.
9. FUTURE IMPROVEMENTS BY HOMEOWNERS THAT ARE MORE THAN 600 SQUARE FEET OF IMPERVIOUS SURFACE TO A LOT WILL REQUIRE STORM WATER MANAGEMENT ON THE LOT IN ACCORDANCE WITH ARTICLE XIII OF THE AZO.
10. ALL ARCHEOLOGICAL PRESERVATION MUST BE COMPLETED PRIOR TO GROUND–DISTURBING ACTIVITIES (SUCH AS CORING, GRADING, FILLING, VEGETATION REMOVAL, UNDERGROUNDING UTILITIES, PILE DRIVING, LANDSCAPING AND OTHER EXCAVATIONS AS DEFINED IN SECTION 2–151 OF THE ZONING ORDINANCE). TO CONFIRM, CALL ALEXANDRIA ARCHAEOLOGY AT (703)838–4399.
11. ALL ARCHAEOLOGICAL WORK WILL BE CARRIED OUT IN ACCORDANCE WITH THE CITY OF ALEXANDRIA ARCHAEOLOGICAL STANDARDS AND IS SUBJECT TO THE APPROVAL OF THE CITY ARCHAEOLOGIST.
12. CERTIFICATES OF OCCUPANCY WILL NOT BE ISSUED FOR THIS PROPERTY UNTIL THE FINAL ARCHAEOLOGICAL REPORT HAS BEEN RECEIVED AND APPROVED BY THE CITY ARCHAEOLOGIST.
13. A CERTIFICATE OF OCCUPANCY SHALL BE OBTAINED PRIOR TO ANY OCCUPANCY OF THE BUILDING OR PORTION THEREOF, IN ACCORDANCE WITH USBC 118.0.
14. A FINAL "AS–BUILT" SITE PLAN FOR THE ENTIRE PROJECT SHALL BE SUBMITTED PRIOR TO APPLYING FOR A CERTIFICATE OF OCCUPANCY PERMIT FOR THE LAST DWELLING UNIT.
15. A COPY OF THE FINAL RELEASED SITE PLAN SHALL BE ATTACHED TO EACH BUILDING PERMIT DOCUMENT APPLICATION.
16. A SOILS REPORT MUST BE SUBMITTED WITH THE BUILDING PERMIT APPLICATION.
17. ALL REQUIRED PERMITS FROM VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL PROTECTION AGENCY, ARMY CORPS OF ENGINEERS, AND VIRGINIA MARINE RESOURCES MUST BE IN PLACE FOR ALL PROJECT CONSTRUCTION AND MITIGATION WORK PRIOR TO THE RELEASE OF THE FINAL SITE PLAN. THIS INCLUDES THE NEW STATE REQUIREMENT FOR A VPDES PERMIT FOR ALL CONSTRUCTION ACTIVITIES GREATER THAN 1 ACRE.
18. ALL DOWNSPOUTS MUST BE CONNECTED TO A STORM SEWER BY A CONTINUOUS UNDERGROUND PIPE.
19. ALL UNDERGROUND UTILITIES SHALL BE LOCATED SO AS TO AVOID DISTURBANCE FOR GRADING BEYOND THE LIMITS OF DISTURBANCE.
20. A VPDES PERMIT IS REQUIRED FOR THIS SITE, AND A COPY SHALL BE FILED WITH THE CITY.

BENCHMARK INFORMATION

BENCHMARK #1: EST. FR. FLD SURVEY 2/25/2004
TOP SANITARY SEWER STR # EX D = 203.84 USC & GS
BENCHMARK #2: EST. FR. FLD SURVEY 2/25/2004
TOP SANITARY SEWER STR # EX H = 205.58 USC & GS

BUILDING CODE ANALYSIS

CABO ONE AND TWO FAMILY DWELLING CODE 1995 EDITION OR INTERNATIONAL RESIDENTIAL CODE (IRC) FOR ONE AND TWO FAMILY DWELLINGS 2000 EDITION

CONSTRUCTION CLASSIFICATION TYPE: 5B UNPROTECTED

USE GROUP: R4

SHEET INDEX

C 1.00 COVER SHEET
C 2.00 NOTES, ABBREVIATIONS AND LEGEND
C 2.10 DEVELOPMENT CONDITIONS
C 3.00 CONTEXTUAL PLAN
C 4.00 EXISTING CONDITIONS AND DEMOLITION PLAN (1 OF 2)
C 4.10 EXISTING CONDITIONS AND DEMOLITION PLAN NOTES (2 OF 2)
C 5.00 GEOMETRIC SITE PLAN
C 5.01 OPEN SPACE PLAN
C 5.10 FIRE SAFETY PLAN
C 5.20 VEHICLE TURNING MOVEMENTS
C 5.30 BARECROFT PLACE PLAN AND PROFILE
C 5.31 JANNEYS LANE / BARECROFT INTERSECTION DESIGN
C 5.40 SIGHT DISTANCE PLAN AND PROFILE–JANNEY'S LANE
C 6.00 DETAILED GRADING PLAN (1 OF 2)
C 6.10 DETAILED GRADING PLAN (2 OF 2)
C 7.00 UTILITY PLAN
C 7.10 UTILITY PROFILES
C 8.00 EROSION AND SEDIMENT CONTROL PLAN–PHASE I
C 8.10 EROSION AND SEDIMENT CONTROL PLAN–PHASE II
C 8.15 EROSION AND SEDIMENT CONTROL PLAN – LOTS 9 & 10
C 8.20 EROSION AND SEDIMENT CONTROL DETAILS & NARRATIVE
C 9.00 GEOTECHNICAL REPORT & INFORMATION
C10.00 DRAINAGE DIVIDE PLAN
C10.10 STORM SEWER PROFILES
C10.20 STORM SEWER/ INLET COMPUTATIONS
C11.00 BMP COMPUTATIONS & DETAILS
C11.10 BMP DETAILS
C12.00 STORMWATER MANAGEMENT NARRATIVE
C12.01 STORMWATER MANAGEMENT PRE–DEVELOPMENT COMPUTATIONS FOR EXISTING CHANNEL OUTFALL
C12.10 STORMWATER MANAGEMENT ROUTING
C12.20 STORMWATER MANAGEMENT PRE–DEVELOPMENT DRAINAGE DIVIDES
C12.30 STORMWATER MANAGEMENT POST–DEVELOPMENT DRAINAGE DIVIDES
C13.00 SITE PLAN DETAILS
C13.10 UTILITY DETAILS (1 OF 2)
C13.20 UTILITY DETAILS (2 OF2)
C14.00 TREE PRESERVATION PLAN
L 1.01 OVERALL LAYOUT PLAN
L 1.02 LIGHTING LOCATION PLAN
L 1.03 LIGHTING PHOTOMETRIC PLAN
L 1.04 EXISTING TREE INVENTORY PLAN
L 1.05 OVERALL LANDSCAPE PLAN
L 1.06 PLANTING DETAILS
L 2.01 DETAILS & SPECIFICATIONS
L 2.02 DETAILS & SPECIFICATIONS
L 2.03 DETAILS & SPECIFICATIONS
L 2.04 DETAILS & SPECIFICATIONS
(46 TOTAL SHEETS)

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004–0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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STUDIO 39
LANDSCAPE ARCHITECTURE, P.C.
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COVER SHEET
OAK GROVE
CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP DESIGN	SRW DRAWN	STL CHKD

SCALE H: AS NOTED V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C1.00

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\MINOR AMENDMENT 14\2267-01-001-100-C00.dwg

LEGEND

EXISTING	DESCRIPTION	PROPOSED
350	INDEX CONTOUR	350
352	INTERMEDIATE CONTOUR	352
EX. E.P.	EDGE OF PAVEMENT	PROP. E.P.
EX. C & G	CURB AND GUTTER	CG-6
	TRANSITION FROM CG-6R TO CG-6	CG-6R CG-6
	PROPOSED HEADER CURB	
	PROPERTY LINE	
	DEPARTING PROPERTY LINE	
	LOT LINE	
	RIGHT-OF-WAY	
	CENTERLINE	
	FLOOD PLAIN	
	LIMITS OF DISTURBANCE	LOD
	TREE LINE	
	FLOW LINE OF SWALE	
	STREAM	
	OVERLAND RELIEF PATHWAY	
	FENCE LINE	
	EASEMENT	
EX 8" W/M	WATER LINE	8" DIP W/M
EX. W/V		
	WATER VALVE	
	REDUCER	
EX 8" SAN	SANITARY SEWER	8" SAN
EX 18" RCP	STORM SEWER	18" RCP
	CABLE TV	CATV
	ELECTRIC SERVICE	
T	TELEPHONE SERVICE	T
G	GAS LINE	G
+ 25.32	SPOT ELEVATION	+25.32
	UTILITY POLE	
	SIGN	
(EX A)	SANITARY SEWER IDENTIFIER	A
(EX 2)	STORM DRAIN IDENTIFIER	2
W	EASEMENT IDENTIFIER	W
	WATER METER	
	FIRE HYDRANT	
	PARKING INDICATOR INDICATES THE NUMBER OF TYPICAL PARKING SPACES	25
	STREET LIGHT	
	VEHICLES PER DAY (TRAFFIC COUNT)	255 VPD
	TEST PIT LOCATION RECOMMENDED/REQUIRED	TP
	CRITICAL SLOPE SLOPES TO BE STABILIZED PURSUANT TO VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK	
	HANDICAP RAMP (CG-12) DENOTES LOCATION OF STD VDOT CG-12 AND/OR JURISDICTIONAL STANDARD RAMP CONSTRUCTION	
	DENOTES CLEAR SIGHT TRIANGLE	
EX 15" OAK	TREE	
	BENCHMARK	BM #1 TRV #1 ELEV=101.62
	ASPHALT TRAIL	
	CONCRETE SIDEWALK	
	END WALLS	
	END SECTIONS	
	STOP SIGN	
	STREET SIGN	
OHE	OVERHEAD ELECTRIC	OHE
OHT	OVERHEAD TELEPHONE	OHT
VAN	HANDICAP PARKING SPACE (VAN)	VAN
	RIP RAP	

ABBREVIATIONS

A	AREA OF ARC
AASHTO	AMERICAN ASSOCIATION OF STATE HWY & TRANSP OFFICIALS
AC	ACRE
ADJ	ADJACENT
AGGR	AGGREGATE
AHD	AHEAD
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASPH	ASPHALT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
B	BREADTH
BC	BACK OF CURB
BF	BASEMENT FLOOR
BLDG	BUILDING
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICES (WATER QUALITY)
BOV	BLOW OFF VALVE
BRG	BEARING
BRL	BUILDING RESTRICTION LINE
BVCE	BEGINNING VERTICAL CURVE ELEVATION
BVCS	BEGINNING VERTICAL CURVE STATION
BW	BOTTOM OF WALL
c,e	CENTER CORRECTION ON VERTICAL CURVE
C	RUNOFF COEFFICIENT
C&G	CABLE TELEVISION
CATV	CURB AND GUTTER
CB	CATCH BASIN
CBR	CALIFORNIA BEARING RATIO
CC	CENTER TO CENTER
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CG(R)	CURB AND GUTTER (REVERSE SLOPE)
CH	CHORD
CHBRG	CHORD BEARING
CIP	CAST IRON PIPE
CL	CENTERLINE OR CLASS
℄	CENTERLINE
C/L	CENTERLINE
CLR	CLEAR
CM	CUBIC METERS
CMP	CORRUGATED METAL PIPE
CMS	CUBIC METERS PER SECOND
CN	RUNOFF CURVE NUMBER
CONT	CONTINUOUS
CO	CLEAN OUT
CONC	CONCRETE
CS	CURB STOP
CT	COURT
CTR	CENTERLINE
CY	CUBIC YARD
D	DEPTH
DA	DRAINAGE AREA
DB	DEED BOOK
DEQ	VA. DEPARTMENT OF ENVIRONMENTAL QUALITY
DET	DETAIL
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DI	DROP INLET
DIST	DISTANCE
DL	DOMESTIC LINE
DM	DROP MANHOLE
DOM	DOMESTIC
DR	DRIVE
DRN	DRAINAGE AREA
DS	DOWN SPOUT
DU	DWELLING UNITS
DWG	DRAWING
D/W	DRIVEWAY
△	DELTA
E	RATE OF SUPER ELEVATION
EA	EACH
EBL	EAST BOUND LANE
EC	EROSION CONTROL
EG	EDGE OF GUTTER
EGL	ENERGY GRADIENT LINE
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATION
ENGR	ENGINEER
ENT	ENTRANCE
EP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
ES	END SECTION
ESMT	EASEMENT
ETD	EXISTING TO BE DEMOLISHED
ETR	EXISTING TO REMAIN
ETRL	EXISTING TO BE RELOCATED
ETRP	EXISTING TO BE REPLACED
EVCE	ENDING VERTICAL CURVE ELEVATION
EVCS	ENDING VERTICAL CURVE STATION
EW	END WALL
EX	EXISTING
EQC	ENVIRONMENTAL QUALITY CORRIDOR
F	FIRE LINE
FAR	FLOOR AREA RATIO
FC	FACE OF CURB
FD	FLOOR DRAIN
FF	FIRST FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FND	FOUNDATION
FOY	FOYER
FP	FLOOD PLAIN
FPS	FEET PER SECOND
FS	FIRE SERVICE OR FACTOR OF SAFETY
FT	FOOT / FEET
G	GAS
GAR	GARAGE
GFA	GROSS FLOOR AREA
GR	GUARD RAIL OR GRATE INLET
H	HEAD
HC	HANDICAP
HB	HORIZONTAL BEND
HGL	HYDRAULIC GRADE LINE
HORZ	HORIZONTAL
HP	HIGH POINT
HR	HAND RAIL
HT	HEIGHT
HW	HEADWATER
I	RAINFALL INTENSITY
ID	INSIDE DIAMETER OR IDENTIFICATION
IE	INVERT ELEVATION
IN	INCH
INV	INVERT
IP	IRON PIPE
IPF	IRON PIPE FOUND
IPS	IRON PIPE SET
JB	JUNCTION BOX
JNT	JOINT
K	SIGHT DISTANCE COEFFICIENT
Ke	CULVERT ENTRANCE LOSS COEFFICIENT
L	LENGTH
LAT	LATERAL
LCG	LIMITS OF CLEARING & GRADING
LF	LINEAR FEET
LL	LOWER LEVEL
LOS	LINE OF SIGHT
LP	LOW POINT
LS	LOADING SPACE
LT	LEFT
M	MONUMENT FOUND
MAX	MAXIMUM
MECH	MECHANICAL
MH	MANHOLE
MI	MILE
MIN	MINIMUM
MISC	MISCELLANEOUS
MPH	MILES PER HOUR
MS	MEDIAN STRIP
MSL	MEAN SEA LEVEL
NA OR N/A	NOT APPLICABLE
NBL	NORTH BOUND LANE
N/F	NOW OR FORMERLY
NFA	NET FLOOR AREA
NO. OR #	NUMBER
OC	ON CENTER
OBJ	OBJECT
OD	OUTSIDE DIAMETER
OH	OVERHANG
O/H	OVERHEAD
OHC	OVERHEAD CABLE
OHE	OVERHEAD ELECTRIC
OHT	OVERHEAD TELEPHONE
P	PERIMETER
P&P	PLAN AND PROFILE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
PCTC	POINT OF CURVATURE TOP OF CURB
PCEP	POINT OF CURVE EDGE OF PAVEMENT
PFM	PUBLIC FACILITIES MANUAL
PG	PAGE
PGL	POINT OF GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
℄	PROPERTY LINE
PRC	POINT OF REVERSE CURVE
PRELIM	PRELIMINARY
PROP	PROPOSED
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVRC	POINT OF VERTICAL REVERSE CURVE
PVT	POINT OF VERTICAL TANGENT
Q (cfs)	AMOUNT OF RUNOFF (FLOW RATE)
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD OR ROOF DRAIN
REINF	REINFORCED
REQD	REQUIRED
RET	RETAINING
REV	REVISION
RGP	ROUGH GRADING PLAN
RMA	RESOURCE MANAGEMENT AREA
ROM	REMOTE OUTSIDE MONITOR
RPA	RESOURCE PROTECTION AREA
RR	RAILROAD
RT	RIGHT
RTE	ROUTE
R/W	RIGHT OF WAY
S	SPEED OR SLOPE
SAN	SANITARY
SBL	SOUTH BOUND LANE
SCH	SCHEDULE
SD	SIGHT DISTANCE
SEC	SECTION
SECT	SECTION
SEW	SEWER
SF	SQUARE FEET
SH	SHOULDER
SP	SPACE OR SITE PLAN
SPEC	SPECIFICATIONS
STA	STATION
STD	STANDARD
STK	STACK
STM	STORM
STR	STRUCTURE
SVC	SERVICE
S/W	SIDEWALK
SWM	STORM WATER MANAGEMENT
Sx	CROSS SLOPE
SY	SQUARE YARD
T	TANGENT
TB	TOP OF BANK OR TEST BORING
TC	TOP OF CURB
Tc	TIME OF CONCENTRATION
TEL	TELEPHONE
TEMP	TEMPORARY
TH	TEST HOLE
TP	TEST PIT OR TREE PROTECTION
TRANSP	TRANSPORTATION
TW	TOP OF WALL OR TAILWATER
TYP	TYPICAL
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UGT	UNDERGROUND TELEPHONE
UGC	UNDERGROUND CABLE
UD	UNDERDRAIN
UL	UPPER LEVEL
UP	UTILITY POLE
USGS	US GEOLOGICAL SURVEY
V OR VOL	VOLUME
V OR VEL	VELOCITY
VA	VIRGINIA
VAN	HANDICAPPED VAN PARKING SPACE
VB	VERTICAL BEND
VC	VERTICAL CURVE
VDOT	VA DEPT OF TRANSPORTATION
VF	VERTICAL FOOT
W	WEIGHT OR WIDTH
WBL	WEST BOUND LANE
WL	WATER LINE
WM	WATER METER
W/M OR WM	WATER MAIN
WQIA	WATER QUALITY IMPACT ASSESMENT
WV	WATER VALVE
XF	TRANSFORMER
YI	YARD INLET
YR	YEAR
Z	SIDE SLOPES

NOTES:
1. THIS IS A STANDARD SHEET, THEREFORE SOME ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT BE USED ON THE PROJECT.

UTILITY CONTACTS

1. ELECTRIC: DOMINION (VIRGINIA) POWER
C/O MR. KEN HOLMES/MR. CHRIS HARE
907 WEST GLEBE ROAD
ALEXANDRIA, VA. 22305
(703) 375-5964; (703) 359-3460
FAX (703) 359-3084

2. NATURAL GAS: (FOR SERVICE DISCONNECTIONS)
WASHINGTON GAS
C/O MR. TONY GOODMAN
6801 INDUSTRIAL ROAD
SPRINGFIELD, VA. 22151
(703) 750-4314, FAX (703) 750-7570

3. NATURAL GAS: (FOR NEW SERVICE ONLY)
WASHINGTON GAS
C/O MR. CHRIS JOHNSON
6801 INDUSTRIAL ROAD
SPRINGFIELD, VA. 22151
(703) 750-4708

4. WATER: VIRGINIA AMERICAN WATER COMPANY
C/O RICK FOX
2223 DUKE STREET
ALEXANDRIA, VA. 22314
(703) 706-3878

5. TELEPHONE: VERIZON
C/O GAIL VINCENT
2980 FAIRVIEW PARK N.
6TH FLOOR
FALLS CHURCH, VA. 22042
(703) 368-6466

6. CATV/INTERNET: COMCAST
C/O CHRIS FOXX
3900 WHEELER AVENUE
ALEXANDRIA, VA. 22304
(703) 567-4406

GENERAL NOTES

1. EROSION AND SEDIMENT CONTROL WILL BE INSTALLED IN ACCORDANCE WITH THE CURRENT EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE REGULATIONS OF CITY OF ALEXANDRIA.

2. A CERTIFICATE OF OCCUPANCY SHALL BE OBTAINED PRIOR TO ANY OCCUPANCY OF THE BUILDING OF PORTION THEREOF, IN ACCORDANCE WITH USBC 119.0.

3. NEW CONSTRUCTION MUST COMPLY WITH THE CURRENT EDITION OF THE UNIFORM STATEWIDE BUILDING CODE (USBC).

4. A SOILS REPORT MUST BE SUBMITTED WITH THE BUILDING PERMIT APPLICATION.

5. PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT OR LAND DISTURBANCE PERMIT, A RODENT ABATEMENT PLAN SHALL BE SUBMITTED TO CODE ENFORCEMENT THAT WILL OUTLINE THE STEPS THAT SHALL BE TAKEN TO PREVENT THE SPREAD OF RODENTS FROM THE CONSTRUCTION SITE TO THE SURROUNDING COMMUNITY AND SEWERS.

6. CONSTRUCTION PERMITS ARE REQUIRED FOR THIS PROJECT. PLANS SHALL ACCOMPANY THE PERMIT APPLICATION THAT FULLY DETAIL THE CONSTRUCTION AS WELL AS LAYOUTS AND SCHEMATICS OF THE MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS.

7. PERMISSION FROM ADJACENT PROPERTY OWNERS IS REQUIRED IF ACCESS TO THE ADJACENT PROPERTIES IS REQUIRED TO COMPLETE THE PROPOSED CONSTRUCTION. OTHERWISE, A PLAN SHALL BE SUBMITTED TO DEMONSTRATE THE CONSTRUCTION TECHNIQUES UTILIZED TO KEEP CONSTRUCTION STRICTLY ON THE REFERENCED PROPERTY.

8. A WALL LOCATION PLAT PREPARED BY A LAND SURVEYOR IS REQUIRED TO BE SUBMITTED TO THIS OFFICE PRIOR TO REQUESTING ANY FRAMING INSPECTION.

9. THE DEVELOPMENT MUST MEET CITY STANDARDS, INCLUDING CUL-DE-SAC TURNAROUNDS AS SOLID WASTE SERVICES WILL BE PROVIDED BY THE CITY. THE HOUSES ON THE PIPESTEM DRIVEWAY WILL HAVE TO BRING THE TRASH CONTAINERS TO THE PUBLIC STREET RIGHT-OF-WAY.

10. NO CONSTRUCTION MATERIALS OF EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.

11. ALL ROOF DRAINS, FOUNDATION DRAINS, AND AREA DRAINS MUST BE CONNECTED TO A STORM SEWER BY CONTINUOUS UNDERGROUND PIPE.

12. ALL ROOF DRAINAGE SYSTEMS MUST BE INSTALLED SO AS NEITHER TO IMPACT UPON, NOR CAUSE EROSION / DAMAGE TO ADJACENT PROPERTY.

ARCHAEOLOGICAL NOTES

1. CALL ALEXANDRIA ARCHAEOLOGY IMMEDIATELY (703-838-4399) IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDS.

2. THE APPLICANT SHALL NOT ALLOW ANY OTHER METAL DETECTION TO BE CONDUCTED ON THE PROPERTY, UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY.

3. CERTIFICATES OF OCCUPANCY WILL NOT BE ISSUED FOR THIS PROPERTY UNTIL THE FINAL ARCHAEOLOGICAL REPORT HAS BEEN RECEIVED AND APPROVED BY THE CITY ARCHAEOLOGIST.

CITY OF ALEXANDRIA STANDARD NOTES

Environmental Site Assessment

There are no tidal wetlands, tidal shores, tributary streams, floodplains, connected tidal wetlands, isolated wetlands, highly erodible / permeable soils or buffer areas associated with shores, streams or wetlands located on this site. Further, there are no wetland permits required for this development project. Additionally, there are no known underground storage tanks or areas of soil or groundwater contamination on the site.

The City of Alexandria Department of Transportation and Environmental Services, Division of Environmental Quality must be notified if unusual or unanticipated contamination or underground storage tanks, drums and containers are encountered at the site. If there is any doubt about public safety or a release to the environment, the Alexandria Fire Department must be contacted immediately by calling 911. The tank or container's removal, its contents, any soil contamination and releases to the environment will be handled in accordance with Federal, State and City regulations.

All wells to be demolished in this project, including monitoring wells, must be closed in accordance with state well regulation. Contact Joe Flander and coordinate with the Alexandria Health Department at 703-838-4400 ext. 255.

All construction activities must comply with the Alexandria Noise Control Code Title 11, Chapter 5, which permits construction activities to occur between the following hours:

Monday through Friday from 7 am to 6 pm and Saturdays from 9 am to 6 pm.
No construction activities are permitted on Sundays.
Pile Driving is further restricted to the following hours:
Monday through Friday from 9 am to 6 pm and Saturdays from 10 am to 4 pm.

Erosion and Sediment Control Notes

The developer and contractors are to keep denuded areas to a minimum. An erosion and sediment control plan is included with these final plans for approval by T&ES for reference by the erosion and sediment control permit. All erosion / sediment control measures will conform to the current standards of the City of Alexandria and the Virginia Erosion and Sediment Control Handbook.

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to the minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations §4VAC50-30 Erosion and Sediment Control Regulations.

T&ES must be notified one week prior to the pre-construction conference, one week prior to the commencements of land disturbing activity, and one week prior to the final inspection. Certified Responsible Land disturber is required to attend pre-construction meeting.

All erosion and sediment control measures are to be placed prior to or as the first step in clearing. An inspection by the City of Alexandria is required after initial installation of erosion and sediment control measures and before any clearing or grading can begin.

A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.

Prior to commencing any land disturbing activities in areas other than those indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the City of Alexandria.

All disturbed areas of the site that are not to be worked for seven or more calendar days must be stabilized.

All temporary earth berms, diversions and sediment control dams shall be seeded and mulched or otherwise stabilized as soon as possible but no later than 48 hours after grading.

All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.

During dewatering operations, water will be pumped through an approved filtering device.

The contractor shall inspect all erosion control measures daily and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately. any supporting utilities, catalog cuts on any mechanical or electrical equipment, a schedule of routine maintenance for the BMP(s) and supporting equipment, and a copy of the maintenance agreement with the City.

or

The Developer shall furnish the Homeowner Association with an Owner's Operation and Maintenance Manual for all the Best Management Practices (BMP's) used on site. The manual shall include at a minimum: an explanation of the functions and operations of the BMP(s), drawings and diagrams of the BMP(s) and any supporting utilities, catalog cuts on maintenance requirements and a copy of the Maintenance Agreement with the City.

The Developer shall furnish each home purchaser with a brochure describing the stormwater BMP(s) installed on the site, outlining the responsibilities of the homeowners and the Homeowner's Association (HOA) with respect to maintenance requirements. Upon activation of the HOA, the Developer shall furnish five copies of the brochure per unit to the HOA for distribution to subsequent homeowners.

Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will not be worked for seven or more calendar days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Any stockpiled material which will remain in place longer than 10 days is to be seeded for temporary vegetation and mulched with straw mulch or otherwise stabilized. All applicable erosion and sediment control measures must be employed for stockpile areas.

Any denuded slopes, either disturbed or created by this plan that exceed 25% are to be sodded and pegged for stability and erosion control.

To the extent possible all tree protection shall be installed at the drip line of the tree(s).
At the completion of the project and prior to the release of the bond all disturbed areas shall be stabilized and all temporary erosion and sediment control shall be removed.

Concerning Utility Work:
No more than 500 linear feet of trench may be opened at one time.
All excavated material to be replaced into the trench shall be stockpiled on the high side of the trench. If any trench work will remain open after the end of the workday all needed erosion and sediment controls shall be employed. Applicable safety regulations shall be complied with.

The contractor is responsible for the installation of any additional erosion control measures as necessary to prevent erosion and sedimentation and as determined by the City of Alexandria.

Stormwater Quality Management Notes:

The stormwater Best Management Practices (BMPs) required for this project shall be constructed and installed under the direct supervision of the design engineer or his designated representative. The design engineer shall make a written certification to the City that the BMP(s) are constructed and installed as designed and in accordance with the approved Final Site Plan. In addition, aggregate layers and collector pipes may not be installed unless the design engineer or his representative is present.

The Developer shall furnish the owners with an Operation and Maintenance Manual for all Best Management Practices (BMPs) on the project. The manual shall include an explanation of the functions and operations of each BMP and any supporting utilities, catalog cuts on any mechanical or electrical equipment, a schedule of routine maintenance for the BMP(s) and supporting equipment, and a copy of the maintenance agreement with the City.

or

The Developer shall furnish the Homeowner Association with an Owner's Operation and Maintenance Manual for all the Best Management Practices (BMP's) used on site. The manual shall include at a minimum: an explanation of the functions and operations of the BMP(s), drawings and diagrams of the BMP(s) and any supporting utilities, catalog cuts on maintenance requirements and a copy of the Maintenance Agreement with the City.

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FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISSION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

Bowman CONSULTING

Bowman Consulting Group, Ltd.
2121 Eisenhower Avenue
Suite 302
Alexandria, Virginia 22314
Phone: (703) 548-2188
Fax: (703) 683-5781
www.bowmanconsulting.com

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NOTES, ABBREVIATIONS AND LEGEND

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40824
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP DESIGN	DAD DRAWN	STL CHKD

SCALE H: NONE V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C2.00

Cad file name : V:\2267 - Janney & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FSP-LEG.dwg

DEVELOPMENT CONDITIONS

CONDITIONS:

Staff **recommends approval** subject to compliance with all applicable codes and ordinances and the following conditions:

I. **Landscaping and Tree Protection**

1. The applicant shall implement the following tree protection measures to ensure the retention of the proposed trees to be saved as depicted on the preliminary site plan dated March 30, 2004 to the satisfaction of the Directors of P&Z and RC&PA. All proposed tree protection details shall be depicted on the final site plan and be provided throughout the construction process.
   a. No construction materials or equipment shall be stored or stagedbeyond the limits of disturbance.
   b. A note identifying these restrictions shall be provided on the Site Plan Cover, Erosion Sediment Control and Landscape Plan sheets.
   c. Provide a note on the plan that the existing shed on lot 5 in the drip line will be removed without heavy equipment entering into the drip line of the existing tree.
   d. Tree protection for any protected tree shall be constructed of 4"x 4" wooden vertical posts installed in the ground 8' on center with 1"x 6" wooden battens mounted between them. Temporary plastic fencing may be used to define other limits of clearing. All tree protection must be shown on the final site plan, and is to be installed prior to any clearing, excavation or construction on the site. Alternative tree protection, providing equivalent or superior protection, may be approved by the Directors of P&Z and RC&PA. The developer shall call the City Arborist for a review of the installed tree protection following its installation and prior to any construction, clearing, grading or site activity.
   e. All underground utilities shall be located so as to avoid disturbance for grading beyond the limits of disturbance.
   f. If the trees are damaged or destroyed by construction activities the applicant shall replace the tree(s) with the largest caliper trees(s) of comparable species that are available or can be transplanted to the satisfaction of the City Arborist and Director of P&Z; the remaining tree caliper shall be planted on-site or adjacent to the site. In addition, a fine will be paid by the applicant in an amount not to exceed $10,000 for each tree that is destroyed if the approved tree protection methods have not been followed. The replacement trees shall be installed and if applicable the fine shall be paid prior to the release of the public improvement bonds. (P&Z)(PC)

2. The Homeowners Association (HOA) shall incorporate language that requires the following elements and other restrictions deemed necessary by the City Attorney to ensure that the trees proposed to be saved are retained including:
   a. The two historic trees shall be subject to all restrictions as mandated by the City Code and applicable ordinances. The owners for lot 7 and lot 6 shall be required to sign a disclosure statement acknowledging the presence and required protection of the trees.
   b. The trees to be protected as depicted on the approved site plan shall be required to be retained unless otherwise permitted to be removed by the City Arborist due to the health and safety of the tree.
   c. Any proposal to remove a tree that is designated to be retained on the approved site plan for reasons other than health or safety shall require unanimous approval by the Homeowners Association and subsequent approval by the Planning Commission. (P&Z)

3. The area of the limits of disturbance and clearing for the site shall be limited to the areas as generally depicted on the preliminary site plan dated March 30, 2004 and reduced if possible to retain existing trees and grades. (P&Z)

4. Depict and label tree save areas on the site plan, erosion control plan, and grading plan sheets in addition to the tree preservation plan sheet. (RP&CA)

5. Revise the site plan, landscape plan and tree protection plan to minimize impact on trees to be saved and protected in accordance with the following to the satisfaction of the Directors of P&Z and RP&CA:
   a. Provide a tree preservation plan for the alternative preliminary site plan, and revise tree protection (sheet C-9) to be located outside of the Historic Tree canopies.
   b. On lot 6, shift driveway and retaining wall farther away from the drip line of the 43" caliper white oak to the maximum extent possible.
   c. Relocate the house and/or below grade drainage pipe for lot 5 to the north and away from the 50" caliper white oak.
   d. Expand the tree save area around the 43" white oak on lot 7.
   e. Revise the property line of lot 9 to exclude the proposed 33" chestnut oak tree to be saved to be located outside the dripline of the tree.
   f. Relocate the proposed street tree adjacent to the 24" London Plane tree to be saved, on the cul-de-sac, lot 10. This tree is positioned too close to the existing tree, and too close to the edge of the proposed retaining wall.
   g. Provide tree pruning/root pruning preservation notes for the 43" caliper white oak tree on lot 7, where the proposed stone wall will be installed. Root pruning shall be required prior to the installation of the retaining wall. (P&Z)(RP&CA)(PC)

6. A landscape plan shall be provided with the final site plan to the satisfaction of the Directors of P&Z and RP&CA. At a minimum the plan shall provide:
   a. Street trees at an interval of no more than 30 feet on-center along Janneys Lane, Quaker Lane and the new public street.
   b. Additional evergreen planting, trees and landscaping shall be provided for all retaining walls that exceed 3 ft. tall.
   c. Provide a significant amount of additional decidious and evergreen trees on the eastern portion of the site to provide screening for the adjoining single-family home.
   d. Provide a significant amount of additional decidious and evergreen trees on the southern portion of lot 7 and lot 8 to provide screening for the adjoining single-family homes.
   e. All landscaping shall be maintained in good condition and replaced as needed.
   f. All plant materials and specifications shall be in accordance with the current and most up to date edition of the American Standard For Nursery Stock (ANSI Z60.1) as produced by the American Association for Nurserymen; Washington, D.C. Show proposed bus shelters on landscape plan.
   g. h. A bond for all existing trees and landscaping designated to be retained, in an amount determined by the Director of Parks, Recreation and Cultural Activities, and for 100% of the cost of trees and landscaping required to be installed, shall be provided and maintained for a period of five years.
   i. The applicant shall be permitted to make minor modifications, if the modifications enhance the tree protection measures. (P&Z)(RP&CA)

7. The applicant shall revise the design of the open space at the corner of Quaker and Janneys Lane and shall be responsible for the amenities and landscaping to the satisfaction of the Directors of RP&CA, P&Z and T&ES in consultation with the community. The plan shall be revised to provide the following:
   a. The open space shall provide amenities such as such as brick sidewalks, benches, focal element, high quality signage, trash receptacles, landscaping, etc. to encourage its use.
   b. There shall be no walls or fences that would appear to close the open space from public access.
   c. The trees shall be reconfigured and the tree species shall be revised to provide a more open and informal gathering area and open space.
   d. Locate trees and specify species in a manner that substantially preserves the openness at the corner of Quaker Lane and Janneys Lane and provides high-quality passive use space.
   e. The pathways shall be handicap accessible.
   f. Locate utilities in a manner which eliminates or minimizes as much as possible conflicts between utilities and existing and proposed landscaping, including the following:
   i. If a new storm drainage line is required along the western property line in the vicinity of the 33" chestnut oak tree to be saved at Quaker Lane the line shall be installed outside the drip line.
   ii. Relocate the proposed gas line that is now shown traversing the proposed park conflicting with the landscaping proposed. (P&Z)(RP&CA)(PC)

II. **Site Plan:**

9. Revise the proposed public sidewalks and public pedestrian easements to provide the following:
   a. The internal sidewalk adjacent to the public street shall be 5ft. wide with a 4 ft. landscape strip between the sidewalk and the curb.
   b. A 5 ft. wide pedestrian easement and sidewalk or path shall be provide on the southern and eastern portion of lot # 9 and on the southern portion of lot # 10. The path shall provide a pedestrian connection from Quaker Lane to the open space on the corner of Quaker Lane and Janneys Lane and the internal public street.
   c. The landscape island within the cul-de sac shall be increased and the end of the on-street parking lane near Janneys Lane shall be reconfigured to the satisfaction of the Director of P&Z, T&ES and Code Enforcement.
   d. Provide a six foot sidewalk adjacent to the public streets on Quaker Lane and Janneys Lane with a 4 ft. landscape strip between the curb and the sidewalk.. Provide a public access easement for that portion of the six foot sidewalk located on the lots 3, 4, 8 and 9. Modifications to this standard section may be permitted by the Directors of P&Z and T&ES in order to limit impacts on existing trees. (P&Z)(RP&CA)(T&ES)(PC)

10. A public access easement for a pedestrian connection from the proposed public street parallel with the lot line of lot 6 and lot 7 and which shall connect to the existing sidewalk on Cathedral Drive. The surface for the trail shall be a pourous material. (T&ES)(RPCA)

11. All retaining walls shall be constructed with a natural stone or brick veneer. Any protective fencing or railing atop retaining walls shall be visually unobtrusive and of a decorative metal material, to the satisfaction of the Directors of P&Z and Code Enforcement. Additional retaining walls other than those shown on the preliminary site plan shall be permitted if they are required to protect existing trees or to prevent any extensive grading, or additional tree loss. Provide a retaining wall detail on the final site plan. (P&Z)

12. Fences shall be limited to a maximum height of 3.5 ft. and shall be limited to a decorative open style metal fence or painted wooden picket to the satisfaction of the Director of P&Z. A detail of all fences shall be provided on the final site plan. Fences within the front yard of lot 3 and lot 9 shall not be permitted. No fences shall be installed within the drip line of any tree shown to be saved on the preliminary site plan unless the Directors of P&Z and RP&CA determine that the proposed installation will not adversely affect the tree. All fence locations shall be depicted on the final site plan and a detail of all proposed fences shall be provided on the final site plan.(RP&CA)(P&Z)(PC)

13. Show existing and proposed street lights and site lights on the site plan. Provide a lighting plan with the final site plan to the satisfaction of the Director of T&ES in consultation with the Chief of Police. The plan shall show existing and proposed street lights and site lights; indicate the type of fixture, and show mounting height, and strength of fixture in Lumens or Watts; provide manufacturer's specifications for the fixtures; and provide lighting calculations to verify that lighting meets City Standards. (T&ES)(Police)

14. Provide all pedestrian and traffic signage to the satisfaction of the Director of T&ES. (T&ES)

15. All driveway entrances and sidewalks in public ROW or abutting public ROW shall meet City standards. (T&ES)

16. Show all existing and proposed easements, both public and private. (T&ES)

17. Replace existing curb and gutter, sidewalks, and handicap ramps that are in disrepair or broken. (T&ES)

18. Provide structural details for the proposed retaining walls greater than four feet in height.. (T&ES)

19. The Developer should provide two 4" rigid steel galvanized traffic signal conduits along the Quaker Lane and Janneys Lane frontage of the project. The conduits shall be buried 2 feet and shall terminate in developer supplied junction boxes at each end and at the Quaker Lane and Janneys Lane intersection. (T&ES)

20. The plans need to show more detail of the existing traffic signal and any impacts. (T&ES)

21. The proposed roadway will be a public roadway and must meet all minimum City street standards. Provide a five foot sidewalk on both sides of the proposed roadway and the cul-de-sac, street lighting and drainage. (T&ES)

22. The proposed width of the public roadway is too narrow to allow on-street parking on both sides of the street. Parking will only be allowed on one side of street as determined by the Director of T&ES. (T&ES)

23. Show the location of the bus shelters on the plan with associated easements and passenger loading ramps. Relocate bus shelter easements away from the trees to be saved on Quaker Lane. Relocate bus shelter or relocate proposed entry walk so that the bus shelter is not directly located next to the entry sidewalk into lot 8. (RP&CA) (T&ES)

24. Show all utility structures, including transformers, on the final development plan. All utility structures (except fire hydrants) shall be clustered where possible and located so as not to be visible from a public right-of-way or private street. When such a location is not feasible, such structures shall be located and screened to the satisfaction of the Director of P&Z. (P&Z)

III. **Environmental**

25. Developer to comply with the peak flow requirements of Article XIII of AZO. All roof drains, foundation drains and the majority of site runoff must be piped to an underground stormwater conveyance system. Provide measures to limit the migration of groundwater to adjacent properties. (T&ES)

26. The applicant is advised that all stormwater designs that require analysis of pressure hydraulic systems and/or inclusion and design of flow control structures must be sealed by a professional engineer, registered in the Commonwealth of Virginia. If applicable, the Director of T&ES may require resubmission of all plans that do not meet this standard. (T&ES)

27. If combined uncontrolled and controlled stormwater outfall is proposed, the peak flow requirements of Article XIII of AZO shall be met. (T&ES)

28. Provide a narrative describing how the project will comply with the stormwater quantity and quality requirements of Article XIII of the Zoning Ordinance. (T&ES)

28a. The applicant shall provide storm water detention to the satisfaction of the Director of T&ES, even if storm water detention is not required under Article XIII of the Alexandria Zoning Ordinance. The detention will be sized to provide excess capacity of an additional 600 square feet of impervious surface per lot.

28b. Future improvements by homeowners that add more than 600 square feet of impervious surface to a lot will require storm water management on the lot in accordance with Article XIII of the AZO.

28c. The storm water management system must incorporate any impervious surface from the proposed Park area into the storm water detention design.

28d. The final design of the storm water management system shall assure that sufficient storm water detention capacity as determined by the Director of T&ES is provided, such that thedevelopment when constructed, including additional impervious cover and landscape features reasonable likely to be constructed by future homeowners, will have no adverse impact on down steam property owners. A hydraulic study related to the adequacy of outfall will be required as stated in the Virginia State Erosion and Sediment Control Manual, Chapter IV (1992). The study will be completed by a professional engineer registered in the Commonwealth of Virginia, selected by the Director of T&ES in consultation with the Key Drive residents and the applicant, and there will be enhanced community dialogue. Such study cost will not exceed

28e. The adequacy and functionality of the entire storm water management system to accommodate a two and ten year storm event as constructed by the applicant shall be bonded or otherwise secured for a period of ten years. Such bond or security shall, in addition, provide for the indemnification of downstream property owners against damage proximately caused by storm water runoff from the newly constructed development and exclusive of any pre-existing conditions. The amount and form of such bond or security shall be determined by the Director of T&ES and the City Attorney.

29. Provide pre and post development, two and ten year storm water computations for the entire site along with a drainage map. (T&ES)

30. Plan must demonstrate to the satisfaction of the Director of T&ES that adequate stormwater outfalls are available to the site or else developer is to design and build any on or off site improvements to discharge to an adequate outfall. The majority of the runoff from the proposed development outfalls into an existing closed storm drainage system which discharges into an open channel. Due to the proximity of the open channel to the existing homes on Key Drive, discuss the impacts of development to the downstream properties. (T&ES)

31. The proposed grading on the eastern portion of the site is steeper than the existing. Show how the runoff will be handled before it impacts the adjacent property. Show additional spot elevations on the eastern end of the retaining wall. (T&ES)

32. The applicant is encouraged to involve the stormwater management designer at an early stage of the site plan process in order to ensure future submittals incorporate stormwater design aspects into the site design in accordance with Article XIII of the Zoning Ordinance. (T&ES)

33. All storm sewers maintained by the City must be a minimum size of 15" for catch basin connections and a minimum size of 18" for storm sewer mains. (T&ES)(PC)

34. All Best Management Practices (BMP) stormwater facilities shall be located on private property or on common areas. This may require applicant to install two smaller flow through BMPs instead of one with higher capacity. (T&ES)

35. Provide additional inlets in place of manholes on the existing and proposed storm sewer on lots 1-3 to maximize the collection of surface run-off from the site to the satisfaction of the Director of T.&ES. (T&ES)(PC)

36. Provide proposed elevations (contours and spot shots) in sufficient details on grading plan to clearly show the drainage patterns. (T&ES)

37. Maintain a ten foot horizontal separation between sanitary and waterlines and a six foot horizontal separation between sanitary and storm sewer. (T&ES)

38. A detailed geotechnical report will be required to be submitted with the first final plan submission. The site is bordering the marine clay area as delineated on the City map of marine clay areas. There is evidence of groundwater seepage on the site. The report is to include, at a minimum: groundwater information, identifying the problems and presenting solutions, underdrain systems, waterproofing basements, how to handle surface and ground water on the site and a summary of impacts to adjacent properties. (T&ES)

39. The stormwater collection system is part of the Taylor Run watershed. All on-site stormwater curb inlets and public curb inlets within 50 feet of the property line shall be duly marked to the satisfaction of the Director of T&ES.(T&ES)

40. Provide a drainage map for the area flowing to the chosen stormwater Best Management Practices (BMPs), including topographic information and storm drains.(T&ES)

41. The stormwater Best Management Practices (BMPs) required for this project shall be constructed and installed under the direct supervision of the design professional or his designated representative. Prior to release of the performance bond, the design professional shall submit a written certification to the Director of T&ES that the BMPs are:
   a. Constructed and installed as designed and in accordance with the approved Final Site Plan.
   b. Clean and free of debris, soil, and litter by either having been installed or brought into service after the site was stabilized.
   c. The surface appurtenances associated with the on-site structural stormwater Best Management Practices (BMPs) shall be marked to the satisfaction of the Director of T&ES to identify them as part of a structural BMP system. (T&ES)

42. For any surface-installed stormwater Best Management Practice (BMP), i.e. Bio-Retention Filters, Vegetated Swales, etc. that are employed for this site, descriptive signage for the BMPs is required to be installed to the satisfaction of the Director of T&ES. (T&ES)

43. Prior to approval of the final site plan, and as reviewed as part of the second final, the applicant shall execute, submit and appropriately record in the land records, a maintenance agreement with the City for the Stormwater Quality Best Management Practices (BMPs). (T&ES)

44. Prior to release of the performance bond, the applicant is required to submit a certification by a qualified professional to the satisfaction of the Director of T&ES that the existing stormwater management facility adjacent to the project and associated conveyance systems were not adversely affected by the construction and that they are functioning as designed and are in a condition similar to prior to construction began. If maintenance of the facility or systems were required in order to make this certification, provide a description of the maintenance performed. (T&ES)

45. The applicant shall furnish the Home Owners Association, where applicable or the owners with an Owner's Operation and Maintenance Manual for all the Best Management Practices (BMPs) used on site. The manual shall include at a minimum: an explanation of the functions and operations of the BMP(s); drawings and diagrams of the BMP(s) and any supporting utilities; catalog cuts on maintenance requirements; manufacturer contact names and phone numbers; a copy of the executed maintenance service contract; and a copy of the maintenance agreement with the City. Prior to release of the performance bond, a copy of the Operation and Maintenance Manual shall be submitted to the City on a digital media. (T&ES)

46. Plan does not indicate whether or not there are any known soil and groundwater contamination as required with all preliminary submissions. Should any unanticipated contamination or underground storage tanks, drums and containers be encountered at the site the applicant must immediately notify the City of Alexandria Department of Transportation and Environmental Services, Division of Environmental Quality.(T&ES)

IV. **Architectural**

47. The final architectural elevations shall be consistent with the level of quality and detail provided in the preliminary architectural elevations dated March 25, 2003. In addition:
   a. a. The primary materials of the units for each facade shall be limited to brick, stone or cementitious siding.
   b. Where possible, the width of shutters needs to equal half the width of the adjacent window.
   c. c. Color elevations will be submitted for review and comment with the final site plan.
   d. Architectural elevations (front, side and rear) shall be submitted for review and comment with the final site plan. Each elevation shall indicate average finished grade.
   e. The facades that are visible from the streets and potential public park shall be designed with a level of architectural detail and with finishes consistent with the front facade treatment. (P&Z)(PC)

48. The applicant shall submit revised architectural elevations for review and comment by the Director of P&Z. The revised elevations should generally present a more balanced facade appearance, orderly fenestration pattern and emulate the styles and scale of residential houses typically found in the City of Alexandria. Items to be considered by the applicant in revising the elevations include:
   a. Revising the size, pitch and design of the roofs to reduce their size and mitigate the scale of the buildings;
   b. Establishing a more formal order on the elevations, particularly sides and rears, for a a more symmetrical arrangement of appropriate sizes, proportions, and types of windows;
   c. Using window styles that conform with the historic style of the general design of the house;
   d. Using special windows, such as Palladian windows, only a focal points of the entire elevation;
   e. Incorporating architectural elements typically found on houses in Alexandria such as the presence of covered porticoes and porches on at least the front facade and desirable on other elevations;
   f. Making chimneys more massive, reflecting load-bearing masonry construction typical of the historic houses depicted;
   g. Using materials that are consistent with the traditional buildings in Alexandria that are predominantly brick or siding or a combination of the two. Stone was not often used as a general cladding material except in some Arts and Crafts style houses.(P&Z)(PC)

47. The building footprints for each unit shall be limited to the building envelope depicted on the preliminary plan unless otherwise necessary to retain additional trees to the satisfaction of the Director of P&Z. (P&Z)

V. **Street Name Case**

50. The new public street shall be named Barecroft Place and shall be shown on the final site plan. (P&Z)

VI. **Subdivision/Legal**

51. The final subdivision plat shall be consistent with the final site plan, except that the subdivision plat shall be modified to provide a separate lot for the driveway that provides access to lots 7, 8, 9 and 10. Lots 1 shall generally be a minimum of 26,030 sq. ft. and lot 2 shall generally be a minimum of 22,582 sq. ft. as reflected on the preliminary site plan dated 3/30/04 to the satisfaction of the Directors of P&Z and RC&PA. The final subdivision plat shall be approved and recorded prior to the release of the final site plan. The subdivision plat and all easements shall be submitted as part of the first final site plan submission. (P&Z)

52. The developer shall provide a signed disclosure statement from each purchaser prior to the release of a certificate of occupancy permit for that unit. The prospective purchasers shall be informed of the restrictions imposed on the landowners by the elements of this proposed site plan, including:
   a. Tree protection requirements;
   b. The presence and location of the proposed public park;
   c. Public access easements/paths through the development site and to the open space and public streets;
   d. The new public street and emergency vehicle easement restrictions;
   e. Sanitary sewer easements; and
   f. That zoning limits construction of future building additions and/or decks larger than what is shown on the site plan. (P&Z)

53. The applicant shall submit a homeowner's agreement (HOA) for approval by the City Attorney, prior to applying for the first certificate of occupancy permit. Such HOA shall include the conditions listed below, which shall be clearly expressed in a separate section of the HOA. Also, such section within the HOA shall include language which makes clear that the site plan conditions listed shall not be amended without the approval of the Planning Commission:
   a. The protected trees/tree protection areas as set forth as part of the site plan approval.
   b. Exterior building improvements by future residents, including above ground decks not included on the approved plans or different from the approved plans, shall require the approval of the Director of Planning and Zoning and must be consistent with the site plan conditions.
   c. Building additions, including decks are limited to the building envelope depicted on the approved site plan.
   d. All required landscaping and screening including trees and landscaping in the common area,) shall be maintained in good condition.
   e. No ground disturbing activity shall occur within the "limits of disturbance" areas or drip-line areas of trees preserved as a condition of this site plan approval.
   f. The principal use of the individual garages shall be for passenger vehicle storage only.
   g. Each homeowner shall maintain the private storm drain lines on their property in good working order in accordance with the approved final site plan. (P&Z)(PC)

54. Freestanding subdivision and/or development sigage shall be prohibited. (P&Z)

55. In accordance with the City's Affordable Housing Policy, the applicant shall make a contribution to the City's Housing Trust Fund of $1.00 per gross square foot of new building area (see definition of gross square footage provided in the Developer Checklist). The applicant shall pay the contribution to the City prior to the issuance of the certificate of occupancy. (Housing)

VII. **Construction and Phasing**

56. A temporary informational sign shall be installed on the site prior to the approval of the final site plan for the project and shall be displayed until construction is complete or replaced with a marketing sign incorporating the required information; the sign shall notify the public of the nature of the upcoming project and shall provide a phone number for public questions regarding the project. (P&Z)

57. The applicant shall identify a person who will serve as liaison to the community throughout the duration of construction. The name and telephone number of this individual shall be provided in writing to residents, whose property abuts the site, and to the Directors of P&Z and T&ES. (P&Z)

58. Prior to the release of the final site plan, provide a Traffic Control Plan for construction detailing proposed controls to traffic movement, lane closures, construction entrances, haul routes, and storage and staging. (T&ES)

59. During the construction phase of this development, the site developer, its contractor, certified land disturber, or owner's other agents shall implement a waste and refuse control program. This program shall control wastes such as discarded building materials, concrete truck washout, chemicals, litter or trash, trash generated by construction workers or mobile food vendor businesses serving them and sanitary waste at the construction site and prevent its off site migration that may cause adverse impacts to the neighboring properties or the environment to the satisfaction of Directors of Transportation and Environmental Services and Code Enforcement. All wastes shall be disposed off site properly in accordance with all applicable federal, state and local laws.(T&ES)

VIII. **General**

60. Remove gas line from 10' water main easement. No other utilities are allowed within the VAWC easement. (T&ES/VAWC)

61. The General Notes of the Final Site Plans must include the following statements so that on-site contractors are aware of the requirements:
   a. Call Alexandria Archaeology immediately (703-838-4399) if any buried structural remains (wall foundations, wells, privies, cisterns, etc.) or concentrations of artifacts are discovered during development. Work must cease in the area of the discovery until a City archaeologist comes to the site and records the finds.
   b. The applicant shall not allow any metal detection to be conducted on the property, unless authorized by Alexandria Archaeology. (Archaeology)

62. Certificates of Occupancy will not be issued for this property until the final archaeological report has been received and approved by the City Archaeologist. (Archaeology)

63. The developer will erect a historic marker on the property according to specifications provided by Alexandria Archaeology. The marker will highlight the historical and archaeological significance of the property. (Archaeology)

64. The developer will produce a booklet for the public on the history and archaeology of the property, according to specifications provided by Alexandria Archaeology. (Archaeology)

65. Any inconsistencies between the various drawings shall be reconciled to the satisfaction of the Directors of P&Z and T&ES. (P&Z).

66. All Traffic Control Device design plans, Work Zone Traffic Control plans, and Traffic Studies shall be sealed by a professional engineer, registered in the Commonwealth of Virginia. (T&ES)

67. Solid waste services shall be provided by the City. In order for the City to provide solid waste service, the following conditions must be met. The development must meet all the minimum street standards, including all standard cul-de-sac turnarounds, if applicable. The developer must provide adequate space within each unit to accommodate a City Standard super can and recycling container. The containers must be placed inside the units or within an enclosure that completely screens them from view. The developer must purchase the standard containers from the City or provide containers that are compatible with City collection system and approved by the Director of Transportation and Environmental Services. The houses on the pipestem driveway will have to bring the trash containers down to the public street right of way. (T&ES)

68. If fireplaces are to be included in the development, the applicant is required to install gas fireplaces to reduce air pollution and odors. Animal screens must be installed on chimneys. (T&ES)

69. The final site plan shall include a zoning tabulation that clearly depicts the permitted and proposed net/gross floor areas, height, yard setbacks, and all other applicable zoning requirements for each individual lot. This information sheet shall also be attached to all building permits. (P&Z)

70. Submit a building location survey to Planning staff prior to applying for a certificate of occupancy permit for each unit. The applicant shall submit the final "as-built" site plan for the entire project prior to applying for a certificate of occupancy permit for the last dwelling unit. (P&Z)

71. Temporary construction trailer(s) shall be permitted and be subject to the approval of the Director of P&Z. Temporary structures for sales personnel, as well as sales/marketing signs, shall be permitted, with the size and site design for such temporary structures, including signs, subject to approval by the Director of Planning and Zoning. (P&Z)

72. The applicant is to consult with the Crime Prevention Unit of the Alexandria Police Department at 703-838-4520 regarding locking hardware and alarms for the homes. This is to be completed prior to the commencement of construction. (Police)

73. The applicant is to contact the Crime Prevention Unit of the Alexandria Police Department at 703-838-4520 regarding a security survey for any sales or construction trailers as soon as they are to be placed on site. (Police)

74. The applicant shall attach a copy of the final released site plan to each building permit document application and be responsible for insuring that the building permit drawings are consistent and in compliance with the final released site plan prior to review and approval of the building permit by the Departments of Planning and Zoning and Transportation and Environmental Services. (P&Z)

Staff Note:
In accordance with section 11-506(c) of the zoning ordinance, construction or operation shall be commenced and diligently and substantially pursued within 18 months of the date of granting of a special use permit by City Council or the special use permit shall become void

CITY DEPARTMENT CODE COMMENTS

Legend: C - code requirement R - recommendation S - suggestion F - finding

Transportation & Environmental Services:

R-1 Underground the utilities along the frontage of the property on North Quaker Lane and Janneys Lane.

F-1 Correct the 10 minute time of concentration label to 5 minute time of concentration

F-2 Relocate the 24" storm sewer further away from the proposed dwelling on lot 3.

F-3 Relocate the 30" storm sewer connection from the stormceptor. It is in conflict with the traffic signal poles.

F-4 Revise drainage arrows on storm sewer to show correct direction of flow.

F-5 Relocate utilities in public right of way to maintain adequate clearances between utilities.

F-6 Revise proposed drainage map to correctly depict drainage area. Revise computations accordingly.

C-1 Bond for the public improvements must be posted prior to release of the plan.

C-2 All downspouts must be connected to a storm sewer by continuous underground pipe.

C-3 The sewer tap fee must be paid prior to release of the plan.

C-4 All easements and/or dedications must be recorded prior to release of the plan.

C-5 Plans and profiles of utilities and roads in public easements and/or public right-of-way must be approved prior to release of the plan.

C-6 All drainage facilities must be designed to the satisfaction of T&ES. Drainage divide maps and computations must be provided for approval.

C-7 All utilities serving this site to be underground.

C-8 Provide site lighting plan to meet minimum city standards.

C-9 The applicant shall comply with the City of Alexandria's Noise Control Code, Title 11, Chapter 5, which sets the maximum permissible noise level as measured at the property line.

C-10 The applicant must comply with the Article XIII of the City's zoning ordinance, which includes requirements for stormwater pollutant load reductions, treatment of the water quality volume default, and stormwater quantity management.

C-11 The applicant must comply with the City of Alexandria, Erosion and Sediment Control Code, Section 5, Chapter 4. This includes naming a Responsible Land Disturber on the Erosion and Sediment Control sheets prior to engaging in land disturbing activities in accordance with Virginia Erosion and Sediment Control Law.

C-12 All required permits from Virginia Department of Environmental Quality, Environmental Protection Agency, Army Corps of Engineers, Virginia Marine Resources must be in place for all project construction and mitigation work prior to release of the final site plan. This includes the new state requirement for a VPDES permit for all construction activities greater than 1 acre.

Virginia American Water Company:

1. Show and call out two-inch blow off approximately fifteen feet west of the proposed fire hydrant by Lot 9. Terminate eight-inch water main at this point.

2. Show proposed water meter locations right behind curb and gutter.

3. Add the following notes to the plan: "All water facility construction shall conform to the Virginia American Water Company Standards and Specifications," and "Contact Virginia American Water Company at 703-549-7080 to coordinate construction and inspection of water facilities."

Code Enforcement:

The following are repeat comments from a review on 2/2/04 & 3/15/04. Updated comment from April 14, 2004 are in **BOLD.**

F-1 Two fire hydrants will be required. One shall be located at the entrance to the subdivision at the northeast corner of Lot 3 (Janneys Lane & Entrance to Development). The second shall be located along the edge of the circle near the front walk to lot 10. Relocate the hydrants show to the new locations mentioned above. **Hydrants have been relocated in accordance with previous requirements for Sheet C5.00, However, Sheet C5.10 (Park Option) is still deficient in proper hydrant coverage. Sheets C5.00 & C5.10 should be identical in reference to hydrant locations and should conform to the locations shown on Sheet C5.00 in this submission.**

F-2 Finding deleted by staff

F-3 The submitted response letter does not reflect the plans submitted. The applicant references Notes 26 - 33 on Sheet C2.00. The submitted plans have only Notes 1 - 10 on Sheet C2.00. **Finding unresolved. Sheet C2.00 only provides Noted 1-11.**

C-1 New construction must comply with the current edition of the Uniform Statewide Building Code (USBC). Show note on plans. Condition met. Shown as Note 3 on Sheet C2.00.

C-2 A soils report must be submitted with the building permit application. Show note on plans. Condition met. Shown as Note 4 on Sheet C2.00.

C-3 Prior to the issuance of a demolition permit or land disturbance permit, a rodent abatement plan shall be submitted to Code Enforcement that will outline the steps that will taken to prevent the spread of rodents from the construction site to the surrounding community and sewers. Show note on site plan. **Condition met. Shown as Note 11 on Sheet C2.00.**

C-4 A Certificate of occupancy shall be obtained prior to any occupancy of the building or portion thereof, in accordance with USBC 118.0. Show note on plans. Condition met. Shown as Note 2 on Sheet C2.00.

C-5 Roof drainage systems must be installed so as neither to impact upon, nor cause erosion/damage to adjacent property. Condition met. Shown as Note 6 on Sheet C2.00.

C-6 Construction permits are required for this project. Plans shall accompany the permit application that fully detail the construction as well as layouts and schematics of the mechanical, electrical, and plumbing systems. Condition met. Shown as Note 7 on Sheet C2.00.

C-7 Permission from adjacent property owners is required if access to the adjacent properties is required to complete the proposed construction. Otherwise, a plan shall be submitted to demonstrate the construction techniques utilized to keep construction solely on the referenced property. Condition met. Shown as Note 8 on Sheet C2.00.

C-8 A wall location plat prepared by a land surveyor is required to be submitted to this office prior to requesting any framing inspection. Condition met. Shown as Note 9 on Sheet C2.00.

Health Department:

No code comments received

Parks and Recreation:

No code comments.

Historic Alexandria (Archaeology):

F-1 Historical maps indicate that structures were located on the southeast portion of this property by at least the 1860s. In addition, documents suggest that the lot was the location of encampments of Union soldiers during the Civil War. The property therefore has the potential to yield archaeological resources which could provide insight into military activities during the war and into domestic activities on the outskirts of town in 19th-century Alexandria.

F-2 The applicant hired Thunderbird Archeological Associates to complete an archaeological evaluation and metal detection survey of the property. A scatter of artifacts relating to a Civil War encampment was discovered, along with the foundations of a small 19th-century out-building. The consultant has submitted a draft report on the investigation and must complete required revisions. No additional archaeological field work is required.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

Bowman Consulting Group, Ltd.
2121 Eisenhower Avenue
Suite 302
Alexandria, Virginia 22314
Phone: (703) 548-2188
Fax: (703) 683-5781
www.bowmanconsulting.com
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DEVELOPMENT CONDITIONS

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: NONE V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C2.10

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FDP-DEV-COND.dwg

① T.M. 51.01-02-71
DENIS J. FLOOD & CARL W. DUYCK
601 QUAKER LANE
ALEXANDRIA, VA 22314
USE: VACANT LANDRESIDENTIAL
ZONED: R-20

② .M. 51.01-02-59
DENIS J. FLOOD & CARL W. DUYCK
510 CATHEDRAL STREET
ALEXANDRIA, VA 22314
USE: DETACHED HOUSE
ZONED: R-20

③ T.M. 51.01-02-58
YONG AE MCPHERSON
513 CATHEDRAL STREET
ALEXANDRIA, VA 22314
USE: DETACHED HOUSE
ZONED: R-20

④ T.M. 51.01-02-36
WALTER E. BEVERLY JR. OR OPAL M. BEVERLY
518 CANTERBURY LANE
ALEXANDRIA, VA 22314
USE: DETACHED HOUSE
ZONED: R-20

⑤ T.M. 51.01-02-02
SHARAM OR PEGGY YAVARI
1312 JANNEY'S LANE
ALEXANDRIA, VA 22314
USE: DETACHED HOUSE
ZONED: R-20

⑥ T.M. 0.51.01-03-01
ELSBERG HAROLD F OR JOSEPHINE
1417 KINGSTON AV
ALEXANDRIA, VA 22302
USE: DETACHED HOUSE
ZONED: R-20

⑦ T.M. 041.03-03-35
WOLVERTON, WILLIAM G OR PATRICIA M
1427 KINGSTON AV
ALEXANDRIA, VA 22302
USE: DETACHED HOUSE
ZONED: R-20

⑧ T.M. 041.03-03-36
MOORE THOMAS S OR JEAN S
1419 KINGSTON AV
ALEXANDRIA, VA 22302
USE: DETACHED HOUSE
ZONED: R-20

⑨ T.M. 041.03-03-39
ROBINSON WILLIAM C OR JANE F
1425 JANNEY'S LA
ALEXANDRIA, VA 22302
USE: DETACHED HOUSE
ZONED: R-20

⑩ T.M. 041.03-03-38
DURAND JUDY C
1431 JANNEY'S LA
ALEXANDRIA, VA 22302
USE: DETACHED HOUSE
ZONED: R-20

⑪ T.M. 041.03-03-39
STAPLES, WILLIAM K OR KATHLEEN E
1437 JANNEY'S LA
ALEXANDRIA, VA 22302
USE: DETACHED HOUSE
ZONED: R-20

⑫ T.M. 041.03-05-02
TR IMMANUEL CHURCH ON THE HILL
3600 SEMINARY RD.
ALEXANDRIA, VA 22304
USE: CHURCH
ZONED: R-20

⑬ T.M. 051.01-01-07
ALICEA, AUGUSTIN OR NANCY
3401 STERLING AVE.
ALEXANDRIA, VA 22304
USE: DETACHED HOUSE
ZONED: R-20

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
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CONTEXTUAL PLAN
OAK GROVE
CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION	
SCP DESIGN	SRW DRAWN	STL CHKD
SCALE	H: 1"= 100' V:	
JOB No.	2267-01-001	
DATE :	OCTOBER, 2016	
FILE No.	2267-D-CP-003	
SHEET	C3.00	

Cad file name : K:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FRP-CONTEXT.dwg

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

JANNEYS LANE
(VARIABLE ROW)
POSTED SPEED 25 MPH

QUAKER LANE
(VARIABLE ROW)
POSTED SPEED 35 MPH

CATHEDRAL STREET

NOTES

1. SEE SHEET C4.10 FOR EXISTING STORM AND SANITARY TABULATIONS, AND DEMOLITION NOTES.
2. ALL TREES WITHIN LIMITS OF DISTURBANCE TO BE REMOVED UNLESS NOTED OTHERWISE.
3. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGEDBEYOND THE LIMITS OF DISTURBANCE.
4. TREE PROTECTION FOR ANY PROTECTED TREE SHALL BE CONSTRUCTED IN THE FORM OF SUPER SILT FENCE (SEE SHEET C8.20 FOR DETAIL). TEMPORARY PLASTIC FENCING MAY BE USED TO DEFINE OTHER LIMITS OF CLEARING. ALL TREE PROTECTION MUST BE SHOWN ON THE FINAL SITE PLAN, AND IS TO BE INSTALLED PRIOR TO ANY CLEARING, EXCAVATION OR CONSTRUCTION ON THE SITE. ALTERNATIVE TREE PROTECTION, PROVIDING EQUIVALENT OR SUPERIOR PROTECTION, MAY BE APPROVED BY THE DIRECTORS OF P&Z AND RC&PA. THE DEVELOPER SHALL CALL THE CITY ARBORIST FOR A REVIEW OF THE INSTALLED TREE PROTECTION FOLLOWING ITS INSTALLATION AND PRIOR TO ANY CONSTRUCTION, CLEARING, GRADING OR SITE ACTIVITY.

CAUTION!!

THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED UPON ABOVE GROUND EVIDENCE (including, but not limited to, manholes, inlets, valves, and marks made upon the ground by others) AND ARE SPECULATIVE IN NATURE, THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH THERE IS NO ABOVE GROUND EVIDENCE OR FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. THE EXACT LOCATIONS OF SAID EXISTING UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY AND ALL CONSTRUCTION

BENCHMARK

BENCHMARK #1: EST. FR. FLD SURVEY 02/25/2004
TOP SANITARY MANHOLE # EX D = 203.84 USC & GS
BENCHMARK #2: EST. FR. FLD SURVEY 02/25/2004
TOP SANITARY MANHOLE # EX H = 205.58 USC & GS

MISS UTILITY

CALL "MISS UTILITY" AT 1-800-257-7777, 72 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF LOCAL CODES AND REGULATIONS.

DISTURBED AREA = 5.35 AC (232,935 S.F.)

LEGEND

- TEST PIT REQUIRED (EXACT LOCATION)
- ETR : EXISTING TO REMAIN
- ETD : EXISTING TO BE DEMOLISHED
- ETRP : EXISTING TO BE REPLACED
- ETRL : EXISTING TO BE RELOCATED
- AIP : ABANDONED IN PLACE
- : PORTION OF PIPE TO BE ABANDON IN PLACE
- LOD : LOD – LIMITS OF DISTURBANCE
- X X X : LIMIT OF EXIST. CURB/APRON REMOVAL
- XX : TREE PROTECTION (SUPER SILT FENCE TO BE USED AS TREE PROTECTION – SEE SHEET C8.20 FOR DETAIL)
- : EXISTING TREE TO BE REMOVED
- : TREES TO BE RELOCATED ON-SITE
- : TREES TO BE PRESERVED
- : TREES SAVE AREA HATCH

NOTE
EX. SHED AND CONCRETE PAD TO BE REMOVED WITHOUT HEAVY EQUIPMENT ENTERING INTO DRIPLINE OF EX. TREES TO BE SAVED.

NOTE:
EX. 9" HULLBERRY TO BE REMOVED BY HAND WITHOUT HEAVY EQUIPMENT ENTERING INTO DRIPLINE OF EX. 43" WHITE OAK

TREE SAVE AREA
ALL TREES WITHIN HATCHED AREAS ARE TO BE SAVED UNLESS NOTED OTHERWISE.

NOTE:
EX. 28" HULLBERRY TO BE REMOVED WITHOUT HEAVY EQUIPMENT ENTERING INTO DRIPLINE OF EX. 43" WHITE OAK

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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EXISTING CONDITIONS AND DEMOLITION PLAN (1 OF 2)

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION
SCP DESIGN	SRW DRAWN	STL CHKD
SCALE	H: 1"=30' V:
JOB No.	2267-01-001
DATE :	OCTOBER, 2016
FILE No.	2267-D-CP-003
SHEET	C4.00

Cad file name: V:\2267 - Janneys & Quaker\2267-01-001 (EXG)\Engineering\Eng Plans\2267-01-001-EXP-XCON.dwg

EXISTING STORM TABULATION

EX 1
MH 1
TOP = 204.46
15" IN = 199.32 (NORTH)
15" IN = 201.21 (SOUTH)
2-24" IN = 200.21
30" OUT = 198.26

EX 2
CB 2
TOP = 204.26
FULL (NO INVERTS POSSIBLE)

EX 3
CB 3
TOP = 206.38
15" OUT = 202.82

EX 4
MH 4
TOP = 205.66
15" IN = 202.76 (FR. YI)
IN = 202.76
OUT = 202.48

EX 5
YI 5
TOP = 206.52
12" IN = 203.84
18" IN = 203.27
15" OUT = 203.23

EX 6
MH 6
TOP = 213.36
12" IN = 209.60
12" OUT = 209.78

EX 7
CB 7
TOP = 218.06
12" OUT = 214.30

EX 8
YI 8
TOP = 207.81
18" IN = 204.28
8" IN = 204.28
18" OUT = 204.04

EX 9
YI 9
TOP = 207.95
18" IN = 204.73
18" OUT = 204.73

EX 10
CB 10
TOP = 208.13
15" IN = 205.33
18" OUT = 205.09

EX 11
CB 11
TOP = 210.50
15" OUT = 205.78

EX 12
CB 12
TOP = 215.60
15" IN = 212.12
15" OUT = 211.62

EX 13
CB 13
TOP = 206.01
15" IN = 202.31
15" OUT = 202.31

EX 14
CB 14
TOP = 206.02
18" OUT = 202.72

EX 15
CB 15
TOP = 206.01
24" IN = 202.16
27" OUT = 201.86

EXISTING SANITARY SEWER TABULATION

EX A
MH A
TOP = 225.41
8" OUT = 215.37

EX B
MH B
TOP = 228.88
8" IN = 219.47
8" OUT = 219.40

EX C
MH C
TOP = 201.81
8" IN = 194.48
8" OUT = 194.02

EX D
MH D
TOP = 203.84
8" IN = 195.85
8" OUT = 195.85

EX DD
MH DD
TOP = 204.48
8" IN = 198.02
8" OUT = 198.02

EX E
MH E
TOP = 187.82
8" IN = 180.14
8" OUT =

EX F
MH F
TOP = 204.79
8" IN = 199.54
8" OUT = 199.54

EX G
MH G
TOP = 206.01
8" IN =
8" OUT = 200.29

EX H
MH H
TOP = 205.58
8" IN = 199.31
8" OUT = 199.31

EX I
MH I
TOP = 209.55
8" IN = 202.43
8" OUT = 202.43

EX J
MH J
TOP = 217.16
8" IN = 208.56
8" OUT = 207.93

EX K
MH K
TOP = 228.02
8" IN =
8" OUT = 220.24

DEMOLITION NOTES:

1. ALL DEMOLITION SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE CURRENT REGULATIONS OF THE CITY OF ALEXANDRIA AND THE COMMONWEALTH OF VIRGINIA.
2. ALL APPLICABLE PHASE 1 EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO COMMENCING DEMOLITION. (SEE SHEETS C8.00 AND C8.20)
3. REFER TO GENERAL NOTES FOR ADDITIONAL NOTES. (SEE SHEETS C1.00 AND C2.00)
4. ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN PER EXISTING RECORDS. CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ASCERTAIN THE EXISTENCE AND LOCATION OF EXISTING UTILITIES.
5. ITEMS SHOWN TO BE RELOCATED SHALL BE CAREFULLY REMOVED AND STORED BY THE CONTRACTOR UNTIL SUCH TIME AS THEY CAN BE PLACED IN THEIR NEW LOCATION. CONTRACTOR SHALL VERIFY THESE ITEMS WITH THE OWNER, PRIOR TO CONSTRUCTION.
6. ALL ITEMS WHICH REQUIRE VERIFICATION BETWEEN THE CONTRACTOR AND THE OWNER SHALL BE DONE IN WRITING BY THE CONTRACTOR PRIOR TO BIDDING AS A METHOD OF BID CLARIFICATION.
7. CONTRACTOR TO STUDY GEOTECHNICAL INFORMATION AVAILABLE AND CLEARLY REPORT PROPOSED CONSTRUCTION METHODOLOGIES TO THE OWNER PRIOR TO BIDDING.
8. CONTRACTOR MUST ADHERE TO ALL SAFETY REGULATIONS GIVEN BY O.S.H.A.
9. THE CONTRACTOR SHALL CALL "MISS UTILITY" AT 1-800-257-7777 AT LEAST 72 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.
11. THE TEST PIT LOCATIONS SHOWN ARE PRELIMINARY AND SUBJECT TO REVISIONS. ADDITIONAL TEST PITS MAY BE REQUIRED, FOLLOWING "UTILITY MARK-OUT" PROCEDURES (ie: TEST PITS FOR GAS, ELECTRIC, CABLE, TELEPHONE, ETC.) AS ORDERED BY THE CONTRACTOR VIA MISS UTILITY. ADDITIONAL TEST PITS MAY ALSO BE REQUIRED SHOULD PROPOSED UTILITY LOCATIONS BE REVISED, PRIOR TO FINAL JURISDICTIONAL APPROVAL. ALL TEST PIT LOCATIONS SHOWN THROUGHOUT PLAN SET MUST BE PERFORMED BY CONTRACTOR PRIOR TO EXECUTION OF ANY CONSTRUCTION ACTIVITIES. SHOULD A DISCREPANCY BE DISCOVERED BETWEEN THIS PLAN SET AND ACTUAL FIELD CONDITIONS, THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY.
12. CONTRACTOR SHALL COORDINATE REMOVAL OR RELOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD ELECTRICAL, TELEPHONE AND CABLE TV LINES AND REMOVAL OF UTILITY POLES, PEDESTALS AND TRANSFORMERS WITH UTILITY COMPANIES AND WITH DEVELOPER PRIOR TO DEMOLITION (AS REQUIRED).
13. LIMITS OF DISTURBANCE SHOWN ARE BASED UPON BEST AVAILABLE INFORMATION AND MAY BE SUBJECT TO CHANGE BASED UPON COORDINATION BETWEEN THE DEVELOPER AND UTILITY COMPANIES. SHOULD THESE LIMITS BE REVISED, THE DEVELOPER SHALL CONTACT THE ENGINEER AND THE CITY OF ALEXANDRIA IMMEDIATELY.
14. CONTRACTOR IS RESPONSIBLE FOR ALL EXISTING CURBS & GUTTER AROUND THE PERIMETER OF THE ENTIRE PROJECT. ALL CURBS AND GUTTER, SIDEWALKS AND HANDICAP RAMPS THAT ARE IN DISREPAIR OR BROKEN WILL BE REPLACED. THE CONTRACTOR SHALL REPLACE THEM AS PART OF THE ORIGINAL WORKSCOPE.
15. PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT OR LAND DISTURBANCE PERMIT, A RODENT ASSESSMENT PLAN SHALL BE SUBMITTED TO CODE ENFORCEMENT THAT WILL OUTLINE THE STEPS THAT WILL BE TAKEN TO PREVENT THE SPREAD OF RODENTS FROM THE CONSTRUCTION SITE TO THE SURROUNDING COMMUNITY AND SEWERS.
16. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.
17. TREE PROTECTION FOR ANY PROTECTED TREE SHALL BE CONSTRUCTED IN THE FORM OF SUPER SILT FENCE (SEE SHEET C8.20 FOR DETAIL). TEMPORARY PLASTIC FENCING MAY BE USED TO DEFINE OTHER LIMITS OF CLEARING. ALL TREE PROTECTION MUST BE SHOWN ON THE FINAL SITE PLAN, AND IS TO BE INSTALLED PRIOR TO ANY CLEARING, EXCAVATION OR CONSTRUCTION ON THE SITE. ALTERNATIVE TREE PROTECTION, PROVIDING EQUIVALENT OR SUPERIOR PROTECTION, MAY BE APPROVED BY THE DIRECTORS OF P&Z AND RC&PA. THE DEVELOPER SHALL CALL THE CITY ARBORIST FOR A REVIEW OF THE INSTALLED TREE PROTECTION FOLLOWING ITS INSTALLATION AND PRIOR TO ANY CONSTRUCTION, CLEARING, GRADING OR SITE ACTIVITY.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
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EXISTING CONDITIONS AND DEMOLITION PLAN NOTES (2 OF2)

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

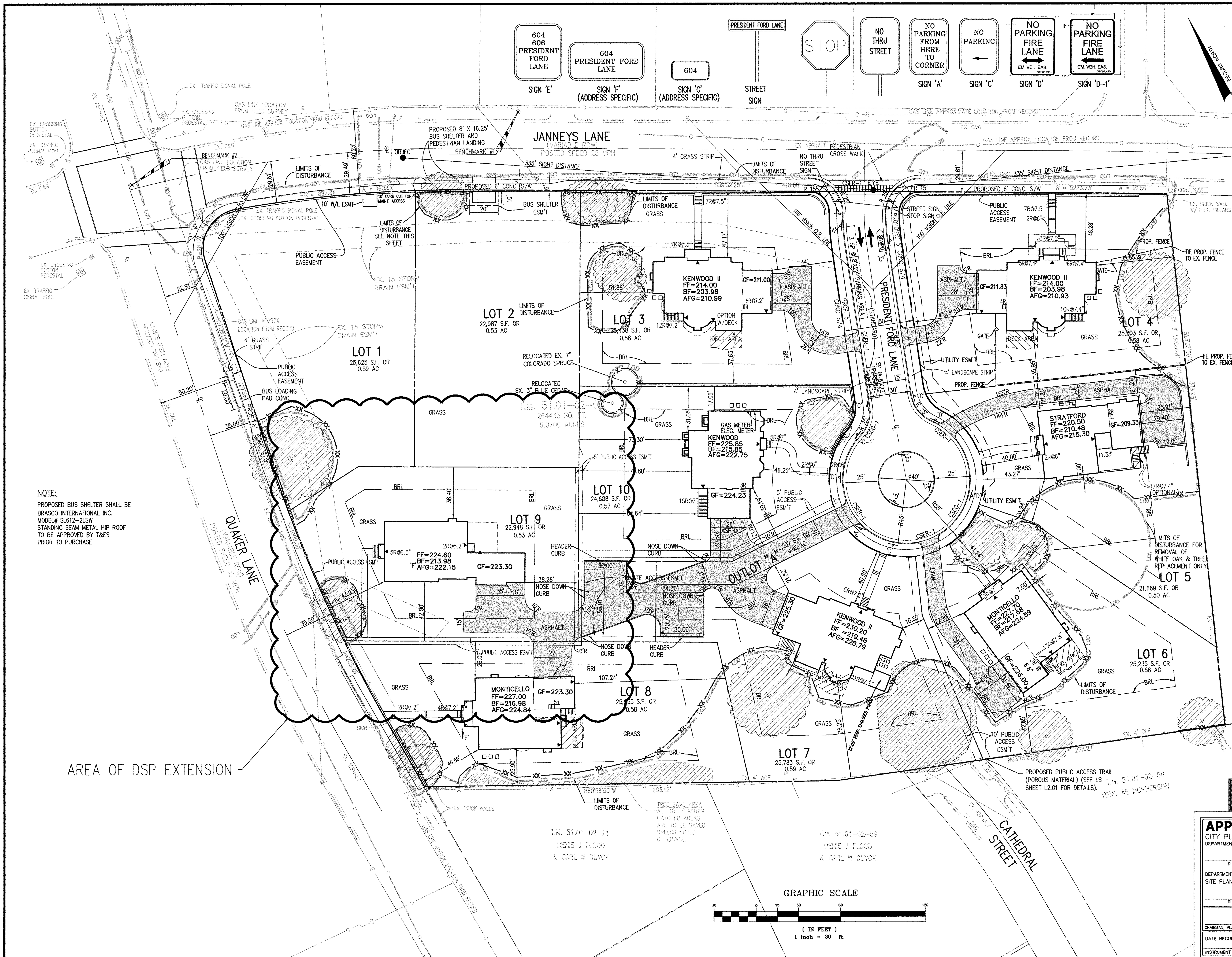
DATE	DESCRIPTION

SCP	SRW	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30'
V:

JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C4.10

Cad file name : N:\2267 - Jennys & Quates\2267-01-001 (DNG)\Engineering\Eng Plans\2267-01-001-15P- XCON.dwg



NOTE:

PROPOSED BUS SHELTER SHALL BE BRASCO INTERNATIONAL INC. MODEL# SL612-2LSW STANDING SEAM METAL HIP ROOF TO BE APPROVED BY T&ES PRIOR TO PURCHASE

NOTES:

1. 1 BUS SHELTER WILL BE PROVIDED AT THE EXISTING BUS STOPS ADJACENT TO THIS PROPERTY
2. ALL NEW UTILITIES TO BE BURIED
3. IN ADDITION TO STANDARD EROSION & SEDIMENT CONTROL PRACTICES, EROSION & SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK (SUCH AS VEGETATION) SHALL BE USED TO STABILIZE ALL PROPOSED SLOPES GREATER THAN EXISTING.
4. ALL DRIVEWAY ENTRANCES TO MEET CITY STANDARDS. (SEE SHT C13.00 FOR DETAIL CSER-1).
5. SUPER SILT FENCE SHALL BE UTILIZED AS TREE PROTECTION. SEE SHEET C8.20 FOR DETAILS.
6. SUPER SILT FENCE SHALL BE UTILIZED AS TREE PROTECTION. SEE SHEET C8.20 FOR DETAILS.
7. UPON COMPLETION OF THE WORK ASSOCIATED WITH THE LANDSCAPE NUBS AND HEADER CURB WITHIN THE PRIVATE ACCESS EASEMENT, CONTACT MAURICE JONES WITH THE FIRE DEPARTMENT AT 703-746-4256 FOR A SITE INSPECTION.

ESI
Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING

DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. ______

DIRECTOR DATE

CHAIRMAN, PLANNING COMMISION DATE

DATE RECORDED ______

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GEOMETRIC SITE PLAN
OAK GROVE
CITY OF ALEXANDRIA VIRGINIA

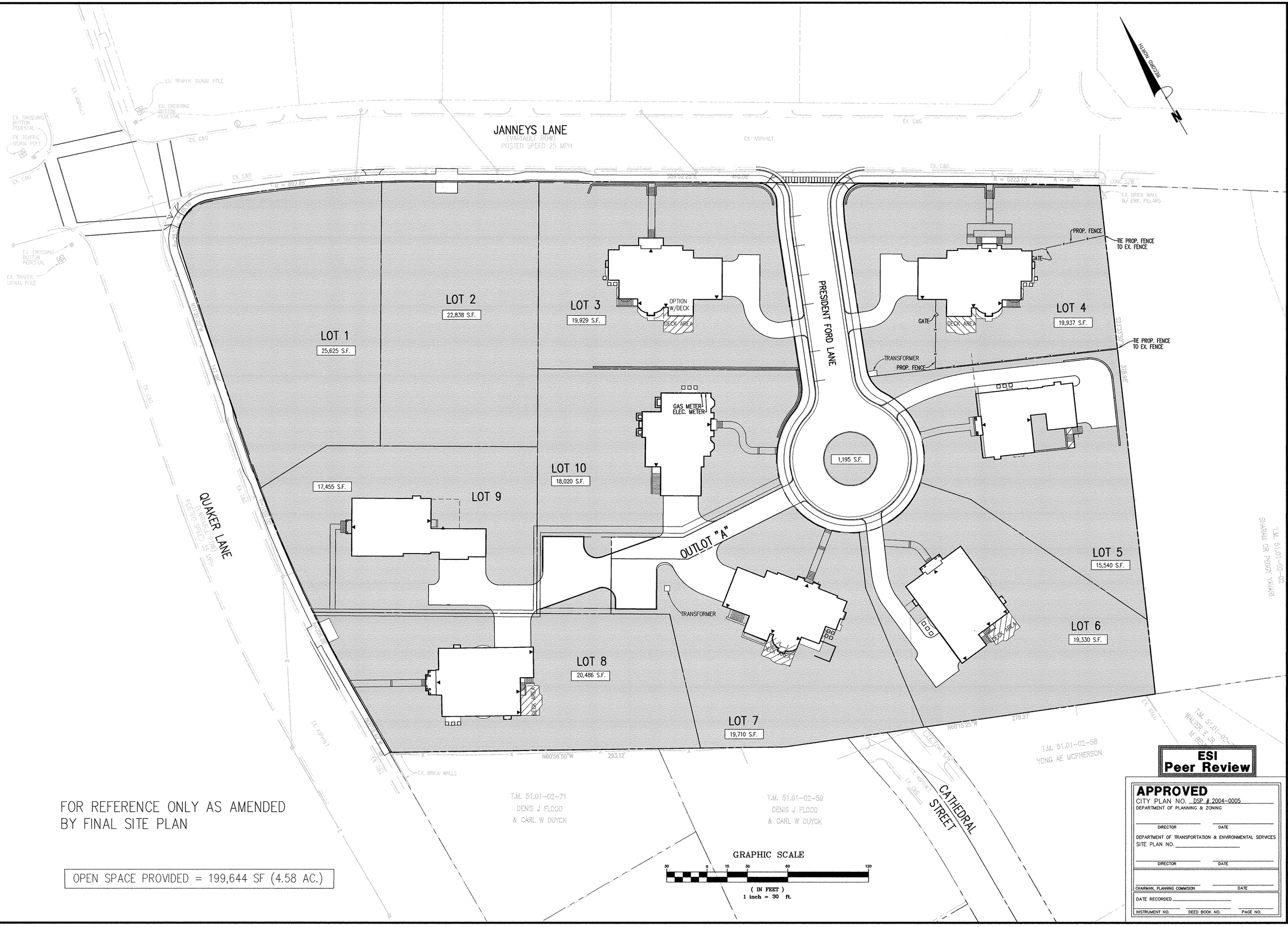
COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30' V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C5.00

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FDP-GEOMETRIC.dwg



FOR REFERENCE ONLY AS AMENDED
BY FINAL SITE PLAN

OPEN SPACE PROVIDED = 199,644 SF (4.58 AC.)

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CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
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OPENSPACE PLAN

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

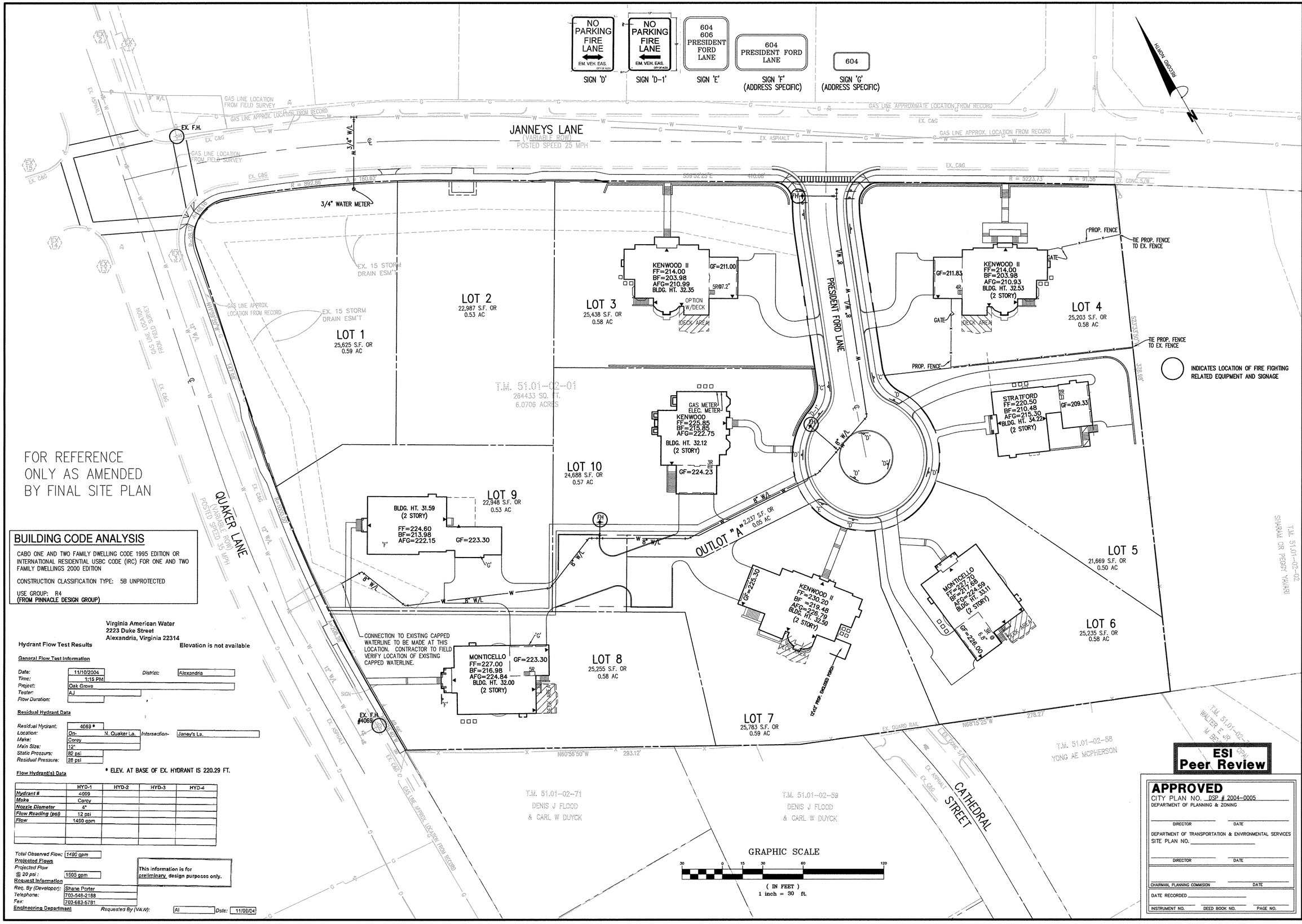
SCP	JWM	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30'
V:

JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003

SHEET C5.01

Cad file name : W:\2267 - Janneys & Quaker\2267-01-001 (DSP)\Engineering\Dwg Plans\MINOR AMENDMENT #1\2267-01-001-FIDP-OPENSPACE.dwg



FOR REFERENCE
ONLY AS AMENDED
BY FINAL SITE PLAN

BUILDING CODE ANALYSIS

CABO ONE AND TWO FAMILY DWELLING CODE 1995 EDITION OR INTERNATIONAL RESIDENTIAL USBC CODE (IRC) FOR ONE AND TWO FAMILY DWELLINGS 2000 EDITION

CONSTRUCTION CLASSIFICATION TYPE: 5B UNPROTECTED

USE GROUP: R4
(FROM PINNACLE DESIGN GROUP)

Virginia American Water
2223 Duke Street
Alexandria, Virginia 22314

Hydrant Flow Test Results — **Elevation is not available**

General Flow Test Information

Date:	11/10/2004	District:	Alexandria
Time:	1:15 PM		
Project:	Oak Grove		
Tester:	AJ		
Flow Duration:			

Residual Hydrant Data

Residual Hydrant:	4069 *		
Location:	On- N. Quaker La.	Intersection-	Janey's La.
Make:	Corey		
Main Size:	12"		
Static Pressure:	82 psi		
Residual Pressure:	28 psi		

* ELEV. AT BASE OF EX. HYDRANT IS 220.29 FT.

Flow Hydrant(s) Data

	HYD-1	HYD-2	HYD-3	HYD-4
Hydrant #	4099			
Make	Corey			
Nozzle Diameter	4"			
Flow Reading (psi)	12 psi			
Flow	1490 gpm			

Total Observed Flow: 1490 gpm

Projected Flows
Projected Flow @ 20 psi: 1805 gpm

This information is for preliminary design purposes only.

Request Information
Req. By (Developer): Shane Porter
Telephone: 703-548-2188
Fax: 703-683-5781
Engineering Department — Requested By (VAW): AJ — Date: 11/09/04

ESI Peer Review

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DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
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FIRE SAFETY PLAN

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30' V:

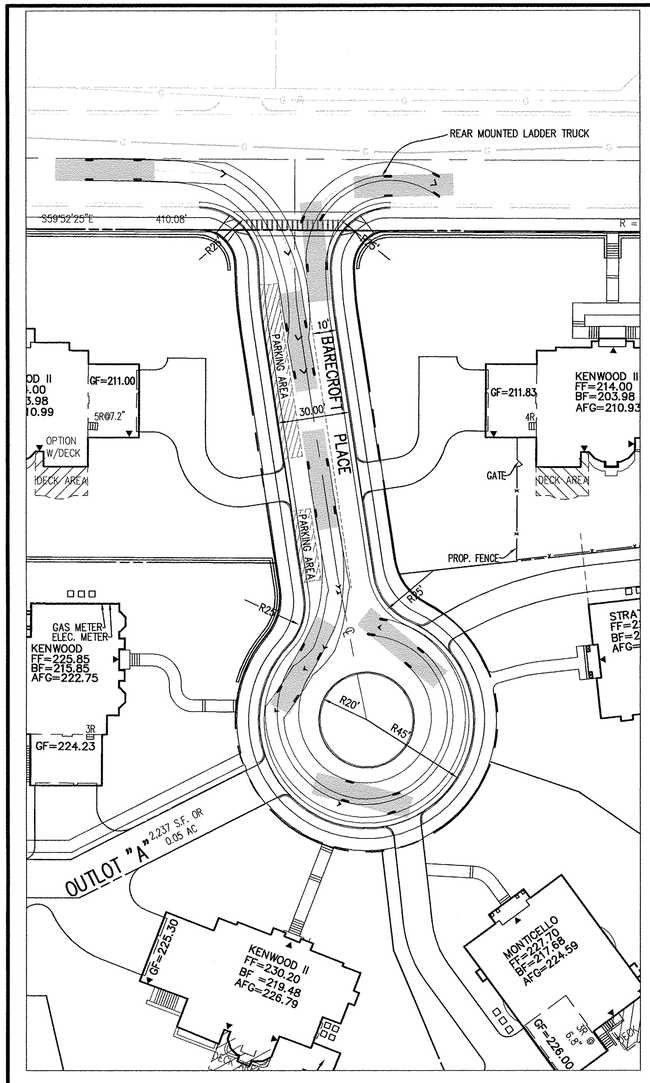
JOB No. 2267-01-001

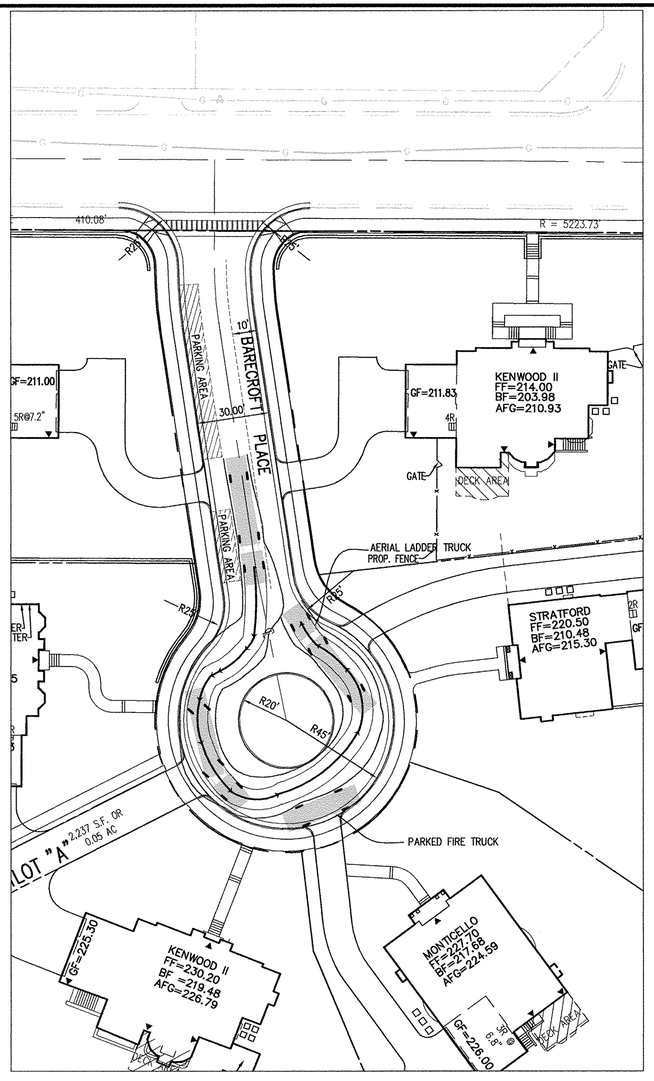
DATE : OCTOBER, 2016

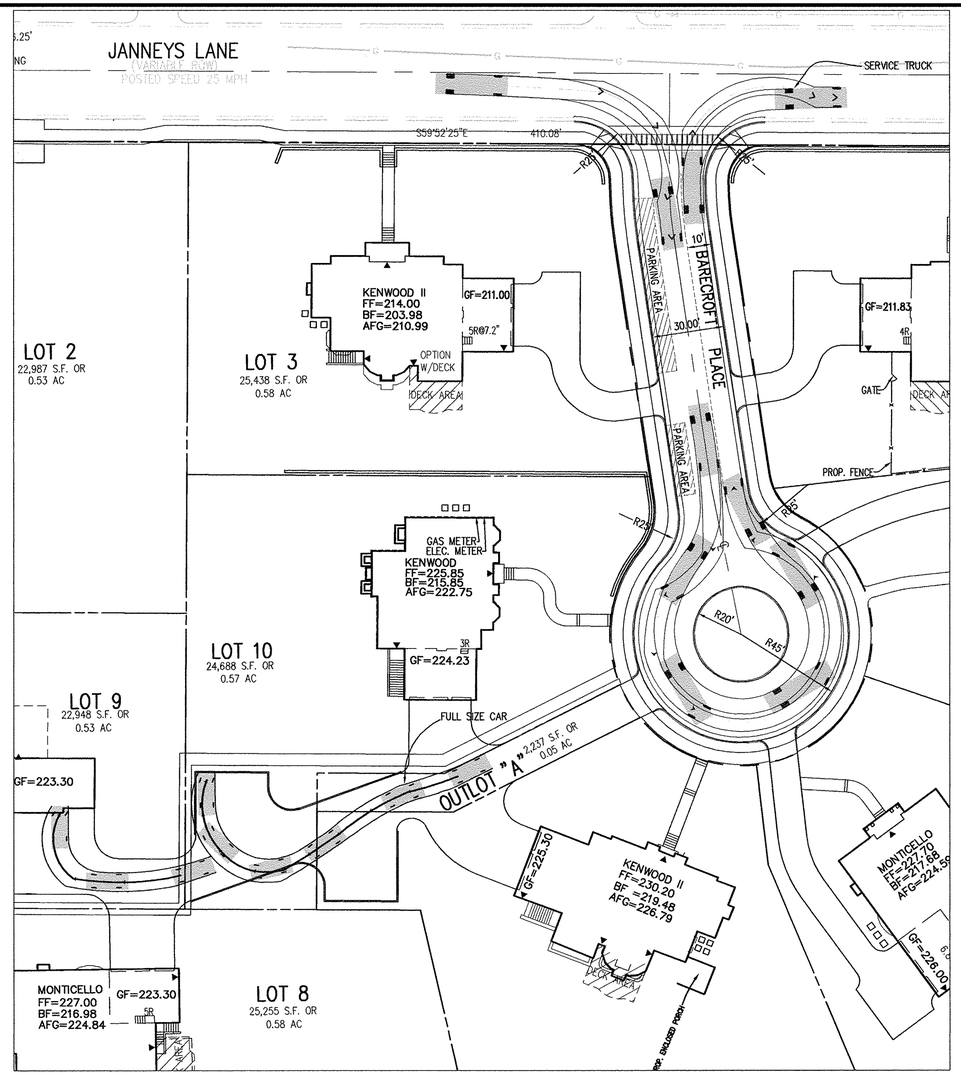
FILE No. 2267-D-CP-003

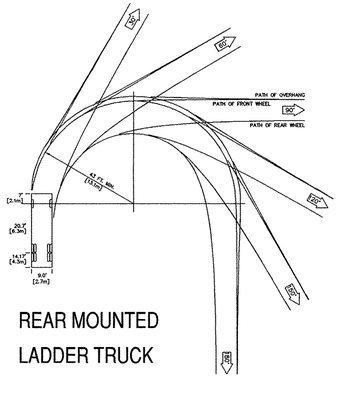
SHEET C5.10

Cad file name: V:\2267 - Janeys & Quaker\2267-01-001 (DND) Engineering\Eng Plans\2267-01-001-FSP-FIRE.dwg

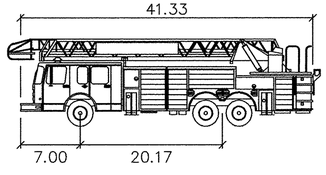






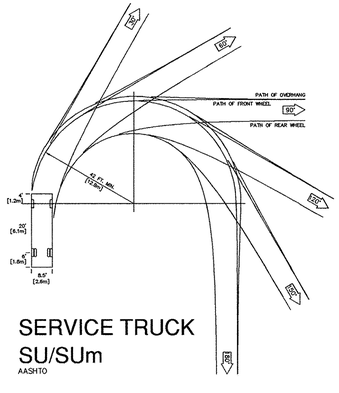


REAR MOUNTED
LADDER TRUCK

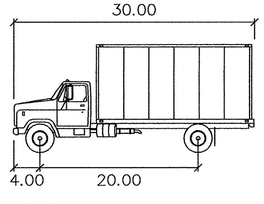


REAR MOUNTED LADDER TRUCK

	feet
Width	: 9.00
Track	: 9.00
Lock to Lock Time	: 6.00
Steering Angle	: 33.30

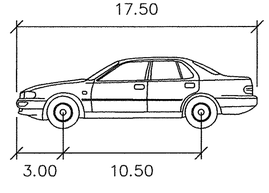


SERVICE TRUCK
SU/SUm
AASHTO



SERVICE TRUCK

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.00
Steering Angle	: 31.63



FULL SIZE CAR

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.00
Steering Angle	: 31.20

FOR REFERENCE ONLY AS
AMENDED BY FINAL SITE PLAN.

ESI Peer Review

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VEHICLE TURNING MOVEMENTS

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

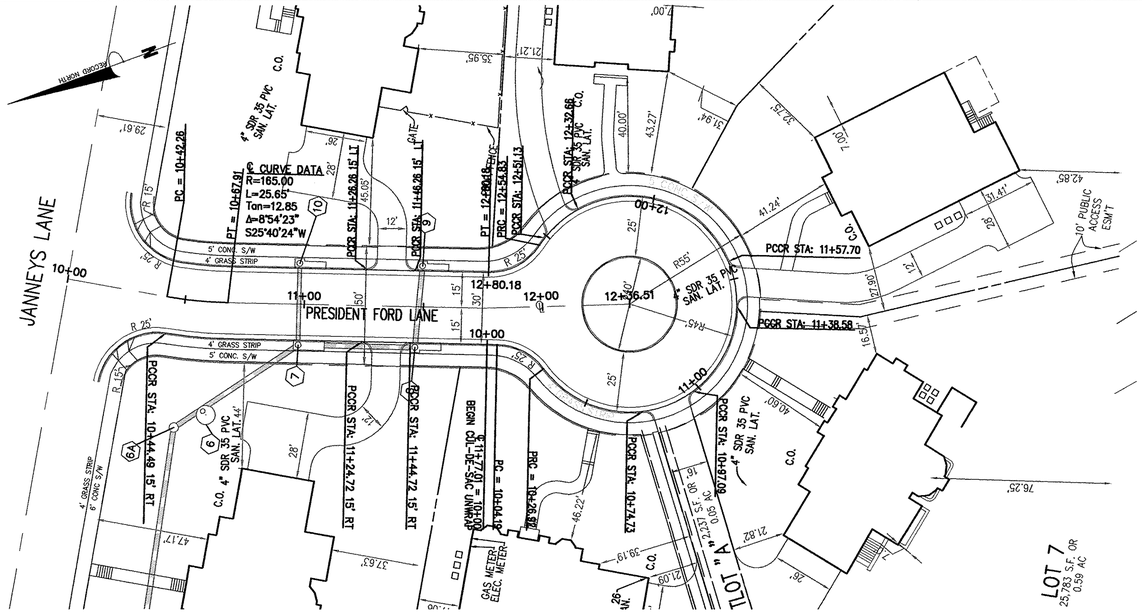
DATE	DESCRIPTION

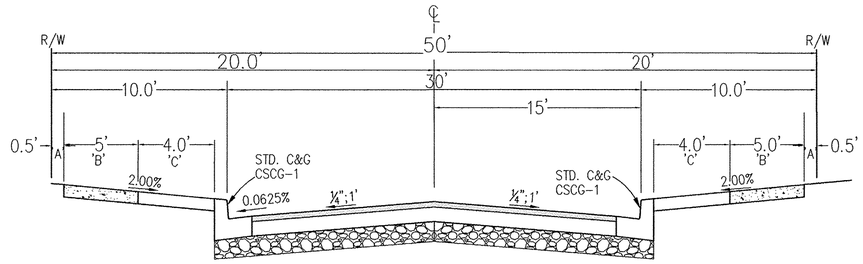
SCP DESIGN	STC DRAWN	STL CHKD

SCALE H: 1"=30'
V:

JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C5.20

Cad file name : Y:\2267 - Jonesgr & Quaker\2267-01-001 (BMI)\Engineering\Eng Plans\2267-01-001-FDP-TURNING.dwg





TYPICAL SECTION
DESIGN SPEED LIMIT = 30 MPH
POSTED SPEED LIMIT = 25 MPH
N.T.S.

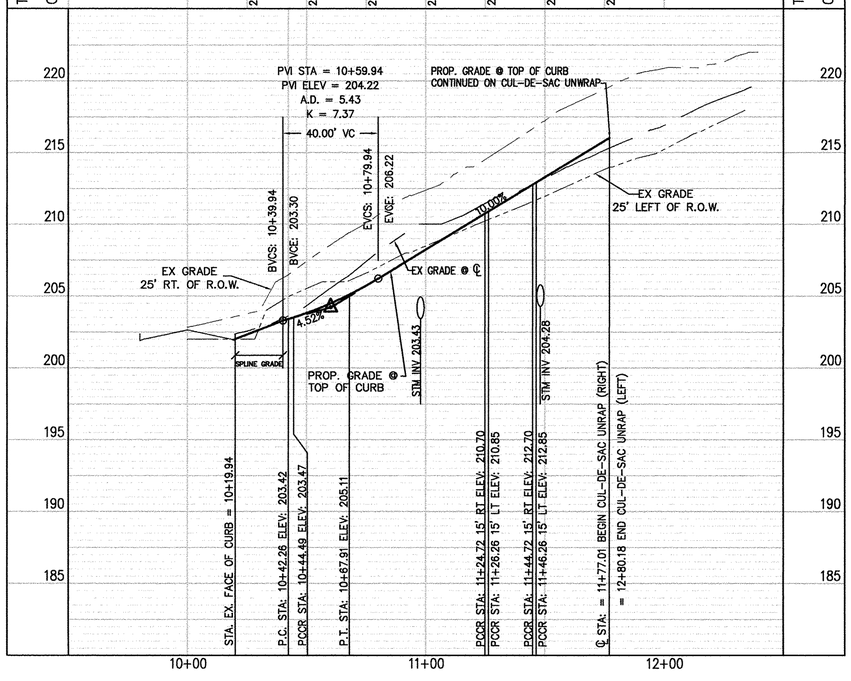
A: GRASS
B: SIDEWALK
C: PLANTING STRIP

PAVING NOTES

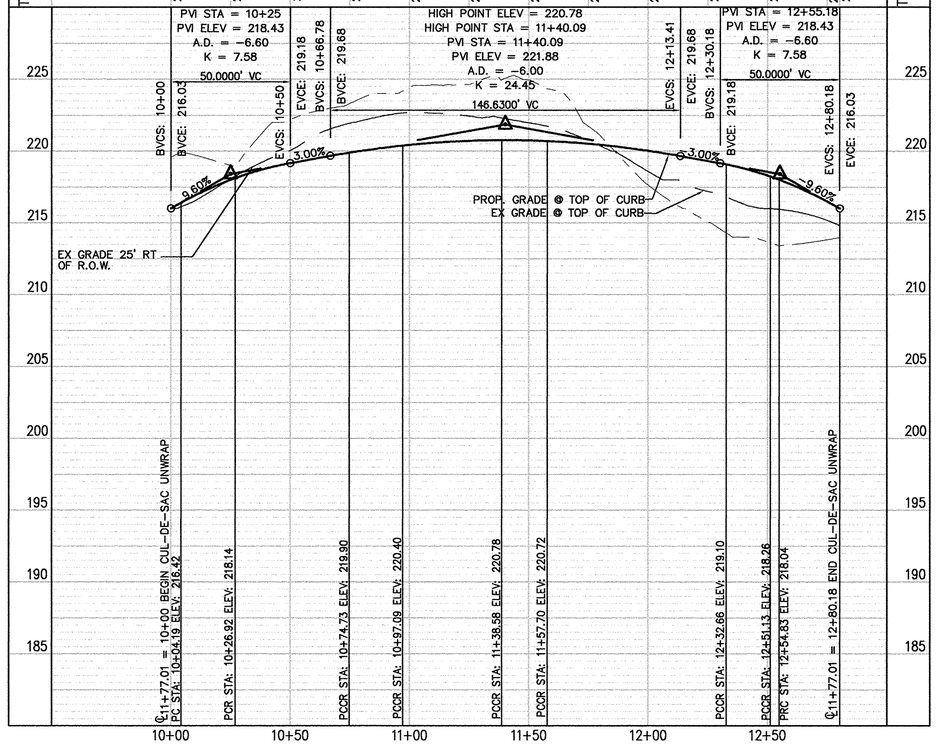
1. SUBGRADE DEPTH FOR SUBGRADE BASED ON A DESIGN CBR VALUE OF 10. SOIL TESTS FOR SUBGRADE MUST BE SUBMITTED FOR ACTUAL DETERMINATION OF REQUIRED SUBBASE THICKNESS PRIOR TO CONSTRUCTION. (SEE GEOTECHNICAL REPORT AND INFORMATION SHEET C9.00 AND GEOTECHNICAL REPORT FOR MORE DETAILED INFORMATION).
2. A SMOOTH GRADE SHALL BE MAINTAINED FROM CENTERLINE OF THE EXISTING ROAD TO PROPOSED CURB AND GUTTER TO PRECLUDE THE FORMING OF FALSE GUTTERS AND /OR THE PONDING OF ANY WATER ON THE ROADWAY.

⚠ CUL-DE-SAC REVISIONS ENTAIL A CORRECTION IN THE ELEVATIONS BEING RAISED BY 0.02'.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.



BARECROFT PLACE PROFILE



TOP OF CURB CUL-DE-SAC UNWRAP

ESI
Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED _____
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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BARECROFT PLACE PLAN AND PROFILE

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER
10/28/16

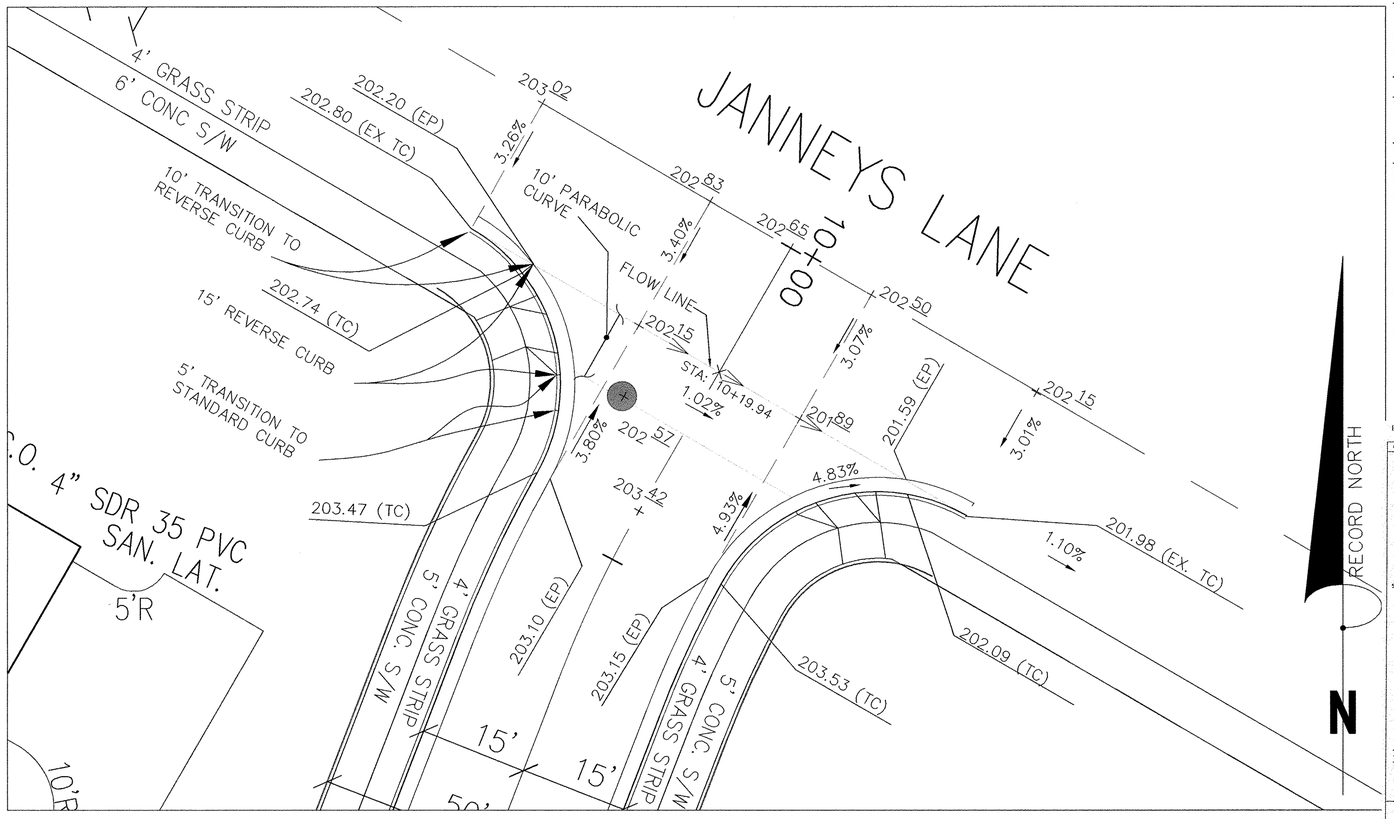
PLAN STATUS
10/28/16 DSP EXTENSION

DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30' V: 1"=5'
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C5.30

Cad file name : V:\2267 - Janneys & Quioter\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-TDP-PRP-ROAD.dwg

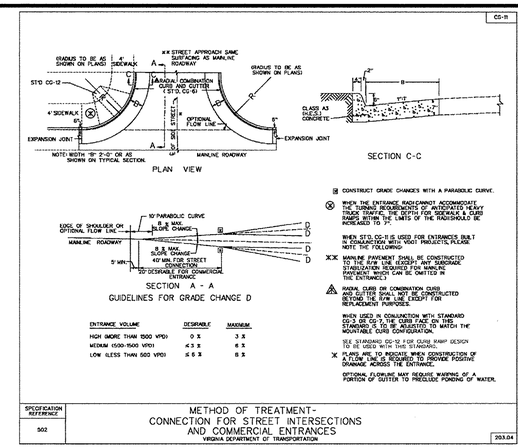


INTERSECTION LANDING (PER VDOT CG-11)
1"=10'

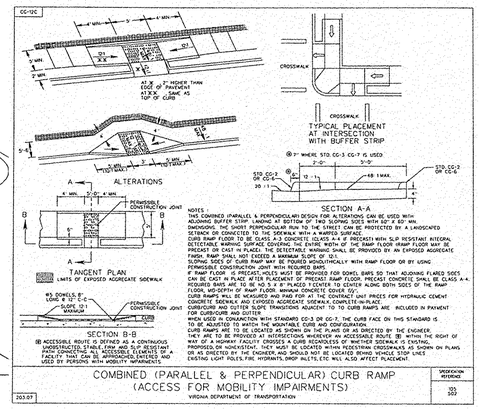
Project Description	
Worksheet	VDOT CG11
Flow Element	Irregular Channel
Method	Mannings Formula
Solve For	Channel Depth

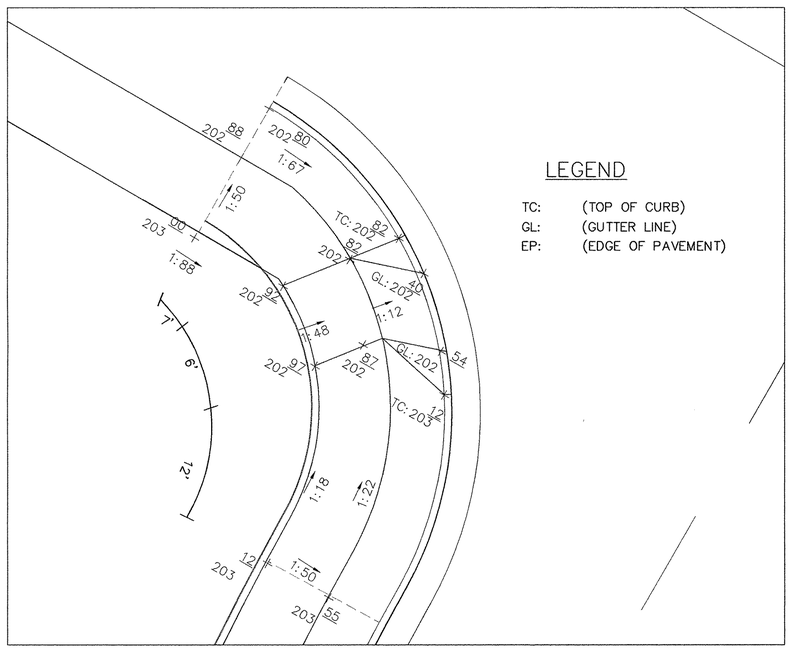
Input Data	
Slope	0.010000 ft/ft
Discharge	5.15 cfs

Results	
Mannings Coefficient	0.015
Water Surface Elevation	0.27 ft
Elevation Range	0.00 to 1.40
Flow Area	2.01 ft²
Wetted Perimeter	15.06 ft
Top Width	15.05 ft
Actual Depth	0.27 ft
Critical Elevation	0.23 ft
Critical Slope	0.009245 ft/ft
Velocity	2.56 ft/s
Velocity Head	0.10 ft
Specific Energy	0.37 ft
Froude Number	1.25
Flow Type	Supercritical

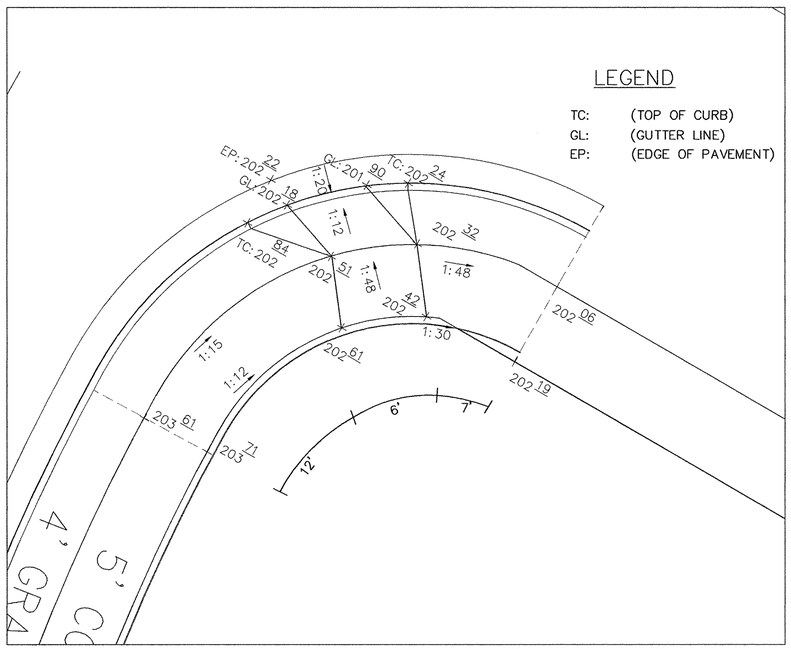


REVISED ON 7/01 REVISED ON 3/03

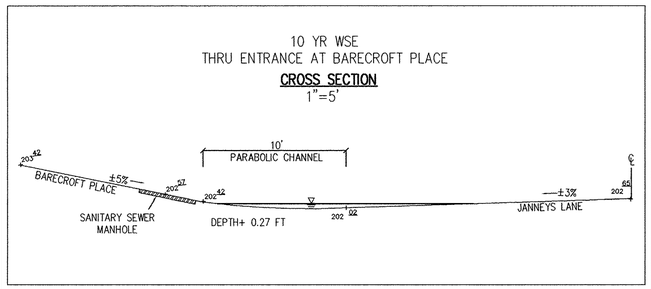




MODIFIED VDOT CG-12C (LEFT SIDE)
1"=5'



MODIFIED VDOT CG-12C (RIGHT SIDE)
1"=5'



NOTE:

THE DRAINAGE AREA TO THE GUTTER LINE AT THE INTERSECTION OF JANNEYS LANE AND BARECROFT PLACE IS 0.80 AC, WITH A WEIGHTED C VALUE OF 0.67. A 10 YEAR STORM PRODUCES A RUNOFF OF 4.82 CFS. COMBINED WITH THE 0.33 CFS BYPASS FLOW FROM THE EX.3 CATCH BASIN, 5.15 CFS FLOW ACROSS THE ENTRANCE, WITH A DEPTH OF 0.28 FT.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. ____
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISION — DATE
DATE RECORDED ____
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

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JANNEYS LANE \ BARECROFT INTERSECTION DESIGN

OAK GROVE

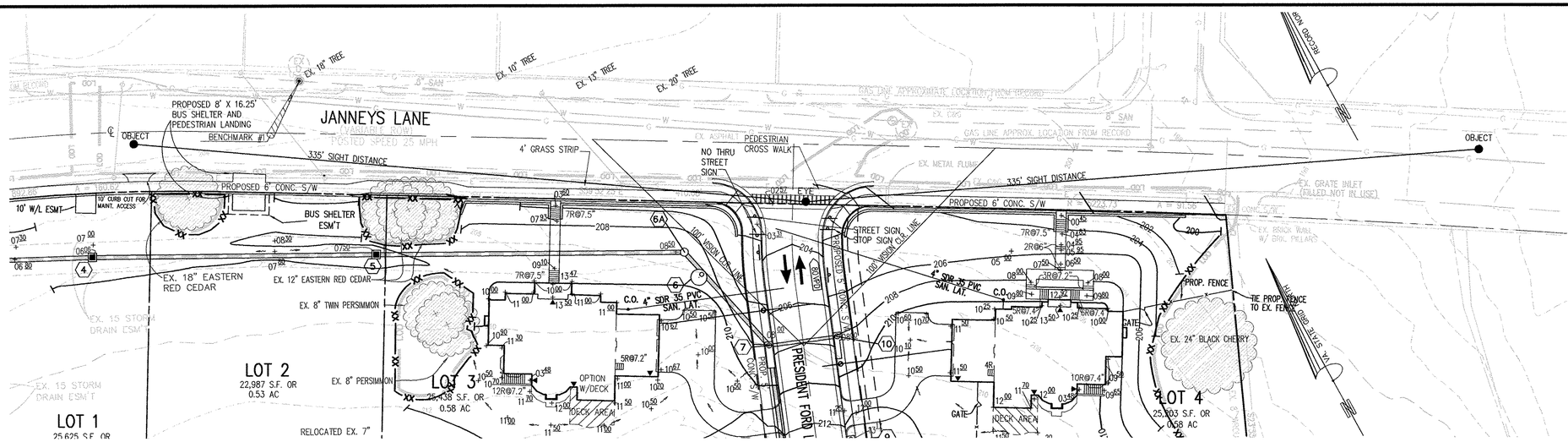
CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION
SCP DESIGN	DAD DRAWN / STL CHKD
SCALE	H: 1"=10' V:
JOB No.	2267-01-001
DATE :	OCTOBER, 2016
FILE No.	2267-D-CP-003
SHEET	C5.31

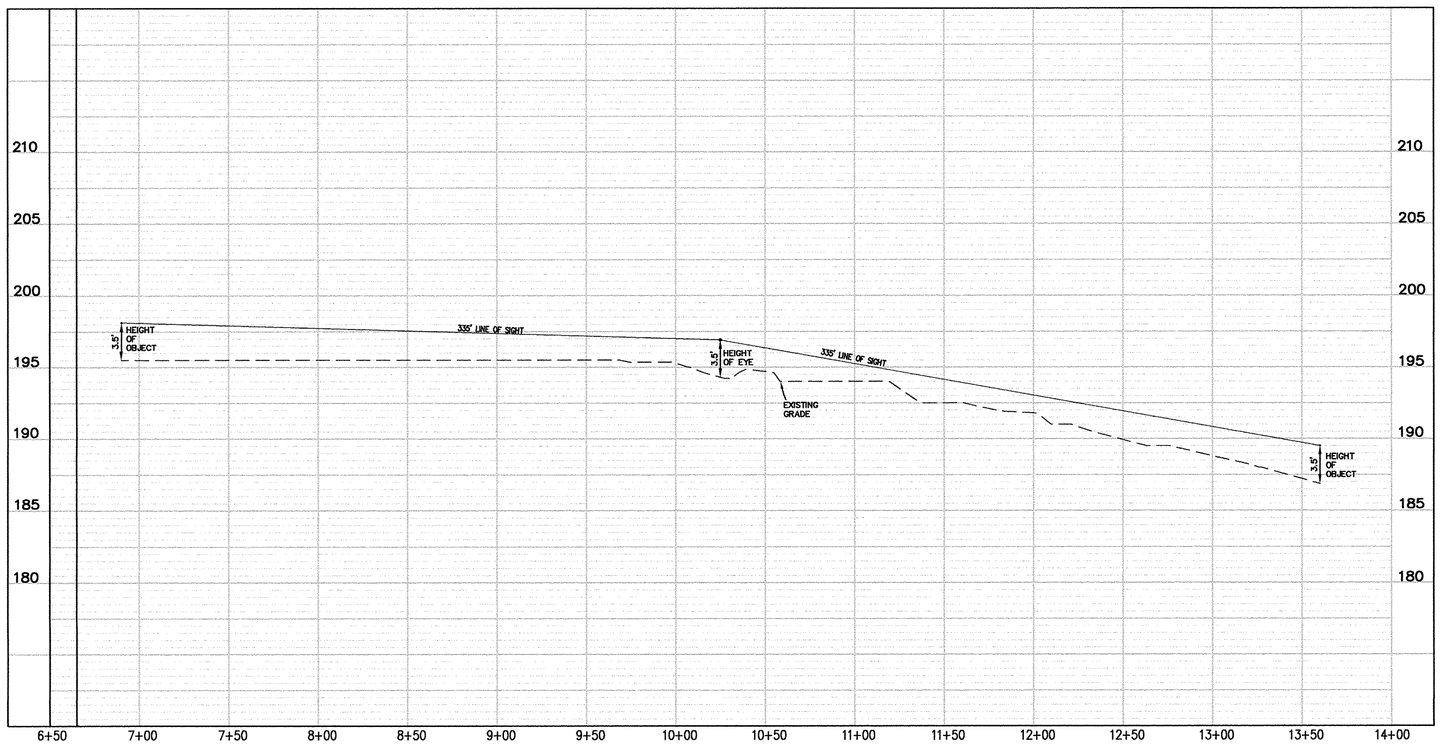
Cad file name - V:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FIP-PR-R010.dwg



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.



SIGHT DISTANCE JANNEY'S LANE

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
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CHAIRMAN, PLANNING COMMISION DATE
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SIGHT DISTANCE PLAN AND PROFILE - JANNEY'S LANE

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

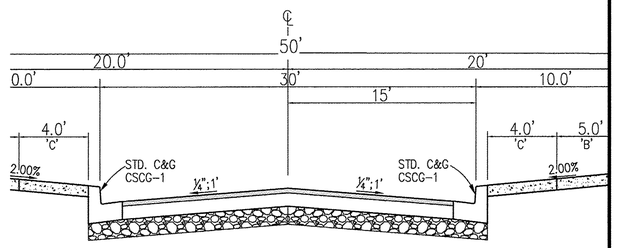
COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DD	STL
DESIGN	DRAWN	CHKD
SCALE	H: 1"=40' V: 1"=5'	
JOB No.	2267-01-001	
DATE :	OCTOBER, 2016	
FILE No.	2267-D-CP-003	
SHEET	C5.40	

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-TDP-SIGHT-DIST.dwg

VING APPLIES TO ALL PROPOSED IMPROVEMENTS WITHIN THE PUBLIC RIGHT



TYPICAL SECTION
N.T.S.

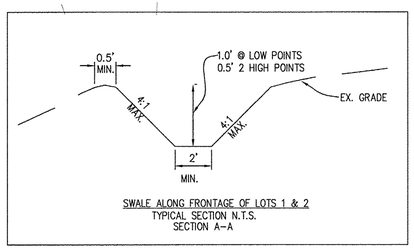
A: C

B: S

C: P

NOTES:

1. 1 BUS SHELTER WILL BE PROVIDED AT THE EXISTING BUS STOPS ADJACENT TO THIS PROPERTY
2. ALL NEW PROPOSED UTILITIES SERVING THIS SITE SHALL BE UNDERGROUND.
3. IN ADDITION TO STANDARD EROSION & SEDIMENT CONTROL PRACTICES, EROSION & SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK (SUCH AS VEGETATION) SHALL BE USED TO STABILIZE ALL PROPOSED SLOPES GREATER THAN EXISTING.
4. UNDER DRAINS TO BE A MIN. OF 6" UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL CONNECT HOUSE SUMP TO DOWN SPOUT LINES.
6. ALL ROOF DRAINS, FOUNDATION DRAINS AND MAJORITY OF THE SITE RUNOFF MUST BE PIPED TO AN UNDERGROUND STORMWATER CONVEYANCE SYSTEM,



SWALE ALONG FRONTAGE OF LOTS 1 & 2
TYPICAL SECTION N.T.S.
SECTION A-A

TOTAL DISTURBED AREA =5.35 AC (233,167 SF)

TOTAL DISTURBED AREA =5.35 AC (232,935 SF)

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Peer Review

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CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
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DIRECTOR DATE

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DETAILED GRADING PLAN (1 OF 2)

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"= 20'
V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C6.00

Cad file name: x:\2267 - Journeys & Quakers\2267-01-001 (ENG)\Engineering\Eng Plans\MINOR AMENDMENT 1\2267-01-001-TSP-DET-R00.dwg

NOTES:

1. 1 BUS SHELTER WILL BE PROVIDED AT THE EXISTING BUS STOPS ADJACENT TO THIS PROPERTY
2. ALL NEW PROPOSED UTILITIES SERVING THIS SITE SHALL BE UNDERGROUND.
3. IN ADDITION TO STANDARD EROSION & SEDIMENT CONTROL PRACTICES, EROSION & SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK (SUCH AS VEGETATION) SHALL BE USED TO STABILIZE ALL PROPOSED SLOPES GREATER THAN EXISTING.
4. UNDER DRAINS TO BE A MIN. OF 6" UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL CONNECT HOUSE SUMP TO DOWN SPOUT LINES.
6. ALL ROOF DRAINS, FOUNDATION DRAINS AND MAJORITY OF THE SITE RUNOFF MUST BE PIPED TO AN UNDERGROUND STORMWATER CONVEYANCE SYSTEM,

LEGEND

□□□ 30" X 30" AC UNIT

⊞ TRANSFORMER

TOTAL DISTURBED AREA =5.35 AC (233,167 SF)

NOTE: A SEPARATE BUILDING PERMIT SHALL BE REQUIRED FOR THE CONSTRUCTION OF THE RETAINING WALL BETWEEN LOT 3 AND LOT 10.

TOTAL DISTURBED AREA =5

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Peer Review

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CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE

CHAIRMAN, PLANNING COMMISSION DATE

DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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DETAILED GRADING PLAN (2 OF 2)

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP DESIGN	DAD DRAWN	STL CHKD

SCALE H: 1"= 20'
V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C6.10

Cad file name : I:\2267 - Jonneys & Quaker\2267-01-001 (SNG)\Engineering\Eng Plans\MINOR AMENDMENT #1\2267-D-001-TOP-DET-C610.dwg

JANNEYS LANE
(VARIABLE ROW)
POSTED SPEED 25 MPH

QUAKER LANE
POSTED SPEED 35 MPH

CATHEDRAL STREET

PRESIDENT FORD DRIVE

OUTLOT A
2,237 S.F. OR
0.05 AC

LOT 1
25,625 S.F. OR
0.59 AC

LOT 2
22,987 S.F. OR
0.53 AC

LOT 3
25,438 S.F. OR
0.58 AC

LOT 4
25,203 S.F. OR
0.58 AC

LOT 5
21,669 S.F. OR
0.50 AC

LOT 6
25,235 S.F. OR
0.58 AC

LOT 7
25,783 S.F. OR
0.59 AC

LOT 8
25,255 S.F. OR
0.58 AC

LOT 9
22,948 S.F. OR
0.53 AC

LOT 10
24,688 S.F. OR
0.57 AC

KENWOOD II
FF=214.00
BF=203.98
AFG=210.99

KENWOOD II
FF=214.00
BF=203.98
AFG=210.93

KENWOOD
FF=225.85
BF=215.85
AFG=222.75

STRATFORD
FF=220.50
BF=210.48
AFG=215.30

KENWOOD II
FF=230.20
BF=219.48
AFG=226.79

MONTICELLO
FF=227.00
BF=216.98
AFG=224.84

MONTICELLO
FF=227.68
BF=217.68
AFG=224.59

FF=224.60
BF=213.98
AFG=222.15

T.M. 51.01-02-01

T.M. 51.01-02-71
DENIS J FLOOD
& CARL W DUYCK

T.M. 51.01-02-59
DENIS J FLOOD
& CARL W DUYCK

T.M. 51.01-02-58
YONG AE MCPHERSON

T.M. 51.01-02-02
WALTER E SR
& BETTY C SPAHR

PROPOSED 8' X 16.25' BUS SHELTER AND PEDESTRIAN LANDING

BUS SHELTER ESM'T

BENCHMARK #1

BENCHMARK #2

JUNCTION BOX

2-4" CONDUIT LINES BURIED MIN. 2' (RIGID GALVANIZED STEEL)

10' W/L ESMT.

3/4" WATER METER

10' CURB CUT FOR MAINT. ACCESS

24" x 38" HECP

24" RCP

15" S.D. ESMT.

PUBLIC ACCESS EASEMENT

EX. 18" EASTERN RED CEDAR

EX. 12" EASTERN RED CEDAR

EX. 8" TWIN PERSIMMON

EX. 8" PERSIMMON

EX. 15 STORM DRAIN ESM'T

EX. 33" CHESTNUT OAK

EX. 14" CRABAPPLE

EX. 12" CRABAPPLE

EX. 24" LONDON PLANE TREE

EX. 43" WHITE OAK

EX. 24" BLACK CHERRY

EX. 7" MAPLE

EX. 20" MAPLE

EX. 12" JAPANESE MAPLE

EX. 7" BLACK HOLLY

HISTORIC TREE

360 L.F. OF 78" CMP

48" RISER

15"STM

18"STM

24"STM

30"STM

DUAL 12"STM

8" W/L

12" W/L

10" SAN

4" SDR 35 PVC SAN. LAT.

C.O.

GRAVITY UNDERDRAIN (SEE C9.00 FOR DETAILS)

OPTION W/DECK

DECK AREA

GATE

NO THRU STREET SIGN

STREET SIGN
STOP SIGN

2" BO VALVE
8"X6" TEE

8"X6" TEE

EX. METAL FLUME

EX. GRATE INLET (FILLED NOT IN USE)

TIE PROP. FENCE TO EX. FENCE

PROP. FENCE

PROP. AQUASWRL

UTILITY ESM'T

10' PUBLIC ACCESS ESM'T

PUBLIC ACCESS ESM'T

CONNECTION TO EXISTING AT THIS LOCATION

PRIVATE ACCESS ESM'T

15' S.S. ESMT.

APPROX. C/L VEPCO EASEMENT (DB 1.00 PG 588)

TREE SAVE AREA
ALL TREES WITHIN HATCHED AREAS ARE TO BE SAVED UNLESS NOTED OTHERWISE.

GAS LINE APPROX. LOCATION FROM RECORD

GAS LINE LOCATION FROM FIELD SURVEY

GAS LINE APPROXIMATE LOCATION FROM RECORD

GAS METER
ELEC. METER

EX. CROSSING BUTTON PEDESTAL

EX. TRAFFIC SIGNAL POLE

EX. C&G

EX. ASPHALT

EX. CURB

EX. SIGN

EX. 18" TREE

EX. 10" TREE

EX. 15" TREE

EX. 20" TREE

N60°56'50"W 293.12'

N88°15'20"E 278.27

S89°52'25"E 419.08'

R = 5225.73'
A = 91.56'

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

NOTES:

1. ALL TRANSFORMERS ARE TO BE SCREENED SO NOT TO BE VISIBLE FROM THE PUBLIC R.O.W.
2. TIE PROP. FENCE TO EX. FENCE ALL PROPOSED UTILITIES SERVING THIS SITE SHALL BE UNDERGROUND.
3. ALL ROOF DRAINS, FOUNDATION DRAINS AND THE MAJORITY OF SITE RUNOFF MUST BE PIPED TO AN UNDERGROUND STORMWATER CONVEYENCE SYSTEM.
4. ALL WATER FACILITY CONSTRUCTION SHALL CONFORM TO THE VIRGINIA AMERICAN WATER COMPANY STANDARDS AND SPECIFICATIONS.
5. CONTACT VIRGINIA AMERICAN WATER COMPANY AT 703-549-7080 TO COORDINATE CONSTRUCTION AND INSPECTION OF WATER FACILITIES.
6. ALL ON-SITE STORMWATER CURB INLETS AND PUBLIC CURB INLETS WITHIN 50 FT. OF THE PROPERTY LINE SHALL BE DULY MARKED TO THE SATIFACTION OF THE DIRECTOR OF T&ES.

LEGEND

ROOF/FOUNDATION DRAINS

30" X 30" AC UNIT

TRANSFORMER

ESI
Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISSION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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UTILITY PLAN

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40824
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30'
V:

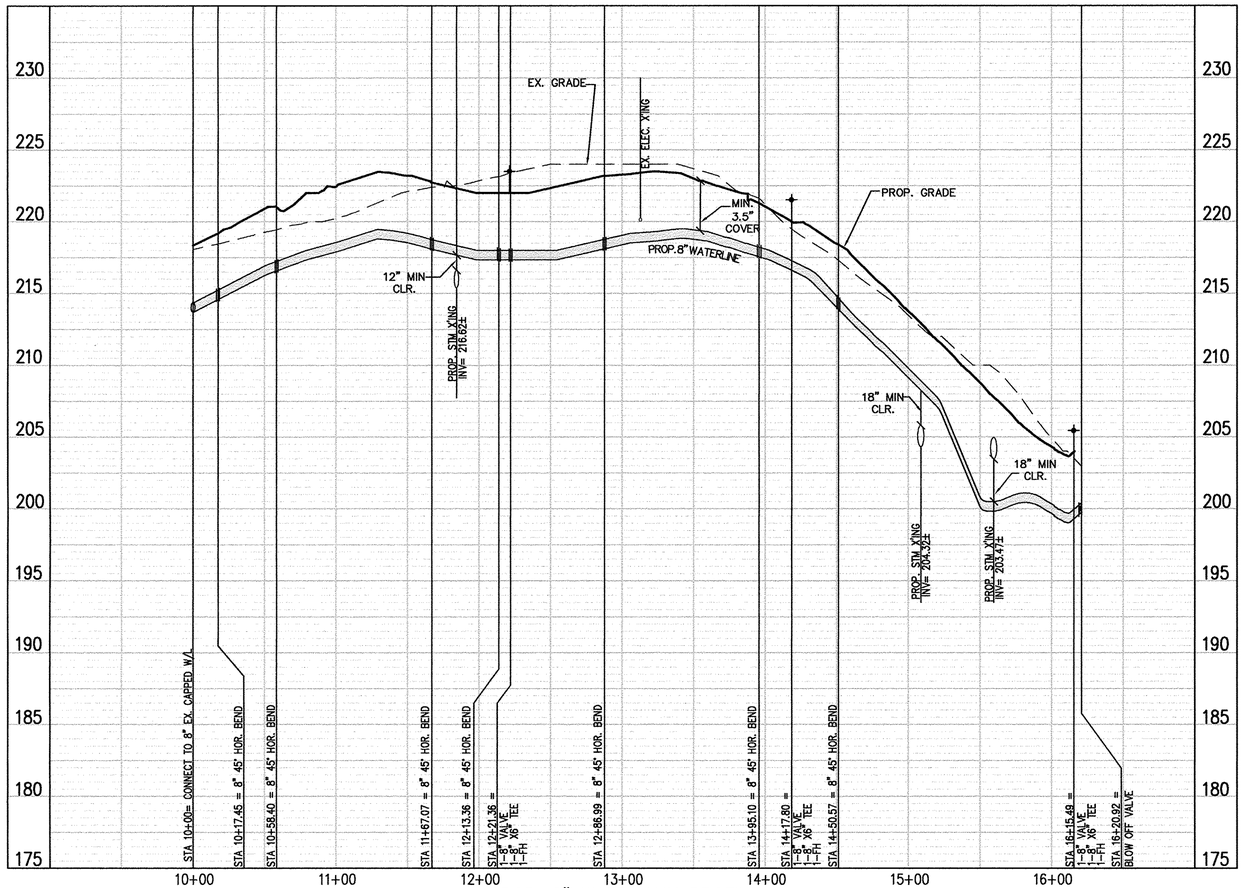
JOB No. 2267-01-001

DATE : OCTOBER, 2016

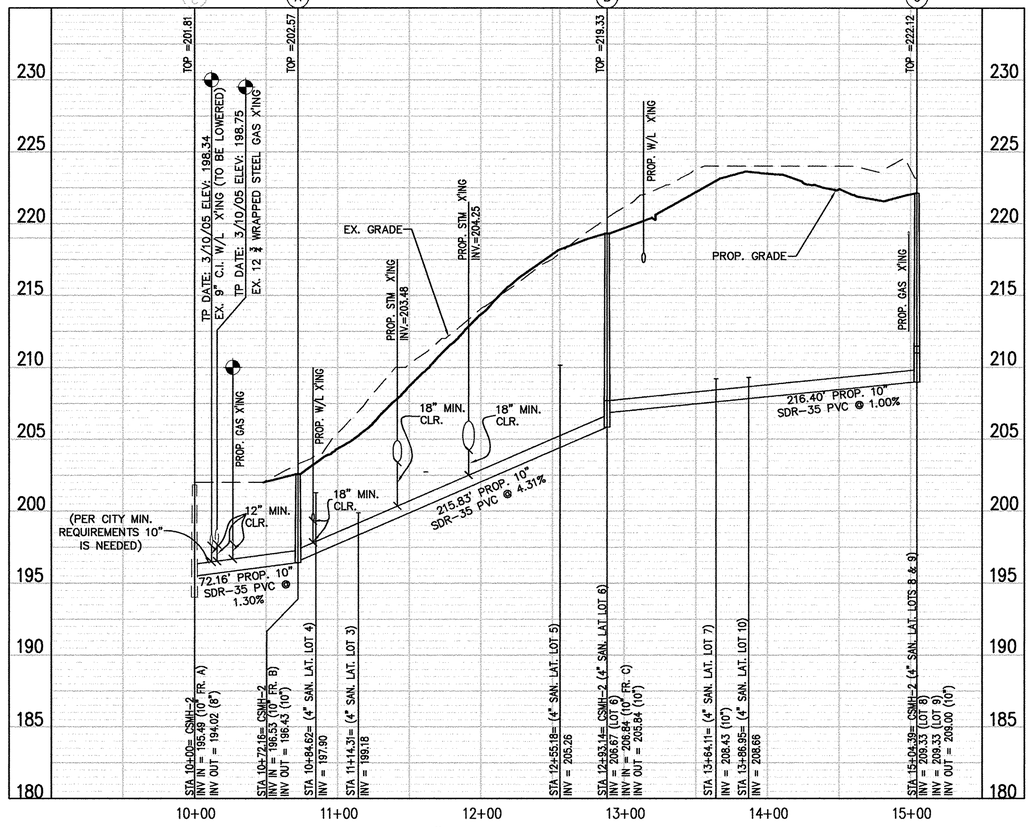
FILE No. 2267-D-CP-003

SHEET C7.00

Cad file name: V:\2267 - Janneys & Quaker\2267-01-001 (END)\Engineering\Eng Plans\MINOR AMENDMENT 14\2267-01-001-FDP-UTILITY.dwg



PROP. 8" WATERMAIN PROFILE



10" SAN. SEWER C TO EX. C

SANITARY SEWER DESIGN COMPUTATIONS

MANHOLE NO		LENGTH	# OF		CUMULATIVE	PEAK	PEAK	CUMULATIVE	CUMULATIVE	GROUND ELEV		DIA	SLOPE	PIPE	FULL	INVERT ELEV		DEPTH
UPPER	LOWER		HOMES	POPULATION	POPULATION	FACT	SEWAGE FLOW	SEWAGE FLOW	DESIGN FLOW	UPPER	LOWER			CAPAC	FLOW VEL	UPPER	LOWER	OF COVER
		(FT)	(UNITS)	(PEOPLE)	(PEOPLE)		(MGD)	(MGD)	(MGD)			(IN)	(%)	(MGD)	(FPS)			(FT)
C	B	216	4	14	14	4.0	0.0014	0.0014	0.0056	222.12	219.13	10	1.00	1.8409	5.22	209.00	206.84	12.29
B	A	216	4	14	28	4.0	0.0014	0.0028	0.0112	219.13	202.57	10	3.25	3.3187	9.41	205.84	196.53	12.46
A	EXC	72	0	0	0	4.0	0.0000	0.0028	0.0112	202.57	201.81	10	1.70	2.4002	6.81	196.43	195.49	5.31

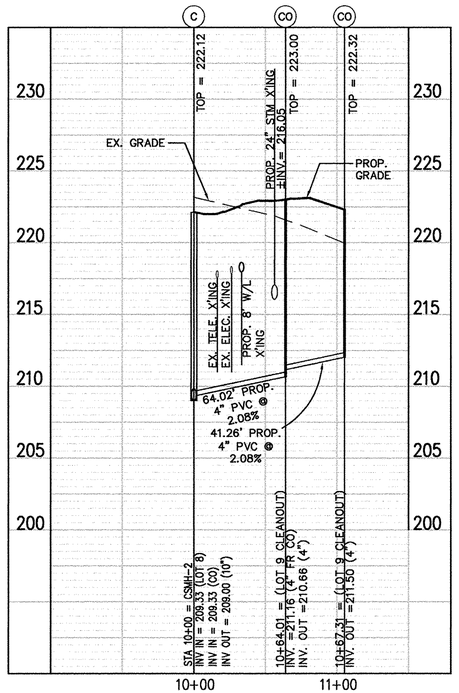
NOTES:
1 - POPULATION COUNT IS BASED ON 3.5 PERSONS PER SINGLE FAMILY RESIDENCE.
2 - SEWAGE FLOW IS CALCULATED AT 100 GPD/PERS
3 - 'N' VALVES USED: 0.010

SANITARY LATERAL TABLE

LOT	MANHOLE			SLOPE	LENGTH	INV @	INV @	INV @	GRADE @	RISER	INV @	FF ELEV	DELTA	REMARKS
NUMBER	STATION	DOWN	UP	FT / FT	FT.	MAIN (A)	CONN. (B)	(C)	BLDG	HEIGHT (FT.) (D)	HOUSE (E)	FT.	FT.	*Inv @ MH
3	42.15	A	B	0.0208	78.01	198.35	199.18	200.80	210.62	5.8	206.62	214.00	7.38	
4	12.46	A	B	0.0208	118.34	197.07	197.90	200.36	210.23	5.9	206.23	214.00	7.77	
5	183.02	A	B	0.0208	98.56	204.42	205.26	207.31	215.05	3.7	211.05	220.50	9.45	
6	215.83	A	B	0.0208	92.77	205.84	206.67	208.60	224.55	11.9	220.55	227.00	6.45	
7	76.12	B	C	0.0208	39.74	207.60	208.43	209.26	225.91	12.7	221.91	229.50	7.59	
8	216.40	B	C	0.0208	70.86	209.00	209.33	210.81	224.84	10.0	220.84	227.00	6.16	
9	216.40	B	C	0.0208	105.26	209.00	209.33	211.52	223.50	8.0	219.50	225.00	5.50	
10	98.96	B	C	0.0208	29.81	207.83	208.66	209.28	223.90	10.6	219.90	225.85	5.95	

SANITARY LATERALS SHALL BE SDR-26 PVC PIPE

SEE SHEET C13.00 FOR SANITARY LATERAL/CLEANOUT DETAIL.



4" SAN. SEW. LAT. CO TO C (LOT 9)

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. ____
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISION — DATE
DATE RECORDED ____
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

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UTILITY PROFILES

OAK GROVE

VIRGINIA

CITY OF ALEXANDRIA

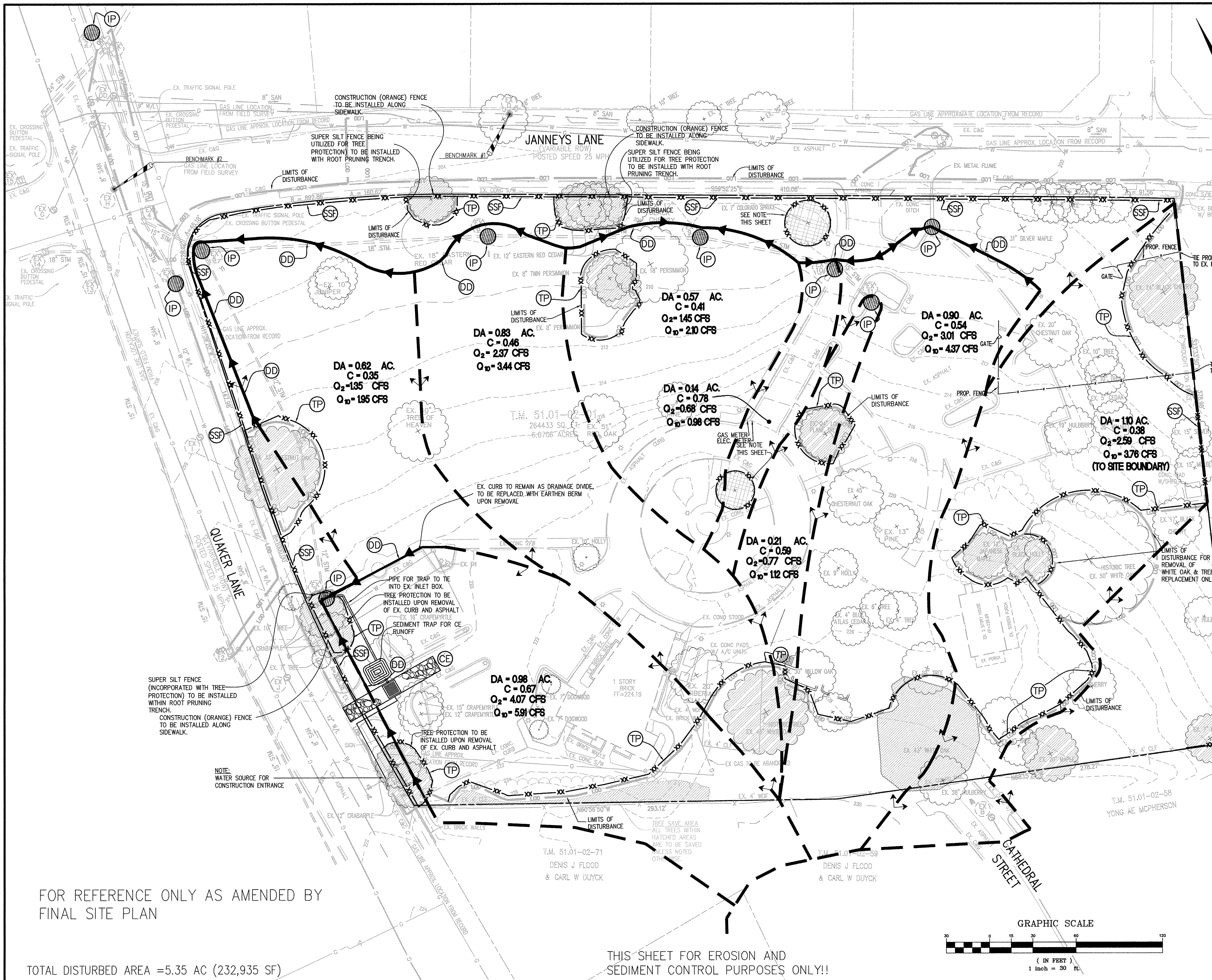
COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	JWM	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=50' V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C7.10

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (SWM)\Engineering\Eng Plans\2267-01-001-FDP-PP-UTIL.dwg



PROVIDE ADDITIONAL CONTROL MEASURES ALONG JANNEY'S LANE AS NECESSITATED BY SITE CONDITIONS OR SITE INSPECTOR.

EROSION AND SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SUPER SILT FENCE	SSF	—XX—
3.07	STORM DRAIN INLET PROTECTION	IP	
3.09	TEMPORARY DIVERSION DIKE	DD	
3.38	TREE PROTECTION *SEE NOTE BELOW	TP	—XX—
	DRAINAGE DIVIDE		
	LIMITS OF DISTURBANCE		LOD

TREES TO BE RELOCATED ON-SITE

TREES TO BE PRESERVED

* NOTES:

1. **SUPER SILT FENCE SHALL BE UTILIZED AS TREE PROTECTION**
2. ALL INSTALLED TREE PROTECTION SHALL BE REVIEWED BY CITY ARBORIST PRIOR TO ANY CONSTRUCTION, CLEARING, GRADING OR SITE ACTIVITIES.
3. TREE PROTECTION TO BE INSTALLED AROUND EX. 3" BLUE CEDAR AND EX 7" COLORADO SPRUCE UNTIL TIME OF RELOCATION ON SITE. ONCE RELOCATED, TREE PROTECTION SHALL BE REINSTALLED AROUND TREES.
4. TREE PROTECTION NOT EXTENDED TO DRIPLINE IN CERTAIN AREAS SINCE CUT LIMITS EXTEND INTO DRIPLINE.
5. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.
6. INTENSITY VALUES FOR 2 & 10 YR DETERMINATION OF Q:
   i_2 = 6.2 IN/HR
   i_{10} = 9.0 IN/HR

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

TOTAL DISTURBED AREA =5.35 AC (232,935 SF)

THIS SHEET FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY!!

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING

DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.

DIRECTOR DATE

CHAIRMAN, PLANNING COMMISION DATE

DATE RECORDED

INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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EROSION AND SEDIMENT CONTROL PLAN - PHASE I

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	SRW	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30' V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C8.00

Cad file name : V:\2267 – Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FDP-ES-PH1.dwg

JANNEYS LANE
(VARIABLE ROW)
POSTED SPEED 25 MPH

QUAKER LANE
DUAL
POSTED 35 MPH

CATHEDRAL STREET

PRESIDENT FORD DRIVE

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
OUTLOT "A"

BENCHMARK #1
BENCHMARK #2

LIMITS OF DISTURBANCE

EX. 15 STORM DRAIN ESM'T

360 L.F. OF 78" CMP

48" RISER

PROP. AQUASWIRL

EX. METAL FLUME

EX. GRATE INLET (FILLED NOT IN USE)

EX. BRICK WALL W/ BRK. PILLARS

PROP. FENCE

TIE PROP. FENCE TO EX. FENCE

GATE

EX. BRICK WALLS

LIMITS OF DISTURBANCE FOR REMOVAL OF WHITE OAK & TREE REPLACEMENT ONLY

APPROX. CENTERLINE OF STREAM (IC 598)

T.M. 51.01-02-71
DENIS J FLOOD
& CARL W DUYCK

T.M. 51.01-02-59
DENIS J FLOOD
& CARL W DUYCK

T.M. 51.01-02-58
YONG AE MCPHERSON

T.M. 51.01-02-60
WALTER E JR & BETTY

GAS LINE LOCATION FROM FIELD SURVEY

GAS LINE APPROX. LOCATION FROM RECORD

GAS LINE APPROX. LOCATION FROM RECORD

GAS LINE APPROX. LOCATION FROM RECORD

GAS LINE APPROX. LOCATION FROM RECORD

GAS LINE APPROX. LOCATION FROM RECORD

GAS METER ELEC. METER

RECORD NORTH

DA = 0.04 AC.
C = 0.67
Q_2 = 0.16 CFS
Q_{10} = 0.24 CFS

DA = 1.22 AC.
C = 0.62
Q_2 = 4.69 CFS
Q_{10} = 6.81 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.59 AC.
C = 0.36
Q_2 = 1.32 CFS
Q_{10} = 1.91 CFS

DA = 0.51 AC.
C = 0.38
Q_2 = 1.20 CFS
Q_{10} = 1.74 CFS

DA = 0.23 AC.
C = 0.41
Q_2 = 0.58 CFS
Q_{10} = 0.85 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.12 AC.
C = 0.48
Q_2 = 0.36 CFS
Q_{10} = 0.52 CFS

DA = 0.12 AC.
C = 0.47
Q_2 = 0.35 CFS
Q_{10} = 0.51 CFS

DA = 0.11 AC.
C = 0.48
Q_2 = 0.33 CFS
Q_{10} = 0.48 CFS

DA = 0.11 AC.
C = 0.70
Q_2 = 0.48 CFS
Q_{10} = 0.69 CFS

DA = 0.06 AC.
C = 0.90
Q_2 = 0.33 CFS
Q_{10} = 0.49 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.22 AC.
C = 0.58
Q_2 = 0.79 CFS
Q_{10} = 1.15 CFS

DA = 0.31 AC.
C = 0.39
Q_2 = 0.75 CFS
Q_{10} = 1.09 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.02 AC.
C = 0.88
Q_2 = 0.11 CFS
Q_{10} = 0.16 CFS

DA = 0.39 AC.
C = 0.60
Q_2 = 1.45 CFS
Q_{10} = 2.11 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.12 AC.
C = 0.52
Q_2 = 0.39 CFS
Q_{10} = 0.56 CFS

DA = 0.96 AC.
C = 0.47
Q_2 = 2.91 CFS
Q_{10} = 4.23 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.68 AC.
C = 0.35
Q_2 = 1.47 CFS
Q_{10} = 2.14 CFS
(TO SITE BOUNDARY)

DA = 0.75 AC.
C = 0.78
Q_2 = 3.63 CFS
Q_{10} = 5.26 CFS

DA = 1.66 AC.
C = 0.54
Q_2 = 5.56 CFS
Q_{10} = 8.07 CFS

DA = 1.66 AC.
C = 0.58
Q_2 = 5.97 CFS
Q_{10} = 8.67 CFS

PROVIDE ADDITIONAL CONTROL MEASURES ALONG JANNEY'S LANE AS NECESSITATED BY SITE CONDITIONS OR SITE INSPECTOR.

EROSION AND SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SUPER SILT FENCE	SSF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.09	TEMPORARY DIVERSION DIKE	DD	
3.08	TREE PROTECTION *SEE NOTE BELOW	TP	
	DRAINAGE DIVIDE		
	LIMITS OF DISTURBANCE		LOD

TREES TO BE RELOCATED ON-SITE

TREES TO BE PRESERVED

* NOTES:

1. **SUPER SILT FENCE SHALL BE UTILIZED AS TREE PROTECTION.**
2. ALL INSTALLED TREE PROTECTION SHALL BE REVIEWED BY CITY ARBORIST PRIOR TO ANY CONSTRUCTION, CLEARING, GRADING OR SITE ACTIVITIES.
3. TREE PROTECTION TO BE INSTALLED AROUND EX. 3" BLUE CEDAR AND EX 7" COLORADO SPRUCE UNTIL TIME OF RELOCATION ON SITE. ONCE RELOCATED, TREE PROTECTION SHALL BE REINSTALLED AROUND TREES.
4. TREE PROTECTION NOT EXTENDED TO DRIPLINE IN CERTAIN AREAS SINCE CUT LIMITS EXTEND INTO DRIPLINE.
5. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.
6. INTENSITY VALUES FOR 2 & 10 YR DETERMINATION OF Q:
   i_2 = 6.2 IN/HR
   i_{10} = 9.0 IN/HR

FOR REFERENCE ONLY
AS AMENDED BY FINAL
SITE PLAN

TOTAL DISTURBED AREA =5.35 AC (232,935 SF)

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. ____
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISION — DATE
DATE RECORDED ____
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

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EROSION AND SEDIMENT CONTROL PLAN PHASE II

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION
SCP DESIGN	DAD DRAWN / STL CHKD
SCALE	H: 1"=30' V:
JOB No.	2267-01-001
DATE :	OCTOBER, 2016
FILE No.	2267-D-CP-003
SHEET	C8.10

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Dwg Plans\2267-01-001-FDP-ES-PH2.dwg

JANNEYS LANE
(VARIABLE ROW)
POSTED SPEED 25 MPH

QUAKER LANE
(VARIABLE ROW)
POSTED SPEED 25 MPH

PRESIDENT FORD LANE

CATHEDRAL STREET

OUTLOT "A"

AREA OF DSP EXTENSION

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10

BENCHMARK #1
BENCHMARK #2
GAS LINE LOCATION FROM FIELD SURVEY
GAS LINE APPROX. LOCATION FROM RECORD
GAS LINE APPROXIMATE LOCATION FROM RECORD
EX. C&G
EX. ASPHALT
EX. METAL FLUME
EX. GRATE INLET (FILLED NOT IN USE)
EX. BRICK WALL W/ BRICK VANES
EX. 15 STORM DRAIN ESM'T
LIMITS OF DISTURBANCE
PROP. AQUASWIRL
PROP. FENCE
GATE
C.O.
TIE PROP. TO EX.
24" RCP
18" RCP
24" x 38" HECP
36" HECP
48" RISER
15" STM
18" STM
24" STM
DUAL 12" STM
360 LF OF 78" CMP
WATER-SOURCE
GAS METER
ELEC. METER
DA = 0.57 AC.
C = 0.47
Q_2 = 1.66 CFS
Q_{10} = 2.41 CFS
DA = 0.53 AC.
C = 0.49
Q_2 = 1.61 CFS
Q_{10} = 2.34 CFS
SF
IP
CE
TP
DD
R.D.
N53°32'25"E 410.00'
N60°58'50"W 293.12'
N68°15'E 278.27'
APPROX. C/L OF PROPERTY LINE (DB 1 PG 566)
T.M. 51.01-02-71 DENIS J FLOOD & CARL W DUYCK
T.M. 51.01-02-59 DENIS J FLOOD & CARL W DUYCK
T.M. 51.01-02-58 YONG AE MCPHERSON
T.M. 51.01-02-57 WALTER E SR & BESSIE V

PROVIDE ADDITIONAL CONTROL MEASURES ALONG JANNEY'S LANE AS NECESSITATED BY SITE CONDITIONS OR SITE INSPECTOR.

EROSION AND SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SUPER SILT FENCE	SSF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.09	TEMPORARY DIVERSION DIKE	DD	
3.38	TREE PROTECTION *SEE NOTE BELOW	TP	
	DRAINAGE DIVIDE		
	LIMITS OF DISTURBANCE		LOD

TREES TO BE RELOCATED ON-SITE

TREES TO BE PRESERVED

* NOTES:

1. **SUPER SILT FENCE SHALL BE UTILIZED AS TREE PROTECTION.**
2. ALL INSTALLED TREE PROTECTION SHALL BE REVIEWED BY CITY ARBORIST PRIOR TO ANY CONSTRUCTION, CLEARING, GRADING OR SITE ACTIVITIES.
3. TREE PROTECTION TO BE INSTALLED AROUND EX. 3" BLUE CEDAR AND EX 7" COLORADO SPRUCE UNTIL TIME OF RELOCATION ON SITE. ONCE RELOCATED, TREE PROTECTION SHALL BE REINSTALLED AROUND TREES.
4. TREE PROTECTION NOT EXTENDED TO DRIPLINE IN CERTAIN AREAS SINCE CUT LIMITS EXTEND INTO DRIPLINE.
5. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.
6. INTENSITY VALUES FOR 2 & 10 YR DETERMINATION OF Q:
   i_2 = 6.2 IN/HR
   i_{10} = 9.0 IN/HR

LIMITS OF DISTURBANCE FOR REMOVAL OF WHITE OAK & TREE REPLACEMENT ONLY

EROSION AND SEDIMENT CONTROL NARRATIVE:

THE SITE IS FULLY DEVELOPED EXCEPT FOR HOUSE CONSTRUCTION ON LOTS 9 AND 10. THE EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 9 AND 10 SHALL BE USED TO INHIBIT SEDIMENT LADEN RUNOFF FROM AFFECTING THE SURROUNDING DEVELOPMENT AND STORM DOWNSTREAM OF THE SITE.

THE CONTRACTOR SHALL INSTALL SILT FENCE, INLET PROTECTION, TREE PROTECTION, AND CONSTRUCTION ENTRANCE GRAVEL AS INDICATED IN THE PLAN PRIOR TO CONSTRUCTION ACTIVITIES.

SEE SHEET C8.20 FOR EROSION AND SEDIMENT CONTROL DETAILS.

TOTAL DISTURBED AREA =5.35 AC (232,935 SF)

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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EROSION AND SEDIMENT CONTROL PLAN - LOTS 9 & 10

OAK GROVE

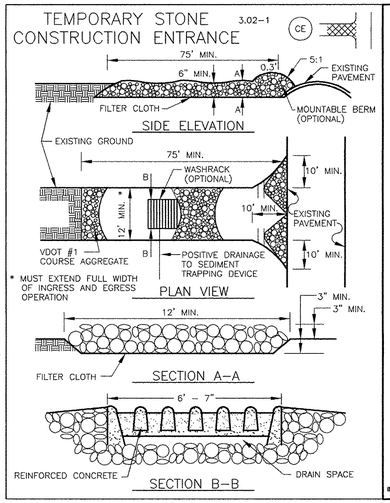
CITY OF ALEXANDRIA VIRGINIA

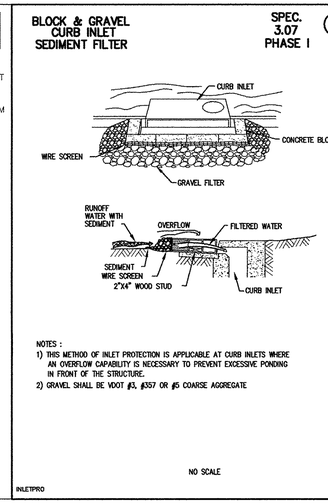
COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER
10/28/16

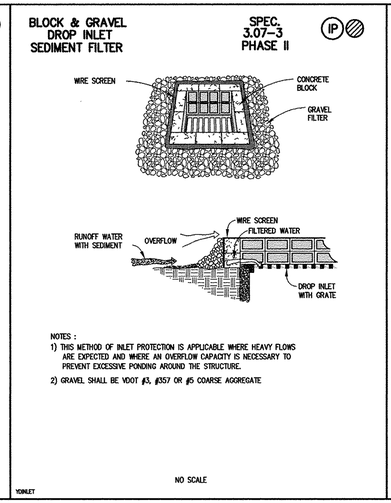
PLAN STATUS	
10/28/16	DSP EXTENSION

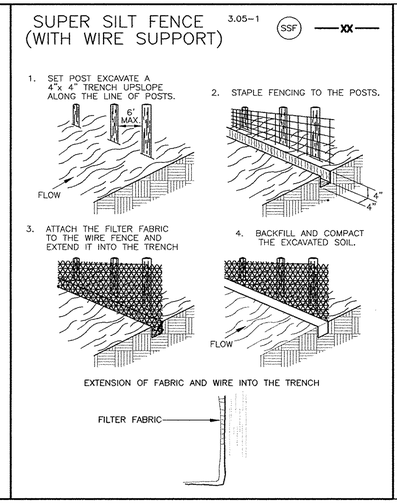
DATE	DESCRIPTION
SCP DESIGN	DAD DRAWN / STL CHKD
SCALE	H: 1"=30' V:
JOB No.	2267-01-001
DATE :	OCTOBER, 2016
FILE No.	2267-D-CP-003
SHEET	C8.15

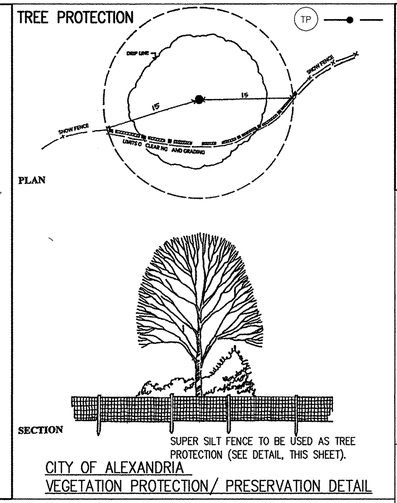
Cad file name : I:\2267 - Janneys & Quaker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FDP-ES-1019-10.dwg

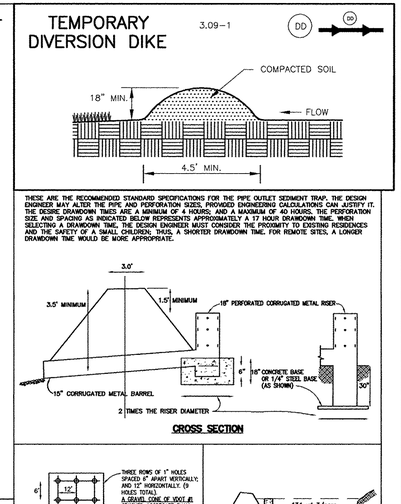












EROSION & SEDIMENT CONTROL NARRATIVE

EXISTING CONDITIONS:

THE SITE CONSISTS OF A 6.07 AC PARCEL OF LAND LOCATED AT THE INTERSECTION OF JANNNEY'S AND QUAKER LANES IN ALEXANDRIA, VIRGINIA. THE PREDOMINANT STRUCTURES ON THE SITE INCLUDE A TWO STORY HOUSE AND A ONE STORY BRICK BUILDING WHICH WAS ONCE USED AS A CHURCH. CORRESPONDINGLY, A PROPORTIONAL AMOUNT OF ASPHALT PARKING LOTS WITH ASSOCIATED CURB AND GUTTER ARE LOCATED ON THE SITE. A 12 INCH STORM DRAIN FLANKS THE WESTERN PORTION OF THE SITE, WHILE AN 18 INCH DRAIN DOMINATES THE NORTHERN EDGE OF THE PROPERTY. THERE ARE TWO STREET ENTRANCES ONTO THE PROPERTY, ONE ON QUAKER LANE AND ONE ON JANNEY'S LANE; BOTH EXTEND INTO THE ROADWAY. THE SITE IS CURRENTLY SERVED BY UTILITIES, AND THERE ARE OVERHEAD UTILITIES WITHIN THE SITE BOUNDARY.

ADJACENT PROPERTIES:

THE PROJECT AREA IS BOUNDED BY QUAKER LANE, JANNEY'S LANE AND CATHEDRAL STREET. MOST ADJACENT PROPERTIES ARE RESIDENTIAL SINGLE FAMILY DWELLINGS, WITH THE EXCEPTION OF A SEMINARY LOCATED TO THE NORTH OF THE PROPERTY.
* PLEASE REFER TO CONTEXTUAL PLAN (SHEET C3.00) FOR SPECIFIC ADDRESS INFORMATION.

CRITICAL AREAS:

THERE ARE NO EXTREMELY STEEP SLOPES WITHIN THE SITE. WITH THIS SAID, CARE SHOULD BE TAKEN WHEN EXCAVATING THE SLOPED CENTRAL PORTION OF THE PROPERTY.

NOTES:

1. T&ES MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENTS OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
2. THE DEVELOPER AND CONTRACTORS ARE TO KEEP DENUDED AREAS TO A MINIMUM. AN EROSION AND SEDIMENT CONTROL PLAN IS INCLUDED WITH THESE FINAL PLANS FOR APPROVAL BY T&ES FOR REFERENCE BY THE EROSION AND SEDIMENT CONTROL PERMIT. ALL EROSION / SEDIMENT CONTROL MEASURES WILL CONFORM TO THE CURRENT STANDARDS OF THE CITY OF ALEXANDRIA AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
3. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS §4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING. AN INSPECTION BY THE CITY IS REQUIRED AFTER INITIAL INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND BEFORE ANY CLEARING OR GRADING CAN BEGIN.
5. TO THE EXTENT POSSIBLE ALL TREE PROTECTION SHALL BE INSTALLED AT THE DRIP LINE OF THE TREE(S).
6. PRIOR TO ANY LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE CITY.
7. AT THE COMPLETION OF THE PROJECT AND PRIOR TO THE RELEASE OF THE BOND ALL DISTURBED AREAS SHALL BE STABILIZED AND ALL TEMPORARY EROSION AND SEDIMENT CONTROL SHALL BE REMOVED.
8. A VPDES PERMIT IS REQUIRED FOR THIS SITE, AND A COPY SHALL BE FILED WITH THE CITY.
9. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.

UTILITY WORK:

1. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME. ALL EXCAVATED MATERIAL TO BE REPLACED INTO THE TRENCH SHALL BE STOCKPILED ON THE HIGH SIDE OF THE TRENCH.
2. IF ANY TRENCH WORK WILL REMAIN OPEN AFTER THE END OF THE WORKDAY ALL NEEDED EROSION AND SEDIMENT CONTROLS SHALL BE EMPLOYED APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES AS NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE CITY OF ALEXANDRIA.
4. A CERTIFIED LAND DISTURBER IS REQUIRED TO BE IDENTIFIED PRIOR TO THE RELEASE OF FINAL SITE PLAN.

EROSION CONTROL:

EROSION SHALL BE MINIMIZED UTILIZING CONTROL DEVICES AS IDENTIFIED BY SYMBOL AND NUMBER THIS SHEET. THESE CONTROLS HAVE BEEN SELECTED TO MINIMIZE SEDIMENT AND EROSION TO ADJACENT PROPERTIES AND TRAVELING BY THE FOLLOWING:

1) IN CONSIDERATION OF THE ERODIBLE SOILS WITHIN THE SITE, CONTRACTOR SHALL EVALUATE THE SITE TO DETERMINE EXTENSIVE CUT AND FILL AREAS, AND SHALL WORK THOSE AREAS TO MINIMIZE THE EXTENT OF HEAVY EQUIPMENT WORK. CONTRACTOR SHALL STRIVE TO BRING AREAS TO GRADE (ROUGH OR FINISH) AND TO STABILIZE, BY TEMPORARY OR PERMANENT VEGETATION, THESE DISTURBED AREAS PRIOR TO BEGINNING WORK IN ANOTHER AREA.
2) FILL AREAS SHALL BE COMPACTED COMPLETELY PRIOR TO THE END OF EACH WORK DAY. FILL SLOPE SURFACES SHALL BE LEFT ROUGHENED TO REDUCE SHEET EROSION OF THE SLOPES. CONTRACTOR SHALL REDIRECT CONCENTRATED RUNOFF, BY EARTH BERMS OR OTHER DEVICES, AROUND ACTIVELY DISTURBED AREAS TO STABILIZE OUTLETS.
3) CUT SLOPES, AS NECESSARY, SHALL BE PROTECTED FROM CONCENTRATED FLOW BY BERMS ABOVE THE SLOPE AND DIRECTED AROUND THE DISTURBED AREA TO STABILIZED OUTLET.
4) IN NEW PAVEMENT AREAS, PLACE THE AGGREGATE BASE STONE ON THE FINISH SUBGRADE AT THE EARLIEST POSSIBLE TIME.
5) ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CARRIED OUT AND MAINTAINED ACCORDING TO THE STANDARDS AND SPECIFICATIONS IN THE CURRENT VERSION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

SEDIMENT CONTROL:

SEDIMENT SHALL BE CONTAINED BY THE TIMED INSTALLATION OF MECHANICAL CONTROL DEVICES. THESE DEVICES SHALL BE PLACED PRIOR TO EARTH DISTURBANCE OPERATIONS AS DIRECTED BY THE SEQUENCE OF CONSTRUCTION OPERATIONS (THIS NARRATIVE). DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

PERMANENT STABILIZATION:

ALL UNPAVED AREAS SHALL BE PERMANENTLY SEEDED OR SODDED, OR LANDSCAPED PRIOR TO THE REMOVAL OF TEMPORARY SILTATION CONTROL MEASURES.

ANY DISTURBED AREAS OF THE SITE THAT ARE NOT TO BE WORKED FOR SEVEN OR MORE CALENDAR DAYS MUST BE STABILIZED.

ANY DENUDED SLOPES, EITHER DISTURBED OR CREATED BY THIS PLAN THAT EXCEED 25% ARE TO BE SODDED AND PEGGED FOR STABILITY AND EROSION CONTROL.

ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROL DAMS SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED AS SOON AS POSSIBLE BUT NO LATER THAN 48 HOURS AFTER GRADING.
ANY STOCKPILED MATERIAL WHICH WILL REMAIN IN PLACE LONGER THAN 10 DAYS IS TO BE SEEDED FOR TEMPORARY VEGETATION AND MULCHED WITH STRAW MULCH OR OTHERWISE STABILIZED. ALL APPLICABLE EROSION AND SEDIMENT CONTROL MEASURES MUST BE EMPLOYED FOR STOCKPILE AREAS.

PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL NOT BE WORKED ON FOR SEVEN OR MORE CALENDAR DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

PROJECT DATES:

CONSTRUCTION SHALL BEGIN IN THE_____AND SHALL BE COMPLETED, TO INCLUDE STABILIZATION OF ALL DISTURBED AREAS BY_____.

SEQUENCE OF CONSTRUCTION OPERATIONS:

(GENERALLY) THE FOLLOWING SEQUENCE SHALL BE FOLLOWED IN THE PLACEMENT OF REQUIRED SEDIMENT CONTROL DEVICES:

PHASE 1
1. INSTALL CONSTRUCTION ENTRANCE.
2. INSTALL TREE PROTECTION AS SHOWN ON THE PHASE 1 PLAN WITH CITY ARBORISTS'S APPROVAL (SSF SHALL BE UTILIZED FOR TREE PROTECTION).
3. INSTALL SUPER SILT FENCE, AND INLET PROTECTION AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN – PHASE I (C8.00).
4. COMMENCE CLEARING, ROUGH GRADING, AND RETAINING WALL CONSTRUCTION OPERATIONS. ALL PERMANENT CONTROLS SHALL BE IN PLACE PRIOR TO GRADING OPERATIONS.
5. ALL AREAS, INCLUDING ANY STOCKPILES, TO BE LEFT DENUDED FOR 7 DAYS OR MORE WILL BE TEMPORARILY SEEDED WITH KENTUCKY 31 AT A RATE OF 100 LBS PER ACRE.

PHASE 2
1. GRADE SITE TO FINAL GRADE.
2. INSTALL PROPOSED STORM DRAINS. CONSTRUCTION OF THE STORM DRAIN SHALL BE SEQUENCED FROM DOWN STREAM TO UP STREAM. WITH THE EXISTING PIPES FROM EX. 1 TO EX. 9 HAVING THE SAME ALIGNMENT AS THE PROPOSED SYSTEM FROM EX. 1 TO PROPOSED 5, THE PROPOSED SYSTEM SHALL BE INSTALLED IN STAGES IN WHICH THE REMAINING PORTIONS OF THE EXISTING STORM DRAIN UPSTREAM ARE KEPT ACTIVE DURING CONSTRUCTION.
3. INSTALL BMP DEVICES, WATER SERVICES, FIRE LINES AND HYDRANTS, AND SANITARY LATERALS AS SHOWN ON PLANS. BMPs SHALL NOT BE ACTIVE UNTIL AFTER SITE IS STABILIZED AND FINAL CLEAN OUT OF SEDIMENT IS COMPLETE.
4. INSTALL INLET PROTECTION AND SUPER SILT FENCE AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN – PHASE II (C8.10).
5. CONSTRUCT / INSTALL REMAINING SITE IMPROVEMENTS (EXCEPT FOR S/W AND RETAINING WALL ALONG JANNEYS LANE AND QUAKER LANE).
6. PRIOR TO INSTALLATION OF S/W AND RETAINING WALL ALONG JANNEYS AND QUAKER STREET FRONTAGE, INSTALL T.P. AS INDICATED ON THE E&S PHASE II PLAN (C8.10).
7. INSTALL S/W AND RETAINING WALLS.
8. REMOVE EROSION AND SEDIMENT PHASE II CONTROLS UPON STABILIZATION OF ENTIRE SITE UNDER APPROVAL OF T&ES

STRUCTURAL PRACTICES:

SILT FENCE BARRIER – 3.05
SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED DOWNSLOPE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT LADEN RUNOFF FROM SHEET FLOW AS INDICATED ON THE EROSION & SEDIMENT CONTROL PLAN.

TEMPORARY CONSTRUCTION ENTRANCE – 3.02
A TEMPORARY CONSTRUCTION ENTRANCE WITH A WASH RACK SHALL BE INSTALLED PER PLATE 3.02. DURING MUDDY CONDITIONS, DRIVERS OF CONSTRUCTION VEHICLES EXITING THE SITE WILL BE REQUIRED TO WASH THEIR WHEELS BEFORE ENTERING THE HIGHWAY.

STORM DRAIN INLET PROTECTION – 3.07
ALL STORM SEWER INLETS, SEDIMENT TRAPS AND DIVERSION DIKES SHALL BE PROTECTED DURING CONSTRUCTION. SEDIMENT-LADEN WATER SHALL BE FILTERED BEFORE ENTERING THE STORM SEWER INLETS.

MAINTENANCE:

1. FOR ADDITIONAL DETAILS AND SPECIFICATIONS NOT SHOWN HEREON, REFER TO THE 1992 VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK
2. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ONSITE AT ALL TIMES.
3. THE SILT FENCE BARRIER WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALFWAY TO THE TOP OF THE BARRIER.
4. THE SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND OF GRASS IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RE-SEEDED AS NEEDED.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

VEGETATIVE PRACTICES:

PERMANENT SEEDING : PERMANENT SEEDING SHALL BE APPLIED IN AREAS OF PERMANENT VEGETATIVE COVER WHERE CONSTRUCTION HAS BEEN COMPLETED OR IN ROUGH GRADED AREA WHICH WILL NOT BE BROUGHT TO FINAL GRADE FOR ONE MONTH OR LONGER. ALL DISTURBED AREAS WHICH ARE PLANNED TO BE LANDSCAPED SHALL BE SEEDED AND LANDSCAPED IMMEDIATELY FOLLOWING FINAL GRADING. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER AND LIME OR OTHER SOIL ADDITIVES SHALL BE APPLIED PRIOR TO MULCHING.

TEMPORARY SEEDING : ALL DENUDED AREAS AND STOCKPILES WHICH WILL BE DORMANT FOR MORE THAN SEVEN DAYS DURING CONSTRUCTION SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED.

SOILS:

SEE GEOTECHNICAL REPORT BY ECS, LTD. DATED 2/04 AND GEOTECHNICAL SUMMARY ON SHEET C9.00

MANAGEMENT STRATEGIES

1. CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. SEDIMENT TRAPPING MEASURES WILL BE INSTALLED PRIOR TO GRADING AND WILL BE SEEDED AND MULCHED IMMEDIATELY FOLLOWING INSTALLATION.
3. TEMPORARY SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING.
4. AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, FENCING, ETC.
5. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
6. AFTER ACHIEVING ADEQUATE STABILIZATION, THE TEMPORARY E&S CONTROLS WILL BE CLEANED UP AND REMOVED. TEMPORARY CONTROLS MAY ONLY BE REMOVED WITH APPROVAL OF THE CITY INSPECTOR.
7. THE EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN TWO PHASES AS INDICATED ON PLANS.
8. PHASE I EROSION & SED. CONTROL PLAN WILL BE IMPLEMENTED AS A FIRST STEP PRIOR TO DEMOLITION.
9. PHASE II EROSION & SED. CONTROL WILL BE IMPLEMENTED UPON COMPLETION OF ROUGH GRADING AND DURING STORM SEWER CONSTRUCTION.
10. DUST CONTROL SHALL BE ACCOMPLISHED BY TEMPORARY VEGETATIVE COVER AND BY IRRIGATION, AS NEEDED. THE CONTRACTOR MAY SUBSTITUTE OR USE ANY ADDITIONAL PRACTICES AS DESCRIBED IN VESCH IF HE/SHE DEEMS NECESSARY OR MORE EFFICIENT.
11. SEDIMENT TRAPS SHALL BE TREATED FOR MOSQUITOS, IF STANDING WATER IS PRESENT, IN ACCORDANCE WITH APPLICABLE REGULATIONS AND TO THE SATISFACTION OF THE DIRECTOR OF T&ES.

STOCKPILING

BASEMENT EXCAVATION ON EACH LOT WILL GENERATE TEMPORARY STOCKPILES OF SOIL. STOCKPILING OF SOIL MATERIALS EXPECTED. SHOULD THE NEED FOR STOCKPILING OCCUR, A SEPARATE PLAN FOR EROSION AND SEDIMENT CONTROL IS TO BE SUBMITTED FOR ALL OFFSITE STOCKPILE LOCATIONS AND THE CONTRACTOR IS TO CONTACT THE CITY OF ALEXANDRIA, DEQ OR REFERENCE THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK FOR SPECIFIC GUIDANCE. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE COORDINATED WITH THE SITE INSPECTOR.

CONTAMINATED SOILS

THE CITY OF ALEXANDRIA DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES, DIVISION OF ENVIRONMENTAL QUALITY MUST BE NOTIFIED IF UNUSUAL OR UNANTICIPATED CONTAMINATION OR UNDERGROUND STORAGE TANKS, DRUMS AND CONTAINERS ARE ENCOUNTERED AT THE SITE. IF THERE IS ANY DOUBT ABOUT PUBLIC SAFETY OR A RELEASE TO THE ENVIRONMENT, THE ALEXANDRIA FIRE DEPARTMENT MUST BE CONTACTED IMMEDIATELY BY CALLING 911. THE TANK OR CONTAINER'S REMOVAL, ITS CONTENTS, ANY SOIL CONTAMINATION AND RELEASES TO THE ENVIRONMENT WILL BE HANDLED IN ACCORDANCE WITH FEDERAL, STATE AND CITY REGULATIONS.

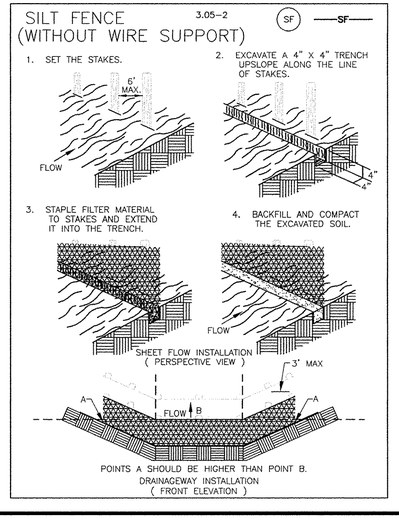


TABLE 3.32-D

SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA

	Total Lbs. Per Acre
Minimum Care Lawn	
- Commercial or Residential	
- Kentucky 31 or Turf-Type Tall Fescue	175-200 lbs.
or	
- Common Bermudagrass **	75 lbs.
High-Maintenance Lawn	
- Kentucky 31 or Turf-Type Tall Fescue	200-250 lbs.
or	
- Hybrid Bermudagrass (seed) **	40 lbs. (unhulled)
or	30 lbs. (hulled)
- Hybrid Bermudagrass (by other vegetative establishment method, see Std. & Spec. 3.34)	
General Slope (3:1 or less)	
- Kentucky 31 Fescue	128 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop *	20 lbs.
	150 lbs.
Low Maintenance Slope (Steeper than 3:1)	
- Kentucky 31 Tall Fescue	93-108 lbs.
- Common Bermudagrass **	0-15 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop *	20 lbs.
- Serícea Lespedeza **	20 lbs.
	150 lbs.

* Use seasonal nurse crop in accordance with seeding dates as stated below:
February, March through April ..... Annual Rye
May 1st through August ..... Foxtail Millet
September, October through November 15th ..... Annual Rye
November 16th through January ..... Winter Rye

** May through October, use hulled seed. All other seeding periods, use unhulled seed. Weeping Lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10-20 lbs./acre in mixes.

TEMPORARY SEEDING SCHEDULE

PLANTING DATES	SPECIES	RATE (LBS/AC)
SEPT. 1 – FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) AND CEREAL (WINTER) RYE (SECALE CEREALE)	50-100
FEB. 16 – APRIL 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60-100
MAY 1 – AUGUST 31	GERMAN MILLET (SETARIA ITALICA)	50

ESI Peer Review

Certified Responsible Land Disturber	
Name	JIM PERRY
Address	6820 ELM STREET, SUITE 200 MCLEAN, VA 22101
Phone #	703-734-9730
Certification #	14380
Expiration Date	7/16/2005

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISSION DATE
DATE RECORDED _____
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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EROSION AND SEDIMENT CONTROL DETAILS AND NARRATIVE

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	SRW	STL
DESIGN	DRAWN	CHKD

SCALE H: NO SCALE V:

JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C8.20

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (300)\Engineering\Eng Plans\2267-01-001-FDP-R301.dwg

FOR REFERENCE ONLY AS AMENDED
BY FINAL SITE PLAN

JANNEYS LANE

QUAKER LANE

OUTLOT "A"

CATHEDRAL STREET

LOT 1
DA = 0.23 AC.
C = 0.41
Q_2 = 0.58 CFS
Q_{10} = 0.85 CFS

LOT 2
DA = 0.51 AC.
C = 0.38
Q_2 = 1.20 CFS
Q_{10} = 1.74 CFS

DA = 0.59 AC.
C = 0.36
Q_2 = 1.32 CFS
Q_{10} = 1.91 CFS

LOT 3
DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.12 AC.
C = 0.48
Q_2 = 0.96 CFS
Q_{10} = 0.52 CFS

DA = 0.04 AC.
C = 0.67
Q_2 = 0.16 CFS
Q_{10} = 0.24 CFS

DA = 1.22 AC.
C = 0.62
Q_2 = 4.69 CFS
Q_{10} = 6.81 CFS

LOT 4
DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.12 AC.
C = 0.47
Q_2 = 0.35 CFS
Q_{10} = 0.51 CFS

DA = 0.11 AC.
C = 0.70
Q_2 = 0.48 CFS
Q_{10} = 0.69 CFS

DA = 0.06 AC.
C = 0.90
Q_2 = 0.33 CFS
Q_{10} = 0.49 CFS

DA = 0.11 AC.
C = 0.48
Q_2 = 0.33 CFS
Q_{10} = 0.48 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

LOT 10

DA = 0.22 AC.
C = 0.58
Q_2 = 0.79 CFS
Q_{10} = 1.15 CFS

LOT 9
DA = 0.39 AC.
C = 0.60
Q_2 = 1.45 CFS
Q_{10} = 2.11 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.02 AC.
C = 0.88
Q_2 = 0.11 CFS
Q_{10} = 0.16 CFS

DA = 0.31 AC.
C = 0.39
Q_2 = 0.75 CFS
Q_{10} = 1.09 CFS

LOT 5
LIMITS OF DISTURBANCE FOR REMOVAL OF WHITE OAK & TREE REPLACEMENT ONLY!

LOT 6
DA = 0.68 AC.
C = 0.35
Q_2 = 1.47 CFS
Q_{10} = 2.14 CFS
(TO SITE BOUNDARY)

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

LOT 7
DA = 0.75 AC.
C = 0.78
Q_2 = 3.63 CFS
Q_{10} = 5.26 CFS

LOT 8
DA = 0.96 AC.
C = 0.47
Q_2 = 2.91 CFS
Q_{10} = 4.23 CFS

DA = 0.08 AC.
C = 0.90
Q_2 = 0.45 CFS
Q_{10} = 0.65 CFS

DA = 0.12 AC.
C = 0.52
Q_2 = 0.39 CFS
Q_{10} = 0.56 CFS

DA = 1.66 AC.
C = 0.54
Q_2 = 5.56 CFS
Q_{10} = 8.07 CFS

DA = 1.66 AC.
C = 0.58
Q_2 = 5.97 CFS
Q_{10} = 8.67 CFS

24" RCP
24" x 38" HERCP
18" RCP
30" STM
15" STM
12" STM
48" RISER
360 L.F. OF 78" CMP
PROP. AQUASWIRL
PROP. FENCE
TIE PROP. FENCE TO EX. FENCE
EX. METAL FLUME
EX. GRATE INLET (FILLED NOT IN USE)
LIMITS OF DISTURBANCE
GAS METER
ELEC. METER
GATE
C.O.
R.D.
5R@7.2"
4R@6.8"
3R@6.8"
N60°56'50"W 293.12'

THIS SHEET FOR DRAINAGE DIVIDE PURPOSES ONLY!!

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

ESI
Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
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Bowman CONSULTING

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DRAINAGE DIVIDE PLAN

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=30'
V:

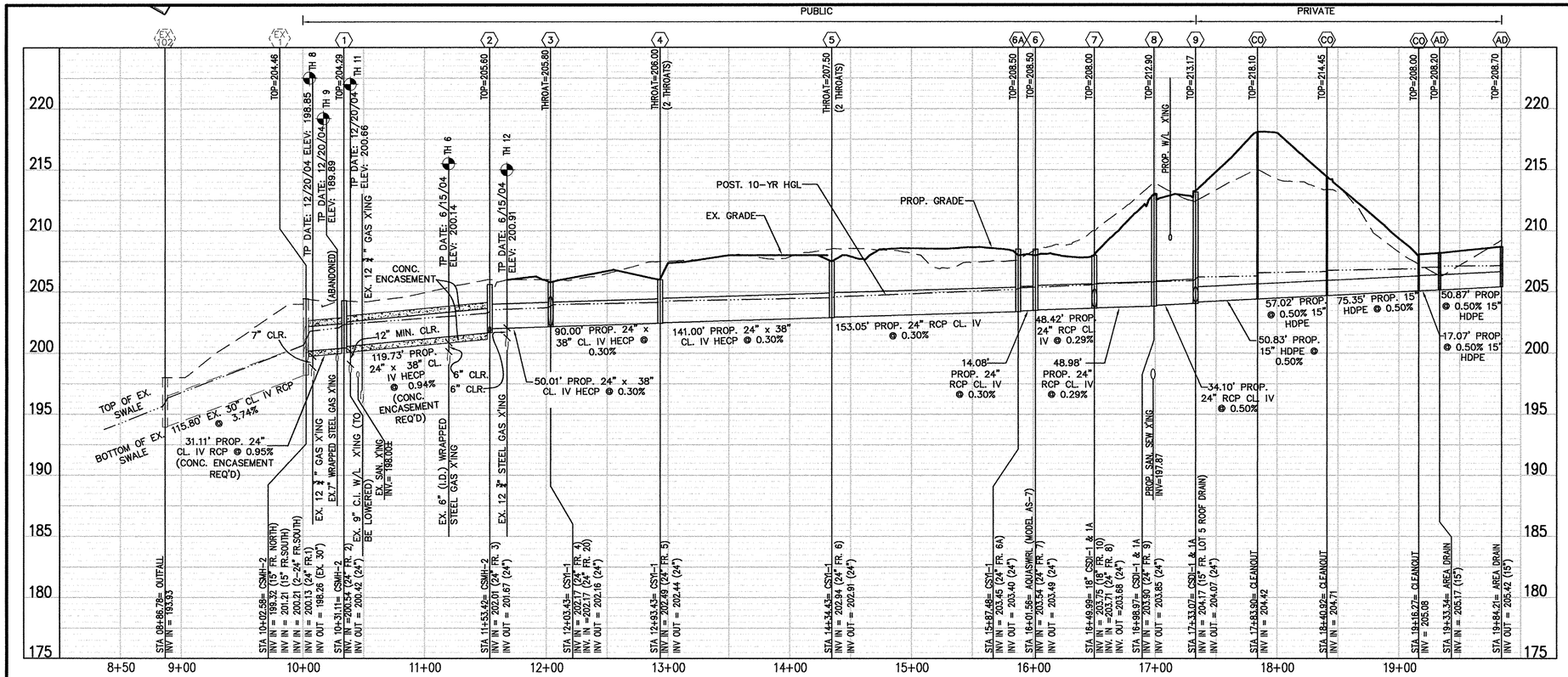
JOB No. 2267-01-001

DATE : OCTOBER, 2016

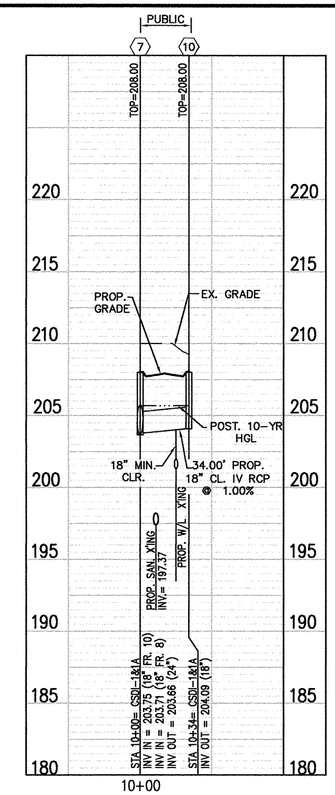
FILE No. 2267-D-CP-003

SHEET C10.00

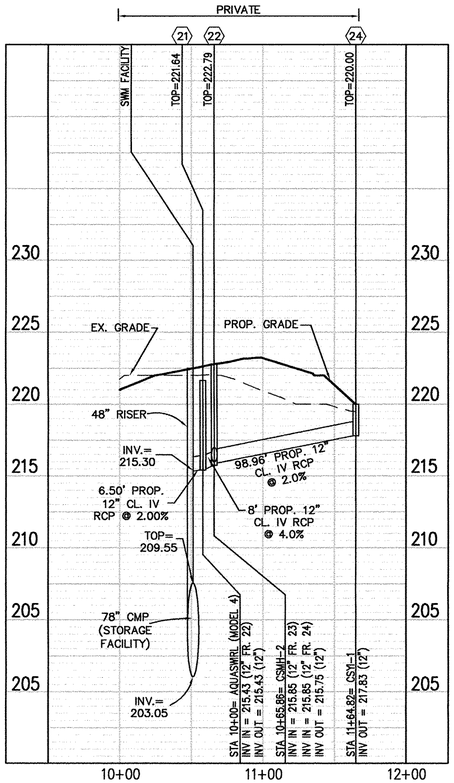
Cad file name: I:\2267 - Janneys & Quaker\2267-01-001 (BNG)\Engineering\Eng Plans\2267-01-001-FDP-3D.dwg



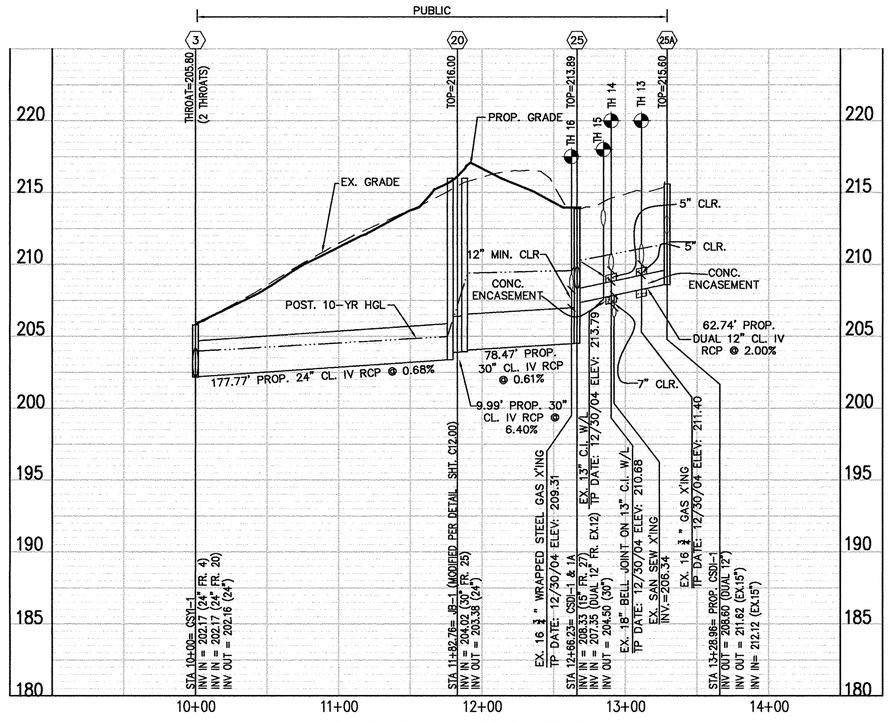
24" STORM SEWER AD TO EX. 1



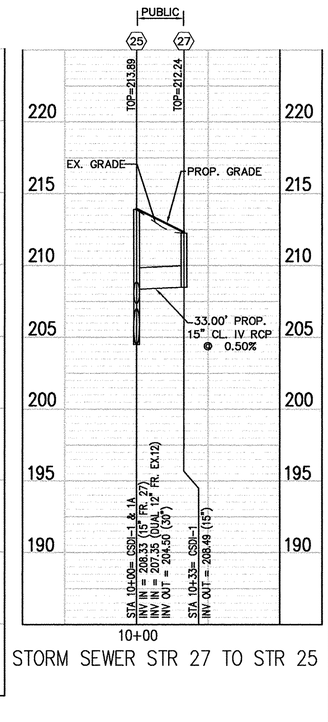
18" STORM SEWER STR 10 TO STR 8



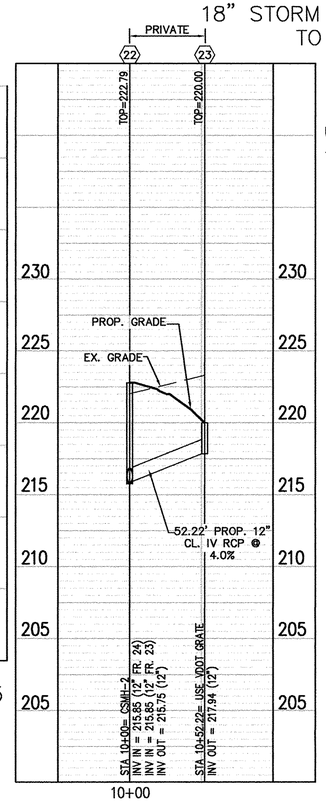
STORM SEWER STR 24 TO STR 21



STORM SEWER STR 25 TO 25A



STORM SEWER STR 27 TO STR 25



STORM SEWER STR 22 TO STR 23

NOTES:

1. SEE SHEET C13.10 FOR CONCRETE ENCASEMENT DETAIL.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

Bowman

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STORM SEWER PROFILES

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP	JWM	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=50'
V: 1"=5'

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C10.10

Cad file name: I:\2267 - Jennys & Dunbar\2267-01-001 (Civil)\Engineering\Eng Plans\2267-01-001-PSP-PRSTM.dwg

STORM SEWER COMPUTATIONS

STRUCTURE		DRAINAGE AREA	RUN-OFF COEF	"CA"		INLET TIME	RAIN FALL	RUNOFF "Q"	LENGTH	SLOPE	MANNING'S "n" VALUE	DIAMETER	CAPACITY	Q_{runoff} / $Q_{capacity}$	VELOCITY	FLOW TIME	MIN SLOPE	REMARKS
From	To	(ACRES) "A"	"C"	Increment	Accumulated	Min.	In./Hr.	C.F.S.	Feet	Feet/Feet	RCP / HECP	Inches	C.F.S.	%	F.P.S.	Seconds	Feet/Feet	
27	25	0.50	0.54	0.27	0.27	5	9	2.43	33	0.0050	0.015	15	3.95	61.46	3.22	10	0.0019	RCP
25A	25	1.66	0.58	0.96	0.96	5	9	8.67	62	0.0161	0.015	2-12	8.74	99.14	5.56	11	0.0181	dual 12" RCP
25	20	1.18	0.54	0.64	1.87	5	9	16.83	78.4	0.0068	0.015	30	29.35	57.35	5.98	13	0.0022	RCP
23	22	1.12	0.53	0.59	0.59	5	9	5.34	51.5	0.0474	0.015	12	6.71	79.62	8.54	6.03	0.0298	RCP
24	22	0.12	0.52	0.06	0.06	5	9	0.56	91.9	0.0282	0.015	12	5.18	10.85	6.59	14	0.0003	RCP
22	21	--	--	0.00	0.66	5	9	5.90	8	0.0500	0.015	12	6.89	85.68	8.77	1	0.0364	RCP
20	3	--	--	0.00	0.14 *	5	n/a	10.35 **	185.3	0.0066	0.015	24	15.93	64.96	5.07	37	0.0028	RCP; ** Value from Hydrograph Addition (See this sheet)
10	7	0.24	0.65	0.16	0.16	5	9	1.40	35.1	0.0094	0.015	18	8.82	15.92	4.99	7	0.0002	RCP
9	8	1.30	0.70	0.91	0.91	5	9	8.19	34.8	0.0060	0.015	24	15.19	53.91	4.84	7	0.0017	RCP
8	7	0.22	0.58	0.13	1.04	5	9	9.34	49	0.0051	0.015	24	14.01	66.67	4.46	11	0.0023	RCP
7	6	0.31	0.59	0.18	1.38	5	9	12.39	48.42	0.0039	0.015	24	12.25	101.14	3.90	12	0.0040	RCP
6	6A	--	--	0.00	1.38	5	9	12.39	14.08	0.0028	0.015	24	10.38	119.37	3.30	4	0.0040	RCP
6A	5	--	--	0.00	1.38	5	9	12.39	152.7	0.0012	0.015	24	6.79	182.34	2.16	71	0.0040	RCP
5	4	0.59	0.36	0.21	1.59	5	9	14.30	140.5	0.0027	0.015	30	18.49	77.33	3.77	37	0.0017	24" x 38" HECP
4	3	0.51	0.38	0.19	1.78	5	9	16.04	91.6	0.0033	0.015	30	20.44	78.48	4.16	22	0.0021	24" x 38" HECP
3	2	0.23	0.41	0.09	1.88	5	9	16.89	51	0.0163	0.015	30	45.44	37.18	9.26	6	0.0023	24" x 38" HECP
2	1	0.39	0.60	0.23	2.11	5	9	19.00	121.7	0.0082	0.015	30	32.23	58.95	6.57	19	0.0030	24" x 38" HECP

HYDROGRAPH ADDITION FOR RUNS 20 - 3

Uncontrolled CA thru 3-2 = 1.95

	Time (min)	Unit Hydrograph (for Tc=5min)	Uncontrolled Hydrograph (thru 3-2)	SWM ROUTING	Hydrograph (thru 3-2)	
	0	0.00	0.00	0.00	0.00	
	5	9.00	17.52	1.30	18.82	<= Peak thru system
	10	5.79	11.27	1.96	13.23	
	15	4.28	8.33	8.41	16.74	
**	17	3.94	7.67	10.35	18.02	
*	20	3.43	6.68	10.35	17.03	
	25	2.83	5.51	7.72	13.23	
	30	2.40	4.67	6.70	11.37	
	35	2.08	4.05	5.78	9.83	
	40	1.82	3.54	5.06	8.60	
	45	1.62	3.15	4.50	7.65	
	50	1.46	2.84	3.99	6.83	
	55	1.34	2.61	3.56	6.17	
	60	1.23	2.39	3.29	5.68	
	65	1.13	2.20	3.01	5.21	
	70	1.03	2.01	2.76	4.77	
	75	0.92	1.79	2.48	4.27	
	80	0.82	1.60	2.21	3.81	
	85	0.72	1.40	2.13	3.53	
	90	0.62	1.21	2.12	3.33	
	95	0.51	0.99	2.10	3.09	
	100	0.41	0.80	2.07	2.87	
	105	0.31	0.60	2.03	2.63	
	110	0.21	0.41	1.99	2.40	
	115	0.10	0.19	1.94	2.13	
	120	0.00	0.00	1.88	1.88	

Equivalent CA for Controlled portion thru pipe 3-2 = 1.3 cfs/9in.hr = 0.14*

** MAX FLOW OUT OF STRUCTURE 20 = 10.35 AT 17 MINUTES. 0.14 CA IS USED FOR COMPUTATIONS OF PIPES DOWNSTREAM OF STRUCTURE 3.

10-YR YEAR HYDRAULIC GRADELINE COMPUTATIONS

	LOSS IN PIPE (FRICTION)						STRUCTURE LOSS																
INLET	OUTLET				Sf		FRICTION	Invert of	MINIMUM					Vi^2						1.3	0.5	SURFACE	RIM	
NO.	WS	Do	Qo	Lo	%	Hf	W.S.E.	pipe out	W.S.E.	Vo	Ho	Qi	Vi	QiVi	2g	Hi	ANGLE	K	Hd	Ht	Ht	Ht	ELEV.	ELEV.	DIFF
EX 1	195.93	30	71.42	115.80	4.09	4.7362	200.67	198.26	200.26	5.83	0.13	19.00	6.05	114.90	0.57	0.20	18	0.14	0.08	0.41	---	0.20	200.87	204.46	3.59
1	201.79	24	19.00	31.11	0.94	0.2910	202.08	200.48	202.08	6.05	0.14	19.00	6.05	114.90	0.57	0.20	35	0.33	0.19	0.53	---	0.26	202.35	204.29	1.94
2	202.35	24	19.00	119.73	0.28	0.3406	202.69	201.67	203.27	6.05	0.14	16.89	5.38	90.84	0.45	0.16	72	0.62	0.28	0.58	---	0.29	203.56	205.60	2.04
3	203.56	24	16.89	50.01	0.22	0.1125	203.67	202.12	203.72	5.38	0.11	16.04	5.11	81.94	0.41	0.14	67	0.59	0.24	0.49	---	0.25	203.97	205.80	1.83
4	203.97	24	16.04	90.00	0.20	0.1826	204.15	202.44	204.04	5.11	0.10	14.30	4.55	65.09	0.32	0.11	0	0.00	0.00	0.21	---	0.11	204.26	206.00	1.74
5	204.26	24	14.30	141.00	0.16	0.2273	204.48	202.92	204.52	4.55	0.08	12.39	3.94	48.85	0.24	0.08	0	0.00	0.00	0.16	---	0.08	204.60	207.50	2.90
6	204.60	24	12.39	153.05	0.40	0.6086	205.21	203.43	205.03	3.94	0.06	12.39	3.94	48.85	0.24	0.08	48	0.45	0.11	0.25	---	0.13	205.34	208.50	3.16
7	205.34	24	12.39	62.51	0.40	0.2486	205.59	203.66	205.26	3.94	0.06	9.34	2.97	27.76	0.14	0.05	55	0.51	0.07	0.18	---	0.09	205.68	208.00	2.32
8	205.68	24	9.34	48.98	0.23	0.1107	205.79	203.85	205.45	2.97	0.03	8.19	2.61	21.35	0.11	0.04	86	0.68	0.07	0.14	---	0.07	205.86	212.90	7.04
9	205.86	24	8.19	34.10	0.17	0.0593	205.92	204.07	205.67	2.61	0.03	8.19	6.67	54.66	0.69	0.24	52	0.49	0.34	0.60	---	0.30	206.22	213.17	6.95
CO 1	206.22	15	8.19	50.83	0.17	0.0883	206.31	204.42	205.42	6.67	0.07	8.19	6.67	54.66	0.69	0.12	53	0.49	0.34	0.53	---	0.27	206.57	218.10	11.53
CO 2	206.57	15	8.19	57.02	0.17	0.0991	206.67	204.71	205.71	6.67	0.07	8.19	6.67	54.66	0.69	0.12	0	0.00	0.00	0.19	---	0.10	206.77	214.45	7.68
CO 3	206.77	15	8.19	75.35	0.17	0.1310	206.90	205.08	206.08	6.67	0.07	8.19	6.67	54.66	0.69	0.12	0	0.00	0.00	0.19	---	0.10	206.99	208.00	1.01
AD	206.99	15	8.19	17.07	0.17	0.0297	207.02	205.17	206.17	6.67	0.07						0	0.00	0.00	0.07	0.09	0.04	207.11	208.20	1.09
10	205.68	18	1.40	34.00	0.02	0.0081	205.68	204.09	205.29	0.79	0.00	0.00					0	0.00	0.00	0.00	0.00	0.00	205.69	208.00	2.31
20	203.97	24	10.35	177.77	0.28	0.4934	204.46	203.38	204.98	3.29	0.04	16.83	3.43	57.70	0.18	0.06	67	0.59	0.11	0.21	---	0.11	205.09	216.00	10.91
25	209.40	30	16.83	78.47	0.22	0.1752	209.58	204.50	206.50	3.43	0.05	8.67	5.52	47.80	0.47	0.17	119	0.70	0.33	0.54	0.70	0.35	210.28	213.89	3.61
25A	210.28	2-12	8.67	62.74	1.81	1.1337	211.41	207.37	208.17	5.52	0.12						63	0.57	0.00	0.12	0.15	0.08	211.57	215.60	4.03

Hi = 0.35 * Vi^2 / 2g Ht = Ho + Hi + Hd 90 K=0.70 50 K=0.47 20 K=0.16
Ho = 0.25 * Vo^2 / 2g FINAL H = Hf + Ht 80 K=0.66 40 K=0.38 15 K=0.10
Hd = K * Vi^2 / 2g 70 K=0.61 30 K=0.28
60 K=0.55 25 K=0.22

** Initial Water Surface Elevation taken from pipe below EX. 5 flowing at 80% full.

CURB INLET COMPUTATIONS

Label	Discharge (cfs)	Slope (ft/ft)	Spread (ft)	Gutter Width (ft)	Gutter Cross Slope (ft/ft)	Road Cross Slope (ft/ft)	Mannings Coefficient	Local Depression (in)	Local Depression Width (ft)	Efficiency	Curb Opening Length (ft)	Intercepted Flow (cfs)	Bypass Flow (cfs)	Depth (ft)	Flow Area (ft^2)	Gutter Depression (in)	Total Depression (in)	Velocity (ft/s)	Equivalent Cross Slope (ft/ft)	Length Factor	Total Interception Length (ft)
Existing #03	2.19	0.0207	7.16	2.00	0.0625	0.0208	0.015	2	2.00	0.85	8	1.86	0.33	0.23	0.60	1	3	3.55	0.1077	0.65	12.33
Existing #12	5.26	0.0200	10.63	2.00	0.0625	0.0208	0.015	2	2.00	0.59	8	3.11	2.15	0.30	1.30	1	3	4.18	0.0842	0.39	20.44
Proposed #07	0.58	0.1000	1.83	2.00	0.0625	0.0208	0.015	2	2.00	1.00	12	0.58	0.00	0.11	0.10	1	3	5.53	0.1458	1.27	9.44
Proposed #08	1.27	0.1000	3.32	2.00	0.0625	0.0208	0.015	2	2.00	0.98	12	1.25	0.02	0.15	0.20	1	3	6.42	0.1420	0.90	13.32
Proposed #09	3.64	0.1000	6.25	2.00	0.0625	0.0208	0.015	2	2.00	0.72	12	2.64	1.00	0.21	0.50	1	3	7.43	0.1157	0.51	23.45
Proposed #10	1.24	0.1000	3.26	2.00	0.0625	0.0208	0.015	2	2.00	0.99	12	1.22	0.02	0.15	0.20	1	3	6.40	0.1424	0.91	13.17
Proposed #25	8.07	0.0300	11.71	2.00	0.0625	0.0208	0.015	2	2.00	0.62	12	5.05	3.08	0.33	1.50	1	3	5.38	0.0790	0.42	28.80
Proposed #27	3.24	0.0300	7.70	2.00	0.0625	0.0208	0.015	2	2.00	0.91	12	2.80	0.28	0.24	0.70	1	3	4.40	0.1033	0.74	16.31

YARD INLET AND AREA DRAIN COMPUTATIONS

Structure	Runoff Computation				Weir Computation				Orifice Computation				Grate Elev.	10-Year WSE	Comments
	C	I	A	Q	C	L (total)	L (50%)	Hw	C	A (total)	A (50%)	Ho			
3	0.42	9.00	0.25	0.95	3.00	8.00	4.00	0.18	0.60	4.00	2.00	0.01	205.80	205.98	4 THROATS
4	0.39	9.00	0.53	1.86	3.00	8.00	4.00	0.29	0.60	4.00	2.00	0.04	206.06	206.35	4 THROATS
5	0.37	9.00	0.61	2.03	3.00	8.00	4.00	0.31	0.60	4.00	2.00	0.04	207.50	207.81	4 THROATS
AD 1 (Lot 5)	0.70	9.00	0.11	0.69	3.00	5.40	2.70	0.19	0.60	0.64	0.32	0.20	208.20	208.40	Nyloplast 15" Grate
AD 2 (Lot 5)	0.39	9.00	0.31	1.09	3.00	6.48	3.24	0.23	0.60	1.35	0.68	0.11	208.70	208.93	Nyloplast 24" Grate

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ESI Peer Review

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CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
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STORM SEWER AND INLET COMPUTATIONS
OAK GROVE
CITY OF ALEXANDRIA
VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER
10/28/16

PLAN STATUS
10/28/16 DSP EXTENSION

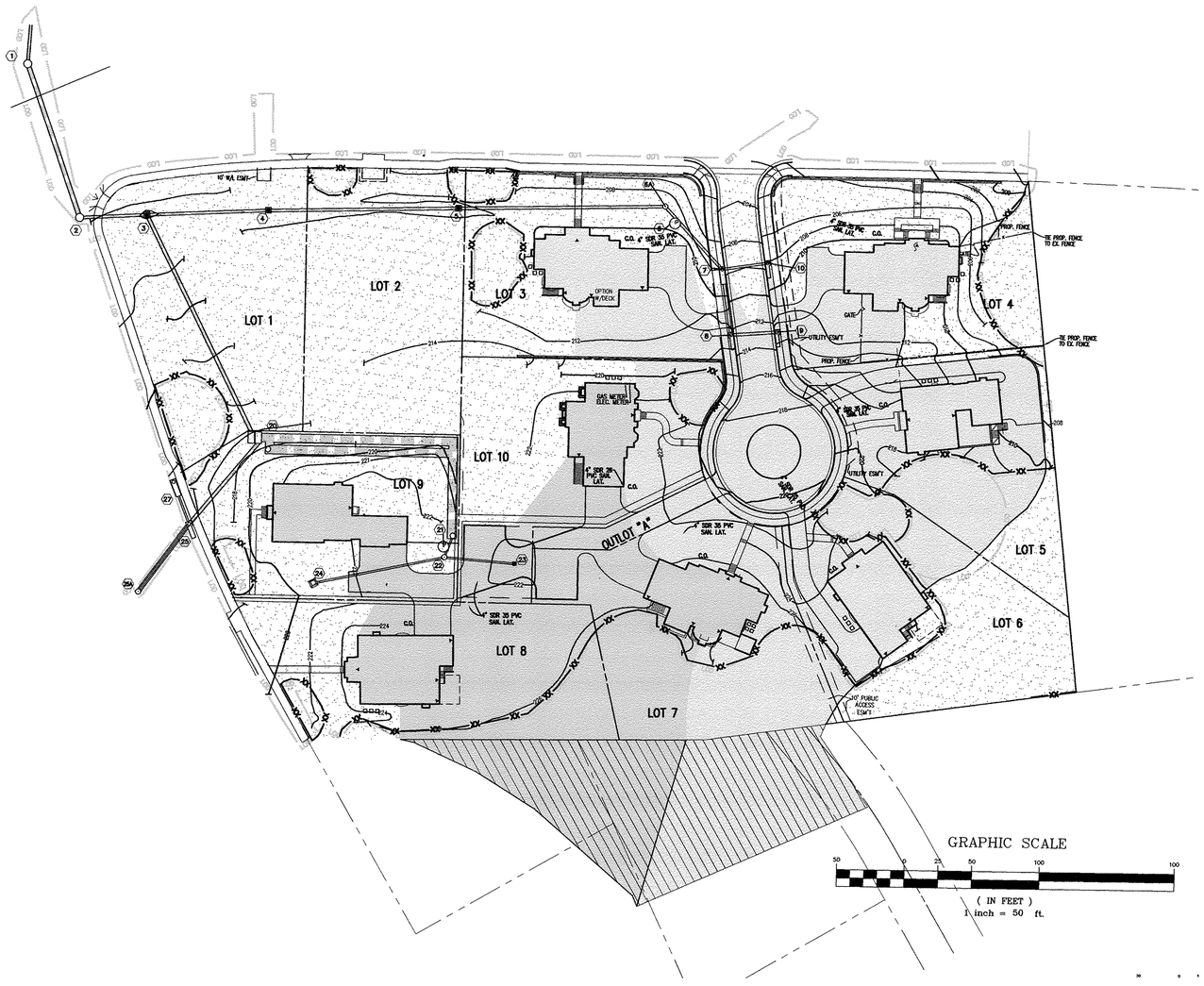
DATE	DESCRIPTION

SCP	DAW	STL
DESIGN	DRAWN	CHKD

SCALE H: V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C10.20

Cad file name : N:\2267 - Jonnys & Tucker\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-FDP-STM-COMPS.dwg

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN



GRAPHIC SCALE

50 0 25 50 100 100

(IN FEET)
1 inch = 50 ft.

TREATED ON-SITE AREA BY AQUASWIRL AT STORM DRAIN STRUCTURE #21 (1.15 AC., 0.55 IMP AC.)

TREATED OFF-SITE AREA BY AQUASWIRL AT STORM DRAIN STRUCTURE #21 (0.25 AC., 0.01 IMP AC.)

TREATED ON-SITE AREA BY AQUASWIRL AT STORM DRAIN STRUCTURE #6 (1.85 AC., 0.88 IMP. AC.)

TREATED OFF-SITE AREA BY AQUASWIRL AT STORM DRAIN STRUCTURE #6 (0.28 AC., 0.02 IMP. AC.)

UNTREATED ON-SITE AREAS (3.08 AC., 0.06 IMP. AC.)

AQUASWIRL COMPUTATIONS

STRUCTURE # 21:
USING 1.75 IN/HR, Tc = 5min PER MEMO TO INDUSTRY NO. 99-01, DATED 7/30/99)
TOTAL CA = 0.80 (FROM STORM COMPS. ON SHEET C10.20)
TREATED FLOW = 0.80 * 1.75 IN/HR = 1.40 cfs
PEAK FLOW = 0.80 * 9 IN/HR = 7.20 cfs
PER AQUASHIELD SIZING CHART, USE MODEL AS-4 w/ CFD*

STRUCTURE # 6:
USING 1.75 IN/HR, Tc = 5min PER MEMO TO INDUSTRY NO. 99-01, DATED 7/30/99)
TOTAL CA = 1.30 (FROM STORM COMPS. ON SHEET C10.20)
TREATED FLOW = 1.30 * 1.75 IN/HR = 2.28 cfs
PEAK FLOW = 1.30 * 9 IN/HR = 11.70 cfs
PER AQUASHIELD SIZING CHART, USE MODEL AS-7 /w CFD*

* STRUCTURE TO INCLUDE (CFD) CONVEYANCE FLOW DIVERSION

BMP NARRATIVE

WITH THE PROPOSED IMPROVEMENTS RESULTING IN LESS THAN 41% IMPERVIOUS AREA ON THIS 6.07 AC. SITE, THIS SITE IS CONSIDERED AS NEW DEVELOPMENT FOR THE PURPOSES OF WATER QUALITY TREATMENT. THEREFORE, WORKSHEET 'A' OF THE ALEXANDRIA SUPPLEMENT TO THE CBPO HANDBOOK IS BEING UTILIZED. WITH A PHOSPHORUS REMOVAL EFFICIENCY OF 15%, THE TREATMENT FOR THIS SITE IS BEING PROVIDED WITH TWO SEPARATE AQUASWIRLS LOCATED ON LOTS 3 AND 9 (PROPOSED STRUCTURES #6 AND #21). AS NOTED ON WORKSHEET 'A' ON THIS SHEET, THE PROPOSED BMP SYSTEM IS DESIGNED TO ACCOMMODATE FOR AN ADDITIONAL 600 S.F./LOT OF IMPERVIOUS ACRES. BY TREATING THE WQV, AS SHOWN IN THE AQUASWIRL COMPUTATIONS, THIS SITE SATISFIES AND CONFORMS TO ARTICLE XIII OF THE AZO AND CONDITION #28 IMPOSED ON THIS SITE.

In addition to BMP worksheets found in the BMP handbook that are required to be included for the project, the following tables must also be included and submitted in the final plans.

Project Description

Development or Redevelopment

Drainage Area	Impervious	Pervious	Total
Site Area	1.49	4.58	6.07
On-Site Treated	1.43	1.57	3.00
Off-Site Treated	0.03	0.50	0.53
Total Treated	1.46	2.07	3.53
On-Site Impervious Areas Disconnected by a Vegetated Buffer			
Total Treated or Disconnected			3.53

Water Treatment on site

BMP Type	Area Treated by BMP (acres)	Impervious area treated by BMP (acres)	Treated efficiency %
AQUASWIRL (SD #21)	1.40	0.56	15.00%
AQUASWIRL (SD #6)	2.13	0.90	15.00%

Miscellaneous

Total WQV Treated: yes no
Detention on site: yes no

Project is within which watershed: TAYLOR RUN
Project discharges to which body of water? CAMERON RUN

NOTES

1. THE STORMWATER BEST MANAGEMENT PRACTICES (BMPS) REQUIRED FOR THIS PROJECT SHALL BE CONSTRUCTED AND INSTALLED UNDER THE DIRECT SUPERVISION OF THE DESIGN PROFESSIONAL OR HIS DESIGNATED REPRESENTATIVE. PRIOR TO RELEASE OF THE PERFORMANCE BOND, THE DESIGN PROFESSIONAL SHALL SUBMIT A WRITTEN CERTIFICATION TO THE DIRECTOR OF T&ES THAT THE BMPS ARE:
   A) CONSTRUCTED AND INSTALLED AS DESIGNED AND IN ACCORDANCE WITH THE APPROVED FINAL SITE PLAN. CLEAN AND FREE OF DEBRIS, SOIL, AND LITTER BY EITHER HAVING BEEN INSTALLED OR BROUGHT INTO SERVICE AFTER THE SITE WAS STABILIZED.
   B) CLEAN AND FREE OF DEBRIS, SOIL AND LITTER BY EITHER HAVING BEEN INSTALLED OR BROUGHT INTO SERVICE AFTER THE SITE WAS STABILIZED. (T&ES)
   C) THE SURFACE APPARATUSES ASSOCIATED WITH THE ON-SITE STRUCTURAL STORMWATER BEST MANAGEMENT PRACTICES (BMPS) SHALL BE MARKED TO THE SATISFACTION OF THE DIRECTOR OF T&ES TO IDENTIFY THEM AS PART OF A STRUCTURAL BMP SYSTEM. (T&ES)
2. ALL DRAINAGE AREAS TO STORM FILTERS SHOULD BE STABILIZED PRIOR TO INSTALLING CARTRIDGES. THE STORMWATER BEST MANAGEMENT PRACTICES (BMPs) REQUIRED FOR THIS PROJECT SHALL BE CONSTRUCTED AND INSTALLED UNDER THE DIRECT SUPERVISION OF THE DESIGN ENGINEER OR HIS DESIGNATED REPRESENTATIVE. THE DESIGN ENGINEER SHALL MAKE A WRITTEN CERTIFICATION TO THE CITY THAT THE BMPs ARE CONSTRUCTED AND INSTALLED AS DESIGNED AND IN ACCORDANCE WITH THE APPROVED FINAL SITE PLAN.
3. THE SURFACE APPARATUSES ASSOCIATED WITH THE ON-SITE STRUCTURAL BMP's SHALL BE MARKED TO THE SATISFACTION OF THE DIRECTOR OF T&ES TO IDENTIFY THEM AS PART OF THE STRUCTURAL BMP SYSTEM.
4. THE DEVELOPER SHALL FURNISH THE OWNERS WITH AN OPERATION AND MAINTENANCE MANUAL FOR ALL BEST MANAGEMENT PRACTICES (BMP's) ON THE PROJECT. THE MANUAL SHALL INCLUDE AN EXPLANATION OF THE FUNCTIONS AND OPERATIONS OF EACH BMP AND ANY SUPPORTING UTILITIES, CATALOG CUTS ON ANY MECHANICAL OR ELECTRICAL EQUIPMENT, A SCHEDULE OF ROUTINE MAINTENANCE FOR THE BMP(s) AND SUPPORTING EQUIPMENT, AND A COPY OF THE MAINTENANCE AGREEMENT WITH THE CITY.
5. PRIOR TO RELEASE OF THE PERFORMANCE BOND, THE APPLICANT IS REQUIRED TO SUBMIT A CERTIFICATION BY A QUALIFIED PROFESSIONAL TO THE SATISFACTION OF THE DIRECTOR OF T&ES THAT THE EXISTING STORMWATER MANAGEMENT FACILITY ADJACENT TO THE PROJECT AND ASSOCIATED CONVEYANCE SYSTEMS WERE NOT ADVERSELY AFFECTED BY THE CONSTRUCTION AND THAT THEY ARE FUNCTIONING AS DESIGNED AND ARE IN A CONDITION SIMILAR TO PRIOR TO CONSTRUCTION BEGAN. IF MAINTENANCE OF THE FACILITY OR SYSTEMS WERE REQUIRED PERFORMED.

BASIC MAINTENANCE GUIDELINES:
A. A MAINTENANCE CONTRACT IS REQUIRED AS A CONDITION OF APPROVAL BY AGENCY.
B. MINIMUM ANNUAL MAINTENANCE INCLUDES:
   1. REMOVAL OF SEDIMENTS.
   2. CLEANING OR RECHARGING OF CARTRIDGES.
C. INSPECT SYSTEM CONDITION IN THE EVENT OF A 5 YEAR STORM OR GREATER.
D. REFER TO O&M GUIDELINES FOR COMPLETE DETAILS.

NOTE: FOLLOW ALL LOCAL, STATE, & FEDERAL SAFETY GUIDELINES.

Aqua-Swirl™ Sizing Chart

Aqua-Swirl™ Model	Swirl Chamber Diameter (ft)	Peak Treatment Design (on-line) (cfs)	Peak Flow / Treated Flow* (off-line) (cfs)	Inlet Pipe Diameter (can vary) (in)	Oil/Debris Storage Capacity (gal)	Sediment Storage Capacity (ft^3)
AS-3	3.25	1.8	5.5 / 1.8	8- 10	110	20
AS-4	4.25	3.0	9.0 / 3.0	10 - 12	190	32
AS-5	5.0	4.25	13.0 / 4.25	12 Max.	270	45
AS-6	6.0	6.25	18.0 / 6.25	14 - 16	390	65
AS-7	7.0	8.5	25.0 / 8.5	16 - 18	540	90
AS-8	8.0	11.0	33.0 / 11.0	18 - 20	710	115
AS-9	9.0	14.0	42.0 / 14.0	20 Max.	910	145
AS-10	10.0	17.5	51.0 / 17.5	22 Max.	1130	180

ALEXANDRIA, VIRGINIA
PHOPHOROUS
LOADING COMPUTATIONS

WORKSHEET A: NEW DEVELOPMENT

1. Compile Site-specific data and determine site impervious (Isite).

POST-DEVELOPMENT

A* = **6.07** ac.
I_s** stuctures = **0.13** ac. Rv-post = 0.05 + (0.009 * I)
parking lot = **1.22** ac. = 0.05 + 0.009 (**24.5**)
roadway = ac. = **0.271** unitless
other = **0.14** ac.
= ac. Rwatershed is embedded in the formula
= ac. in step 4.

Total I_s = **1.49** ac.

I site = (total I_s/A) * 100
= **25** percent expressed in whole numbers

*A is the total area of the site
** I_s is the toal amount of impervious cover.

2. Determine the need to continue.

I site = **25 %**
I watershed = 41 %

If I site < I watershed STOP and submit analysis to this point. WQV Default prevails. See p. 1-8 of the Alexandria Supplement.

BMP SUPPLEMENT **2/1/1992** **PAGE 1 OF 2** **PAGE 1-A2-2**

***PER CONDITION #28, AN ADDITIONAL 600 S.F. OF IMPERVIOUS ACRE PER LOT IS INCLUDED.

PER APPROVAL LETTER FROM ALEXANDRIA DEPARTMENT OF ENVIRONMENTAL QUALITY DATED 9/6/05, A MONETARY CONTRIBUTION SHALL BE MADE TO THE ALEXANDRIA WATER QUALITY IMPROVEMENT FUND PRIOR TO RELEASE OF THE FINAL SITE PLAN. SEE SHEET C11.10 FOR A COPY OF LETTER REFERENCED ABOVE.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

Bowman CONSULTING
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Phone: (703) 548-2188
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www.bowmanconsulting.com

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BMP COMPUTATIONS & DETAILS
OAK GROVE
CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

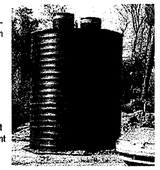
SCP	LEN	STL
DESIGN	DRAWN	CHKD

SCALE H: AS NOTED V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C 11.00

Cad file name : \\C\2267 - Jonneys & Quaker\2267-01-001 (DNG)\Engineering\Eng Plans\MINOR AMENDMENT 14\2267-01-001-TOP-BMP-COMPS.dwg

AquaShield
STORMWATER TREATMENT SOLUTIONS

AquaSwirl Introduction



The Aqua-Swirl™ Concentrator provides a highly effective means for the removal of sediment, floating debris and free-oil . Swirl technology , or vortex separation, is a proven form of pollutant removal utilized in the stormwater industry to accelerate gravitational separation. Independent university laboratory performance evaluations have shown the TSS removal of 91% calculated for a net annual basis. See the "Performance and Testing" Section for details.

Each Aqua-Swirl™ is constructed of High-Density Polyethylene (HDPE), and is therefore modular, lightweight and durable, eliminating the need for heavy lifting equipment during installation. Inspection and maintenance are made easy, with large risers that allow for both examination and cleanout without entering the chamber.

AquaSwirl Maintenance

Inspection and cleanout of the Aqua-Swirl™ is simple. The chamber can be inspected and maintained completely from the surface. Free-floating oil and floatable debris can be directly observed and removed through the provided service access.

Cleanout of accumulated sediment should to be performed when the usable sediment storage volume has been occupied. Sediment depths can be determined by lowering a measuring device (i.e. stadia rod) to the top of the sediment pile and to the water's surface.

A vacuum truck can be used to remove the accumulated sediment and debris. Disposal of the material is typically treated in the same fashion as catch basin cleanouts. AquaShield™ recommends that all materials removed be handled and disposed of in accordance with local and state requirements.

Performance Evaluation

Aqua-Swirl™

A generally accepted performance evaluation, or quantifying "yard stick" for stormwater treatment structures, is the removal of total suspended solids (TSS) over a period of time (not necessarily individual storm events). As a pre-engineered stormwater treatment system whose primary removal mechanism is gravity separation (e.g. vortex separators), the Aqua-Swirl™ Concentrator can be effectively evaluated in a laboratory setting.

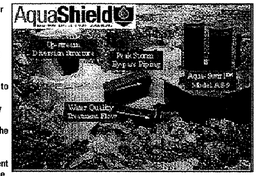
A full-scale Model AS-3 Aqua-Swirl™ was tested by Tennessee Tech University's Department of Civil and Environmental Engineering. Their findings indicate that the Aqua-Swirl™ Concentrator has an estimated net annual TSS removal efficiency of 91% based on the testing and calculations provided in the report (link on right-side menu). Additional testing and performance evaluations of the Aqua-Swirl™ are continuing at the University.

AquaSwirl Installation

- The Aqua-Swirl™ system has been designed and fabricated as a modular unit to facilitate easy installation of the system.
- Because AquaShield™'s systems are fabricated from HDPE, the Aqua-Swirl™ is lightweight, and can be installed without the use of heavy lifting equipment.
- Lifting supports are provided on each unit, to allow easy offloading and installation with a backhoe.
- Compared to concrete systems, using an Aqua-Swirl™ can significantly reduce installation costs.
- In addition, stub-outs for the inlet and outlet are provided. This allows the contractor to simply attach the storm drain pipes to the Aqua-Swirl™ with rubber couplings. Typically, an AquaShield™ representative is present on-site to assist in the installation process.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

AquaSwirl Operation

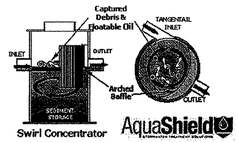


As recommended by the Center for Watershed Protection and most municipalties, Aqua-Swirl™ systems operate in an "off-line" configuration providing full treatment of the "first flush" (or approximately 1/3) of the peak design storm diverted to out structure, as shown in the photograph. This allows roughly 90% – 95% of a site's annual runoff volume to be treated by the Aqua-Swirl™.

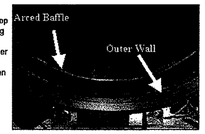
The larger portion of less frequent storm events are routed past the treatment chamber, thereby reducing turbulence within the system and eliminates the possibility of re-suspension of previously captured pollutants.

The operation begins when stormwater enters the Aqua-Swirl™ by means of its tangential inlet pipe, which induces a circular (or vortex) flow pattern. Because stormwater flow is intermittent by nature, the Aqua-Swirl™ Concentrator retains water between storm events providing both "quiescent and dynamic" settling of inorganic solids. The dynamic settling occure during each storm event, while the quiescent settling takes place between successive storms. A combination of gravitational and hydrodynamic drag forces encourages the solids to drop out of the flow and migrate to the center of the chamber where velocities are lowest.

Given that a large percentage of settleable solids in stormwater are reported to be small and have low settling velocities, the volume of water retained in the Aqua-Swirl™ Concentrator, providing the quiescent settling, increases its performance. Further, with inorganic particle sizes less than 200 microns, the water velocity needed to promote re-suspension increases due to increasing cohesiveness of finer sediment.



Arced Baffle - The treated flow exits the Aqua-Swirl™ behind an arced baffle. The top of the baffle is sealed, thereby elimminating any possible floatables toescape the system. A vent pipe is extended up the riser to expose the backside of the baffle to atmospheric conditions, preventing a siphon from forming at the bottom of the baffle.



Buoyancy – All Aqua-Swirl™ systems are supplied with an octagonal base plate, which extends a minimum of 6" beyond the outside diameter of the swirl chamber. The function of the extension on this base is to provide additional surface area to counter any buoyant force exerted on the system. The forces created on the base plate by the weight of the surrounding fill material offsets the buoyant force generated within the system. If needed, concrete can be poured directly onto the base plate to provide additional downward force. AquaShield™ engineering staff can provide buoyancy calculations for your site specific conditions.

Traffic Loading – When installed in traffic areas, the system will be designed to withstand H20 loading. In order to accomplish this, a reinforced concrete pad shall be poured in place above the system.

See the "Install and Fabrication" section for sample concrete pad details adn further details on installation and the use of HDPE.

Retrofit Applications – The Aqua-Swirl™ system is designed so that it can easily be used for retrofit applications. With the invert of the inlet and outlet pipe at the same elevation, the Aqua-Swirl™ can easily be inserted into existing drainage system networks. Futhermore, because of the lightweight nature and small footprint of the Aqua-Swirl™, existing infrastructure utilities (i.e., wires, poles, trees) will be unaffected in installation.

AquaShield™ Stormwater Treatment Systems

Aqua-Swirl™ Sizing Chart *(English)*

Aqua-Swirl™ Model	Swirl Chamber Diameter (ft.)	Maximum Stub-Out Pipe Outer Diameter (in.)		Water Quality Treatment Flow¹ (cfs)	Oil/Debris Storage Capacity (gal)	Sediment Storage Capacity (ft^3)
		On/Off-line	CMP			
AS-2	2.50	8	12	1.1	37	10
AS-3	3.25	10	16	1.8	110	20
AS-4	4.25	12	18	3.2	190	32
AS-5	5.00	12	24	4.4	270	45
AS-6	6.00	14	30	6.3	390	65
AS-7	7.00	16	36	8.6	540	90
AS-8	8.00	18	42	11.2	710	115
AS-9	9.00	20	48	14.2	910	145
AS-10	10.0	22	54	17.5	1130	180
AS-12	12.0	24	48	25.2	1698	270
AS-XX*	Custom	--	--	>26	--	--

*Higher water quality treatment flow rates can be designed with multiple swirls.

1) *The Aqua-Swirl™ Conveyance Flow Diversion (CFD) provides full treatment of the "first flush," while the peak design storm is diverted and channeled through the main conveyance pipe. Please refer to your local representative for more information.*

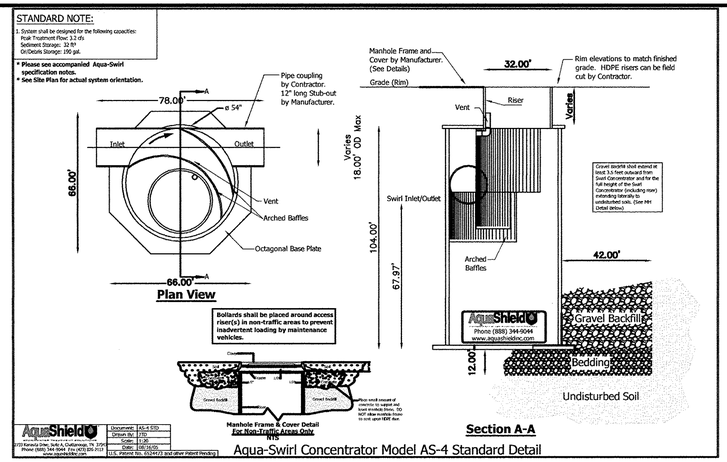
2) *Many regulatory agencies are establishing "water quality treatment flow rates" for their areas based on the initial movement of pollutants into the storm drainage system. The treatment flow rate of the Aqua-Swirl™ system is engineered to meet or exceed the local water quality treatment criteria. This "water quality treatment flow rate" typically represents approximately 90% to 95% of the total annual runoff volume.*

The design and orientation of the Aqua-Swirl™ generally entails some degree of customization. For assistance in design and specific sizing using hiscorical rainfall data, please refer to an AquaShield™ representative or visit our website at www.AquaShieldinc.com. CAD details and specifications are available upon request.

STANDARD NOTE:

1. System shall be designed for the following capacities:
Peak Treatment Flow: 3.3 cfs
Sediment Storage: 32 ft³
Oil/Debris Storage: 190 gal.

* Please see accompanied Aqua-Swirl specification notes.
* See Site Plan for actual system orientation.

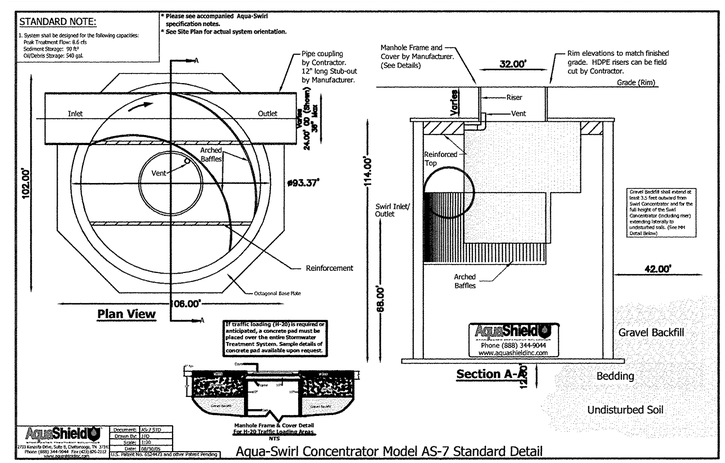


Aqua-Swirl Concentrator Model AS-4 Standard Detail

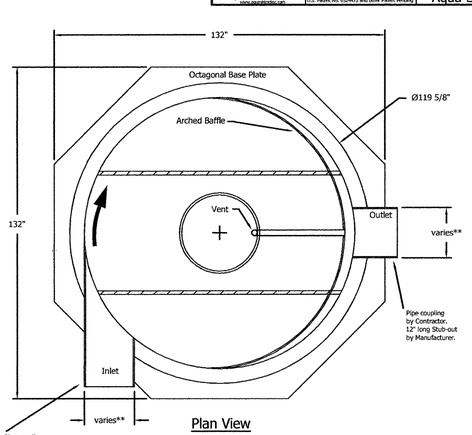
STANDARD NOTE:

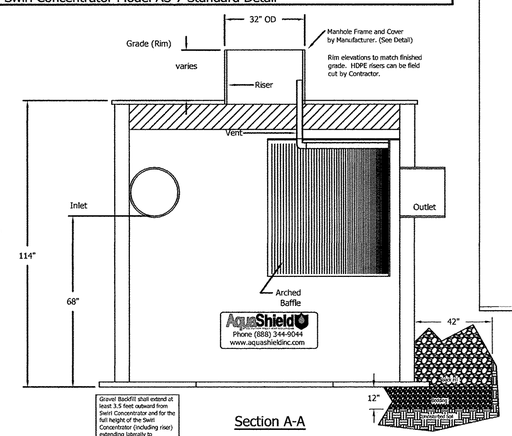
1. System shall be designed for the following capacities:
Peak Treatment Flow: 8.6 cfs
Sediment Storage: 90 ft³
Oil/Debris Storage: 540 gal.

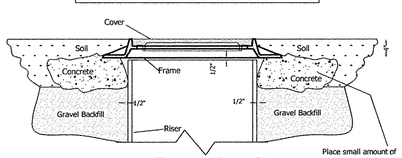
* Please see accompanied Aqua-Swirl specification notes.
* See Site Plan for actual system orientation.

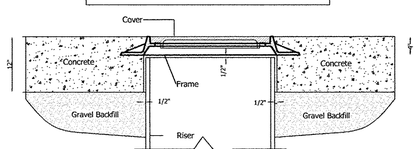


Aqua-Swirl Concentrator Model AS-7 Standard Detail









DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES
P. O. Box 178 - City Hall
alexandriava.gov Alexandria, Virginia 22313

September 6, 2005

Bowman Consulting
2121 Eisenhower Avenue, Suite 302
Alexandria, VA 22314

RE: Oak Grove
1400 Janney's Lane
DSP #2004-0005

Dear Mr. Wall:

This letter is in regard to your letter, dated July 27, 2005, requesting to meet the water quality management performance criteria requiring BMP treatment in a Chesapeake Bay Protection Area (Article XIII, Section 13-109(5)(a) by participating in the City's Water Quality Improvement Fund. You have requested to pay a fee in lieu of providing an on-site BMP as outlined in Article XIII, Section 13-110(A)(2). You have agreed to provide a monetary contribution of $4,068.00 (2,712 square feet impervious surface x $1.50/square foot) to the Alexandria Water Quality Improvement Fund. This represents 4% of the Water Quality Volume left untreated.

Your request has been approved. The procedure now is to scan your request letter onto your final plan on a sheet that is labeled BMP Details or something similar. Your final plan will be eligible for approval when you have paid the fee ($4,068.00). The approval of the plan (with your request therein) will act as the approval of your request.

Sincerely,

William Skrabak

William Skrabak,
Division Chief, DEQ

cc: Emily Baker, City Engineer
Gregory Tate, Site Plan Coordinator

Bowman
CONSULTING

July 27, 2005

City of Alexandria
Department of Environmental Quality
301 King Street, Room 3900
Alexandria, VA 22314
Attn: Mr. William Skrabak, Director of Department of Environmental Quality

Re: Oak Grove (DSP # 2004-0005)
Alternative Stormwater Management Equivalency Option

Dear Mr. Skrabak:

In response to comment #4 on the Fourth Submission of the Final Site Plan, please accept this letter on behalf of the applicant, Elm Street Development, as a request for approval for an alternative stormwater management equivalency option in the form of a monetary contribution to the Alexandria Water Quality Improvement Fund as permissible under Section 13-100 of Article XIII of the Alexandria Zoning Ordinance.

This request is being made because 0.06 Imp. Ac. (2,712 sf) of the site's 1.49 Imp. Ac. (65,095 sf) will be untreated due to site constraints. With all other impervious area on this site treated by Aquaswirls™ onsite, this untreated area is comprised of the hardscape within the proposed City Park, portions of the proposed roadway not being captured by the site's storm sewer system, and the lead walks for lots 3, and 4. These areas are not being treated because of the lack of depth for existing storm sewers serving this site. Below are some additional items that may be considered in the review of this request:

1. Although the hardscape within the park area will not be treated, a majority of the area sheet flows across the relatively flat (<10% slope) grass area prior to entering into the storm sewers. Therefore, some pollutants generated in this area will be removed.
2. 0.03 Imp. Ac. (1,377 sf) from offsite will pass through the Aquaswirl (structure 6). This impervious area comes from portions of Cathedral Ave., and existing rooftops which sheet flow onto this site.

At $1.50 per square foot of untreated impervious area, the monetary contribution to the Alexandria Water Quality Improvement Fund will be $4,068.

We appreciate the City's receptiveness and look forward to receiving approval for this request. Should you have any questions and/or concerns with this request, please feel free to contact our office at 703.548.2188 or via email at dwall@bowmancp.com.

Respectfully,

Bowman Consulting Group

David A. Wall, PE
Team Leader

Enclosures

cc: Jack Perkins – Elm Street Development
Jonathan Rak – McGuire Woods

Bowman Consulting Group, Ltd.
2121 Eisenhower Avenue • Suite 302 • Alexandria,VA 22314
Phone: 703.548.2188 • Fax: 703.683.5781 • www.bowmanconsulting.com

Bowman
CONSULTING

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Fax: (703) 683-5781

www.bowmanconsulting.com
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VIRGINIA

BMP DETAILS

OAK GROVE

CITY OF ALEXANDRIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 49224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
02/22/06	MINOR AMENDMENT
DATE	DESCRIPTION

SCP	LEN	STL
DESIGN	DRAWN	CHKD

SCALE H: AS NOTED V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C 11.10

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING

DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____

DIRECTOR DATE

CHAIRMAN, PLANNING COMMISSION DATE

DATE RECORDED _____

INSTRUMENT NO. DEED BOOK NO. PAGE NO.

Cad file name: K:\2267 – Janneys & Quaker\2267-01-001 (DNG)\Engineering\Eng Plans\MINOR AMENDMENT 14\2267-01-001-FDP-BMP-COMPS.dwg

STORMWATER MANAGEMENT NARRATIVE

This 6.19 acre site is located on the southeast quadrant of the intersection of Janney's Lane and Quaker Lane (the "intersection"). There are three outfalls for this site:

Eastern Sheetflow Outfall	Sheet flow to adjacent property along the eastern boundary.
Janney's Lane Outfall	Sheet flow into the eastbound lane of Janney's Lane
Existing Channel Outfall	The on-site storm system conveys flows into the storm drain system in the intersection of Janney's Lane and Quaker Lane.

With the proposed improvements to the site, the runoff to the "Eastern Sheetflow Outfall" and "Janney's Lane Outfall" will be reduced. An underground detention facility will be installed on Lot 9 to control a portion of the flows to the Existing Channel Outfall so as to meet the requirements of Article XIII and condition #28 which states the following:

a. The detention will be sized to provide excess capacity of an additional 600 square feet of impervious surface per lot.
c. The storm water management system must incorporate any impervious surface from the proposed Park area into the storm water detention design.
d. The final design of the storm water management system shall assure that sufficient storm water detention capacity is provided, such that the development when constructed, including additional impervious cover and landscape features reasonable likely to be constructed by future homeowners, will have no adverse impact on down steam property owners. A hydraulic study related to the adequacy of outfall will be required as stated in the Virginia State Erosion and Sediment Control Manual, Chapter IV (1992).

Eastern Sheetflow Outfall

As depicted as "Area 4" on sheet C12.20, the pre-development drainage area sheet flowing onto the adjacent property to the east is 1.49 Ac (c=0.35). With the proposed grading and site improvements for this site, this drainage area will be reduced by 54% (or 0.81 Ac.) to 0.68 Ac (c=0.35). Using a Tc of 5 minutes, the following tables show the reduction of the 2 and 10 year flows to this outfall.

2-Year Storm Event (i = 6.2)

	A	C	Q(cfs)
Pre-Development	1.49	0.35	3.23
Post-Development	0.68	0.35	1.48

10-Year Storm Event (I = 9.0)

	Ac.	C	Q (cfs)
Pre-Development	1.49	0.35	4.69
Post-Development	0.68	0.35	2.14

As demonstrated above, the post-development flows will be below the pre-development flows for this outfall and therefore exceed the requirements of Article XIII of the Alexandria Zoning Ordinance.

Janney's Lane Outfall

As depicted as "Area 3" on sheet C12.20, the pre-development drainage area that sheetflows into the eastbound lane of Janney's Lane is 2.53 Ac (c=0.53). As will be demonstrated with the "Existing Channel Outfall" portions of this narrative below, surface runoff, from "Area 2", by-passes the inlet (EX 3) and manhole (EX 4) on Quaker Lane at the intersection. The combined flows by-passing are 7.64 cfs and 15.15 cfs for the 2 and 10 year storms, respectively. The proposed improvements for this site affecting this outfall are the following:

- Additional inlets (#25 and #27) on Quaker Lane in front of lot 9 will collect surface runoff that is currently by-passing existing structure #3. (Inlet computations show that 0.23cfs & 0.33cfs will still by-pass EX. 3 for 2-yr & 10-yr respectively).
- The pipes downstream of EX 4 are to be replaced to provide for adequate capacity to handle the runoff through this system and eliminate by-passing flows to the Janney's Lane Outfall.
- The proposed on-site grading and storm sewer system will reduce the surface runoff from the site onto Janney's Lane from 1.99 Ac (c=0.40) to 0.68 Ac (c=0.45)

Using a Tc of 5 minutes, the following table shows the reduction of the 2 and 10 year flows to this outfall. (Inlet computations show that 0.01cfs & 0.02cfs will still by-pass Inlet #7 for 2-yr & 10-yr respectively)

2-Year Storm Event (i = 6.2)

	A	C	Q(cfs)
Pre-Development	2.53	0.53	8.31
With a by-pass flow of 7.93 cfs for a total pre-development flow = 16.24cfs			
Post-Development	1.22	0.58	4.39
With a by-pass flow of 0.24 cfs for a total post-development flow = 4.63cfs			

10-Year Storm Event (I = 9.0)

	Ac.	C	Q (cfs)
Pre-Development	2.53	0.53	12.07
With a by-pass flow of 15.58 cfs for a total pre-development flow = 27.65 cfs			
Post-Development	1.22	.58	6.37
With a by-pass flow of 0.35 cfs for a total post-development flow = 6.72cfs			

As demonstrated above, with a reduction of 71% & 76% for the 2 and 10 year storms repectively, the post-development flows will be below the pre-development flows for this outfall and therefore exceed the requirements of Article XIII of the Alexandria Zoning Ordinance.

Existing Channel Outfall (Pre-Development Conditions)

As depicted as "Area 1" and "Area 2" on sheet C12.20, the total pre-development drainage area that flows through the existing channel northeast of the intersection is 27.68 Ac (c=0.45). With a large portion of this site's surface runoff to this channel being conveyed by the storm drain system from EX 5 to EX 1, a hydraulic study of this system is required to establish the pre-development condition in the channel.

As demonstrated in the "Pre-Development Storm Sewer Calculations", "Pre-Development Hydraulic Gradeline Computations" and the "EX 3 Inlet Capacity Computation" (see sheet C12.01), this existing storm sewer system is inadequate to handle the pre-development runoff. These constraints to the storm sewer system are outlined below:

- EX 3 (Curb Inlet)- With an inlet capacity of 3.73 cfs, existing structure #3 is not adequate to receive the surface flow in the gutter pan of the northbound lane of Quaker Lane. As mentioned above, runoff by-passes this inlet and continues along the gutter pan to the east contributing to the pre-development flows for the "Janney's Lane Outfall".
- Pipes downstream of EX 4 and EX 5- With a capacity of 9.02 cfs and 6.75 cfs, respectively, these existing 15" RCP's do not have the capacity to convey the total pre-development flows from EX 3 and EX 5. Therefore, surface run-off by-passes this system and contributes to the pre-development flows for the "Janney's Lane Outfall".

The combination of these two constraints on the existing storm drain system results in a by-pass flow to the "Janney's Lane Outfall" of 7.93 cfs and 15.58 cfs for the 2 and 10 year storms, respectively.

Using these constraints, a separate hydrograph for "Area 2" flowing through this system is generated. Also with a difference in the Tc, separate hydrographs are required for "Area 1". The addition of these three hydrographs results in the peak flow through the existing channel. The Three (3) separate hydrographs are described below:

- "Hydrograph A" (THRU EX #4) represents "Area 2", with a total CA of 2.73 and a Tc of 5 minutes, depicted on sheet C12.20 that flows through the storm drain system in the intersection. With a limited capacity of this storm drain system, the maximum runoff contributing flows to the existing channel is 9.04 cfs. Therefore, the hydrograph is capped at 9.02 cfs.
- "Hydrograph B" (TO EX #1) represents portion of "Area 1" on sheet C12.20 with a total CA of 1.80 and a Tc of 5 minutes.
- "Hydrograph C" (TO EX #1) represents portion of "Area 1" on sheet C12.20 with a total CA of 7.81 and a Tc of 10 minutes. (From Tc Computations on sheet C12.20).

Adding these hydrographs results in the peak flows for the 2 and 10 year storms of 54.08 cfs and 74.26 cfs, respectively, at a time of 10 minutes.

Using these flows, the velocities within the existing trapezoidal channel section are 17.43 and 16.08 for the 2 and 10 year storm events, respectively. The velocities within the existing half circle channel section are 10.52 and 7.66 for the 2 and 10 year storm events, respectively.

Existing Channel Outfall (Post-Development Conditions)

Based on the above information used to establish the pre-development conditions in the channel, several on-site and off-site improvements are required, which are as follows:

- Detention in the form of 360 L.F. of 78" CMP is proposed to attenuate the peak flow for a total of 4.73 Ac being conveyed through the site. Due to the lack of sufficient cover at the northwest corner of the site, this facility will be located on Lot 9. Because the location of the facility will not service 3.79 Ac of the on-site surface runoff, 1.66 Ac of off-site area, currently flowing to the existing channel through EX 12, will need to be diverted into this facility so as not to increase the flow in the downstream channel
- The installation of two curb inlets on Quaker Lane (#25 and #27) will collect the surface runoff currently by-passing EX 3. As a result, additional flows will be conveyed to the existing channel. The proposed detention facility will take this additional flow into account.
- The capacity of the storm drain system leaving the site through the intersection to EX 1 will be replaced. In addition to being undersized, these existing pipes are being lowered to service the French drains on lots 3 and 4, and driveway inlet on lot 5. These proposed pipes from proposed #3 to EX 1 are designed for the 10-year storm.

Three hydrographs are setup for the modeling of the runoff through the downstream channel.

- SWM HYD- This hydrograph represents the inflow to the 78" CMP detention facility with a total CA of 2.60 and a Tc of 5 minutes.
- HYD-5M- This hydrograph represents the uncontrolled areas with Tc of 5 minutes contributing to the downstream channel. To satisfy Condition #28a, the required additional 600 square feet of additional impervious per lot will be considered uncontrolled. Therefore per the computations below, an additional "CA" value of 0.06 will be added to this hydrograph.
  8 lots * 600 s.f. = 4,800 s.f. = 0.11 Ac.
  Increase in 'C'-value = 0.90 - 0.35 = 0.55
  Increase in CA = 0.11*0.55 = 0.06
  The total CA for this hydrograph is 3.02.
- HYD-10M- This hydrograph represents the 19.05 Ac (c=0.41) of off-site area with a Tc of 10 minutes contributing to the downstream channel.

The resulting hydrograph ("SWM Routing") from the routing of SWM HYD through the 78" CMP is then added to the "HYD-5M" and HYD-10M" hydrographs to find the peak flow through the downstream channel. (See "Existing Channel Outfall Schematic" on this sheet)

The resulting peak flows in the channel are: Q2 = 51.57 cfs; Q10 = 74.36 cfs

Using these flows, the velocities within the existing trapezoidal channel section are 17.41 and 15.89 for the 2 and 10 year storm events, respectively. The velocities within the existing half circle channel section are 10.48 and 7.30 for the 2 and 10 year storm events, respectively. Since the velocities are not increased and the increase in the peak flows are insignificant from the pre-development condition, the proposed improvements associated with this development do not adversely impact the downstream channel and satisfy both Article XIII of the AZO and condition #28.

ADEQUATE OUTFALL

Eastern Sheetflow Outfall- Since this surface runoff does not cross more than three (3) lots and the surface flow is reduced by 53%, this outfall is adequate.

Janney's Lane Outfall- Since proposed improvements reduce the flows over 70% for both the 2 and 10 year storm events, this outfall is adequate.

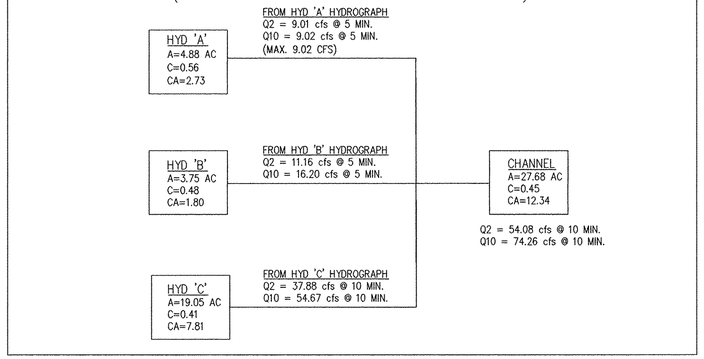
Existing Channel Outfall- With the proposed improvements to the existing system in the intersection and no increase in the flows or velocities in the existing channel, this outfall is adequate.

SUMMARY OF DISCHARGES BASED ON SITE AREA (6.07 AC.)

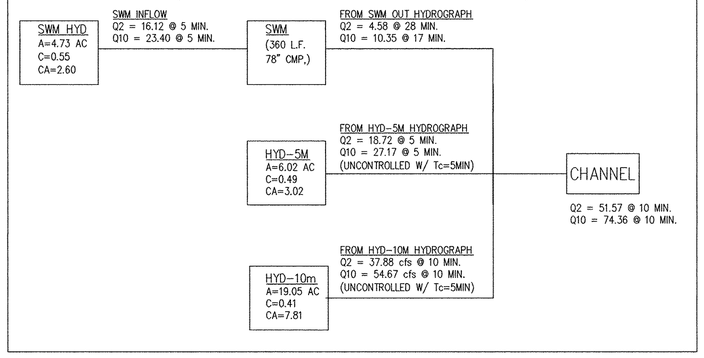
Q_2 PRE = (6.07 AC.) (0.49) (6.20 IN/HR) = 18.44 CFS
Q_2 POST = (6.07 AC.) (0.49) (6.20 IN/HR) = 18.44 CFS
(INCLUDES ADDITIONAL 600 S.F. OF IMP. AC PER LOT)

Q_{10} PRE = (6.07 AC.) (0.49) (9.00 IN/HR) = 26.77 CFS
Q_{10} POST = (6.07 AC.) (0.49) (9.00 IN/HR) = 26.77 CFS
(INCLUDES ADDITIONAL 600 S.F. OF IMP. AC PER LOT)

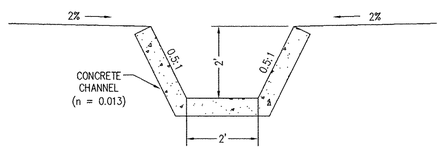
Existing Channel Outfall- PRE-DEVELOPMENT SCHEMATIC
(SEE SHEET C12.01 FOR HYDROGRAPHS)



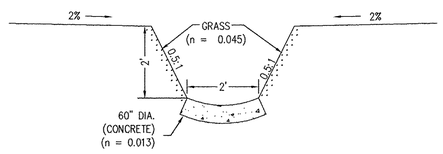
Existing Channel Outfall- POST-DEVELOPMENT SCHEMATIC
(SEE SHEET C12.10 FOR HYDROGRAPHS)



EXISTING CHANNEL SECTIONS AND COMPUTATIONS



TRAPEZOIDAL CHANNEL SECTION (UPPER 56' REACH)



PARABOLIC CHANNEL SECTION (LOWER 127' REACH)

Label	Worksheet Type	Discharge (cfs)	Mannings Coefficient	Slope (ft/ft)	Flow Area (ft2)	Velocity (ft/s)	Depth of Flow (ft)
Trap Channel (Pre 10yr)	Irregular	74.26	0.013	0.032300	4.3	17.43	1.57
Trap Channel (Pre 2yr)	Irregular	54.08	0.013	0.032300	3.4	16.08	1.30
Half Circle Channel (Pre-10yr)	Irregular	74.26	0.036	0.040000	7.1	10.52	2.16
Half Circle Channel (Pre-2yr)	Irregular	54.08	0.036	0.040000	7.1	7.66	2.16
Trap Channel (Post 10yr)	Irregular	74.36	0.013	0.032300	4.3	17.41	1.57
Trap Channel (Post 2yr)	Irregular	51.57	0.013	0.032300	3.2	15.89	1.26
Half Circle Channel (Post-10yr)	Irregular	74.36	0.036	0.040000	7.1	10.48	2.16
Half Circle Channel (Post-2yr)	Irregular	51.57	0.036	0.040000	7.1	7.30	2.16

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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STORMWATER MANAGEMENT NARRATIVE
OAK GROVE
CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAW	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=50' V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C12.00

Cad file name : N:\2267 - Janneys & Quaker\2267-01-001 (EKO)\Engineering\Eng Plans\2267-01-001-RDP--SWM-NARR.dwg

PRE-DEVELOPMENT 2-YEAR STORM SEWER CALCULATIONS AND HYDRAULIC GRADELINE COMPUTATIONS

PRE-DEVELOPMENT 2-YR STORM SEWER CALCULATIONS

Structure From	To	Drainage Area "A" (acres) Increment	Accumulated	Runoff Coef. C	CA Increment	CA Accumulated	Tc (min.)	I (in/hr)	Runoff Q (cfs)	n	Slope (%) Design Slope	Slope (%) Min. Slope	Diameter (in)	Length (ft)	Capacity (cfs)	Velocity (fps)	Remarks
				Total CA into 5 =		1.86	Total Q into 5 =		11.52								
				Total CA By-Pass 5 =		0.77	Total Q By-Pass 5 =		**4.77**								
5	4	3.26	3.26	0.57	1.86	1.09	5.00	6.20	6.75	0.015	1.040	1.45	15.00	45.00	5.71	#NAME?	EXISTING PIPE
				Total CA into 3 =		0.87	Total Q into 3 =		5.42	<= Max intercepted by Inlet is 3.73 cfs							
				Total CA By-Pass 3 =		0.27	Total Q By-Pass 3 =		**1.69**								
3	4	1.62	1.62	0.54	0.87	0.60	5.00	6.20	3.73	0.015	0.130	0.44	15.00	47.00	2.02	#NAME?	EXISTING PIPE
				Total CA into 4 =		1.69	Total Q into 4 =		10.48								
				Total CA By-Pass 4 =		0.24	Total Q By-Pass 4 =		**1.47**								
4	1	0.00	4.88	0.00	0.00	1.45	5.00	6.20	9.01	0.015	1.050	2.59	15.00	121.00	5.74	#NAME?	EXISTING PIPE
1	102	20.71	25.59	0.42	8.70	10.15	10.00	4.85	49.24	0.015	3.830	1.92	30.00	115.80	69.57	#NAME?	EXISTING PIPE
102	101	2.09	27.68	0.48	1.00	11.16	10.00	4.85	54.10	--	4.590	2.52	Channel	55.00	86.10	18.83	EXISTING CHANNEL
101	100	0.00	27.68	0.00	0.00	11.16	10.00	4.85	54.10	--	4.000	0.62	Channel	127.00	162.11	9.91	EXISTING CHANNEL

PRE-DEVELOPMENT 2-YR YEAR HYDRAULIC GRADELINE COMPUTATIONS

							LOSS IN PIPE (FRICTION)							STRUCTURE LOSS															
							INLET NO.	OUTLET WS						FRICTION W.S.E.	Invert of pipe out	MINIMUM W.S.E.	Vo	Ho	Qi	Vi	Qi*Vi	V^2 2g	Hi	ANGLE	K	Hd	Ht	1.3 Ht	0.5 Ht	SURFACE ELEV.	RIM ELEV.	DIFF
Qout	Dout	Qin	DIN	L	Sf				Do	Qo	Lo	Sf	Hf																	
54.10	30	54.10	30	127	4.00		101	189.23	30	54.10	127.00	4.00	5.08	194.31	192.15	193.67	11.02	NA	54.10	11.02	598.33	1.89	NA	0	0.00	0.00	0.00	0.00	----	194.31	NA	NA
54.10	30	49.24	30	55.0	4.59		102	194.31	30	54.10	55.00	1.44	0.79	195.10	194.28	195.51	11.02	NA	49.24	10.03	493.89	1.56	NA	0	0.00	0.00	0.00	0.00	0.00	195.51	NA	NA
49.24	30	42.19	24	115.8	1.92		1	195.93	30	49.24	115.80	1.92	2.22	198.15	198.26	200.26	10.03	0.39	42.19	13.43	566.49	2.80	0.98	15	0.10	0.28	1.65	----	0.83	201.09	204.46	3.37
9.01	15	6.75	15	121.0	2.59		4	202.21	15	9.01	121.00	2.59	3.14	205.35	202.48	203.48	7.35	0.21	6.75	5.50	37.15	0.47	0.16	60	0.55	0.26	0.83	----	0.32	205.66	205.66	0.00
6.75	15	6.75	15	45.0	1.45		5	205.66	15	6.75	45.00	1.45	0.65	206.32	203.23	204.23	5.50	0.12	6.75	5.50	37.15	0.47	0.16	30	0.28	0.13	0.41	----	0.21	206.52	206.52	0.00
3.73	15	3.73	15	47.0	0.44		3	205.66	15	3.73	47.00	0.44	0.21	205.87	202.82	203.82	3.04	0.04	3.73	3.04	11.34	0.14	0.05	0	0.00	0.00	0.09	----	0.04	205.92	206.38	0.46

Hi = 0.35 * W^2 / 2g | Ho = 0.25 * Vo^2 / 2g | Hd = K * W^2 / 2g | FINAL H = Hf + Hi + Ho

90	K=0.70	50	K=0.47	20	K=0.16
80	K=0.66	40	K=0.38	15	K=0.10
70	K=0.61	30	K=0.28		
60	K=0.55	25	K=0.22		

PRE-DEVELOPMENT 2-YR HYDROGRAPH COMPUTATIONS

	HYD 'A'	HYD 'B'	HYD 'C'
	Thru Ex #4	To Ex. #1	To Ex #1
CA	2.73	1.80	7.81
Tc	5	5	10
Max Q =	9.01	N/A	NA

Time (min)	Flows (cfs)			Combined		Unit Hydrographs Tc=5min.	Tc=10min.
0	0.00	0.00	0.00	0.00		0.00	0.00
5	9.01	11.16	21.16	41.34		6.20	2.71
10	9.01	7.18	37.88	**54.08**	<==Peak Flow Thru Channel	3.99	4.85
15	8.09	5.33	28.00	41.42		2.96	3.58
20	6.48	4.27	19.43	30.18		2.37	2.49
25	5.36	3.53	14.99	23.87		1.96	1.92
30	4.54	2.99	12.27	19.79		1.66	1.57
35	3.99	2.63	10.29	16.91		1.46	1.32
40	3.42	2.25	8.73	14.40		1.25	1.12
45	3.12	2.05	7.49	12.66		1.14	0.96
50	2.76	1.82	6.42	11.00		1.01	0.82
55	2.54	1.67	5.68	9.90		0.93	0.73
60	2.30	1.51	4.94	8.75		0.84	0.63
65	2.10	1.39	4.53	8.02		0.77	0.58
70	1.94	1.28	4.12	7.34		0.71	0.53
75	1.75	1.15	3.71	6.61		0.64	0.47
80	1.53	1.01	3.29	5.83		0.56	0.42
85	1.34	0.88	2.88	5.10		0.49	0.37
90	1.15	0.76	2.47	4.37		0.42	0.32
95	0.96	0.63	2.06	3.65		0.35	0.26
100	0.77	0.50	1.65	2.92		0.28	0.21
105	0.60	0.40	1.24	2.23		0.22	0.16
110	0.38	0.25	0.82	1.46		0.14	0.11
115	0.19	0.13	0.41	0.73		0.07	0.05
120	0.00	0.00	0.00	0.00		0.00	0.00

INLET COMPUTATIONS FOR EXISTING INLET #3

Worksheet	Existing #03	
Type	Curb Inlet On Grade	
Solve For	Efficiency	
Input Data		
Discharge	7.87	cfs
Slope	0.022800	ft/ft
Gutter Width	2.00	ft
Gutter Cross Slope	0.062500	ft/ft
Road Cross Slope	0.020800	ft/ft
Mannings Coefficient	0.015	
Curb Opening Length	8.00	ft
Local Depression	2.0	in
Local Depression Width	2.00	ft
Results		
Efficiency	0.47	
Intercepted Flow	3.73	cfs
Bypass Flow	4.14	cfs
Spread	12.23	ft
Depth	0.34	ft
Flow Area	1.6	ft
Gutter Depression	1.0	in
Total Depression	3.0	in
Velocity	4.80	ft/s
Equivalent Cross Slope	0.076713	ft/ft
Length Factor	0.30	
Total Interception Length	26.62	ft

PRE-DEVELOPMENT 10-YEAR STORM SEWER CALCULATIONS AND HYDRAULIC GRADELINE COMPUTATIONS

PRE-DEVELOPMENT 10- YR STORM SEWER CALCULATIONS

Structure From	To	Drainage Area "A" (acres) Increment	Accumulated	Runoff Coef. C	CA Increment	CA Accumulated	Tc (min.)	I (in/hr)	Runoff Q (cfs)	n	Slope (%) Design Slope	Slope (%) Min. Slope	Diameter (in)	Length (ft)	Capacity (cfs)	Velocity (fps)	Remarks
				Total CA into 5 =		1.86	Total Q into 5 =		16.72								
				Total CA By-Pass 5 =		1.11	Total Q By-Pass 5 =		**9.99**								
5	4	3.26	3.26	0.57	1.86	0.75	5.00	9.00	6.73	0.015	1.040	1.44	15.00	45.00	5.71	#NAME?	EXISTING PIPE
				Total CA into 3 =		0.87	Total Q into 3 =		7.87	<= Max intercepted by Inlet is 3.73 cfs							
				Total CA By-Pass 3 =		0.46	Total Q By-Pass 3 =		**4.16**								
3	4	1.62	1.62	0.54	0.87	0.41	5.00	9.00	3.73	0.015	0.130	0.44	15.00	47.00	2.02	#NAME?	EXISTING PIPE
				Total CA into 4 =		1.16	Total Q into 4 =		10.46								
				Total CA By-Pass 4 =		0.16	Total Q By-Pass 4 =		**1.44**								
4	1	0.00	4.88	0.00	0.00	1.00	5.00	9.00	9.02	0.015	1.050	2.59	15.00	121.00	5.74	#NAME?	EXISTING PIPE
1	102	20.71	25.59	0.42	8.70	9.70	10.00	7.10	68.87	0.015	3.830	3.75	30.00	115.80	69.57	#NAME?	EXISTING PIPE
102	101	2.09	27.68	0.48	1.00	10.70	10.00	7.10	75.99	--	4.590	2.52	Channel	55.00	86.10	18.83	EXISTING CHANNEL
101	100	0.00	27.68	0.00	0.00	10.70	10.00	7.10	75.99	--	4.000	0.62	Channel	127.00	162.11	9.91	EXISTING CHANNEL

PRE-DEVELOPMENT 10-YR YEAR HYDRAULIC GRADELINE COMPUTATIONS

							LOSS IN PIPE (FRICTION)							STRUCTURE LOSS															
							INLET NO.	OUTLET WS						FRICTION W.S.E.	Invert of pipe out	MINIMUM W.S.E.	Vo	Ho	Qi	Vi	Qi*Vi	V^2 2g	Hi	ANGLE	K	Hd	Ht	1.3 Ht	0.5 Ht	SURFACE ELEV.	RIM ELEV.	DIFF
Qout	Dout	Qin	DIN	L	Sf				Do	Qo	Lo	Sf	Hf																	
75.99	30	75.99	30	127	4.00		101	189.23	30	75.99	127.00	4.00	5.08	194.31	192.15	193.67	15.48	NA	75.99	15.48	1176.49	3.72	NA	0	0.00	0.00	0.00	0.00	----	194.31	NA	NA
75.99	30	68.87	30	55.0	4.59		102	194.31	30	75.99	55.00	1.44	0.79	195.10	194.28	195.51	15.48	NA	68.87	14.03	966.29	3.06	NA	0	0.00	0.00	0.00	0.00	0.00	195.51	NA	NA
68.87	30	61.76	24	115.8	3.75		1	195.93	30	68.87	115.80	3.75	4.35	200.28	198.26	200.26	14.03	0.76	61.76	19.66	1214.02	6.00	2.10	15	0.13	0.60	3.46	----	1.73	202.00	204.46	2.45
9.02	15	6.73	15	121.0	2.59		4	202.21	15	9.02	121.00	2.59	3.14	205.35	202.48	203.48	7.35	0.21	6.73	5.48	36.91	0.47	0.16	60	0.55	0.26	0.83	----	0.31	205.66	205.66	0.00
6.73	15	6.73	15	45.0	1.44		5	205.66	15	6.73	45.00	1.44	0.65	206.31	203.23	204.23	5.48	0.12	6.73	5.46	36.91	0.47	0.16	30	0.28	0.13	0.41	----	0.21	206.52	206.52	0.00
3.73	15	3.73	15	47.0	0.44		3	205.66	15	3.73	47.00	0.44	0.21	205.87	202.82	203.82	3.04	0.04	3.73	3.04	11.31	0.14	0.05	0	0.00	0.00	0.09	----	0.04	205.92	206.38	0.46

Hi = 0.35 * W^2 | Ho = 0.25 * Vo^2 | Hd = K * W^2 / 2g | FINAL H = Hf + Hi + Ho

90	K=0.70	50	K=0.47	20	K=0.16
80	K=0.66	40	K=0.38	15	K=0.10
70	K=0.61	30	K=0.28		
60	K=0.55	25	K=0.22		

** Initial Water Surface Elevation taken from pipe below EX. 5 flowing at 80% full.

PRE-DEVELOPMENT 10-YR HYDROGRAPH COMPUTATIONS

	HYD 'A'	HYD 'B'	HYD 'C'
	Thru Ex #4	To Ex. #1	To Ex #1
CA	2.73	1.80	7.81
Tc	5	5	10
Max Q =	9.02	N/A	NA

Time (min)	Flows (cfs)			Combined		Unit Hydrographs Tc=5min.	Tc=10min.
0	0.00	0.00	0.00	0.00		0.00	0.00
5	9.02	16.20	30.02	55.23		9.00	3.84
10	9.02	10.57	54.67	**74.26**	<==Peak Flow Thru Channel	5.87	7.00
15	9.02	7.70	41.84	58.56		4.28	5.36
20	9.02	6.17	29.00	44.19		3.43	3.71
25	7.73	5.09	22.44	35.27		2.83	2.87
30	6.56	4.32	18.38	29.26		2.40	2.35
35	5.68	3.74	15.42	24.85		2.08	1.97
40	4.97	3.28	13.02	21.27		1.82	1.67
45	4.43	2.92	11.17	18.52		1.62	1.43
50	3.99	2.63	9.60	16.22		1.46	1.23
55	3.66	2.41	8.50	14.57		1.34	1.09
60	3.36	2.21	7.39	12.96		1.23	0.95
65	3.09	2.03	6.74	11.86		1.13	0.86
70	2.81	1.85	6.19	10.86		1.03	0.79
75	2.51	1.66	5.54	9.71		0.92	0.71
80	2.24	1.48	4.89	8.61		0.82	0.63
85	1.97	1.30	4.34	7.60		0.72	0.56
90	1.69	1.12	3.69	6.50		0.62	0.47
95	1.39	0.92	3.05	5.36		0.51	0.39
100	1.12	0.74	2.49	4.35		0.41	0.32
105	0.85	0.56	1.85	3.25		0.31	0.24
110	0.57	0.38	1.20	2.15		0.21	0.15
115	0.27	0.18	0.65	1.10		0.10	0.08
120	0.00	0.00	0.00	0.00		0.00	0.00

FOR REFERENCE ONLY AS
AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
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CHAIRMAN, PLANNING COMMISION DATE
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STORMWATER MANAGEMENT- PRE DEVELOPMENT COMPUTATIONS
FOR Existing Channel Outfall
OAK GROVE
CITY OF ALEXANDRIA
VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS
10/28/16 DSP EXTENSION

DATE	DESCRIPTION
SCP DESIGN	DAW DRAWN / STL CHKD
SCALE	H: V:
JOB No.	2267-01-001
DATE :	OCTOBER, 2016
FILE No.	2267-D-CP-003
SHEET	C12.01

Cad file name = N:\2267 - Jonesys & Quake\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-D2P-SWM-HARR.dwg

STAGE–DISCHARGE–VOLUME FOR SWM FACITILY (360' OF 78" CMP)

OUTLET STRUCTURE INPUT DATA

Structure ID = w2
Structure Type = Weir–Rectangular
# of Openings = 1
Crest Elev. = 209.38 ft
Weir Length = 10.00 ft
Weir Coeff. = 3.1

Structure ID = w1
Structure Type = Weir–Rectangular
# of Openings = 1
Crest Elev. = 208.38 ft
Weir Length = 4.00 ft
Weir Coeff. = 3

Structure ID = o1
Structure Type = Orifice–Circular
# of Openings = 1
Invert Elev. = 203.38 ft
Diameter = 6.00 in
Orifice Coeff. = 0.61

INPUT DATA FOR PIPE STORAGE

US Invert Elev. = 203.38 ft
DS Invert Elev. = 203.38 ft
Barrel Length = 120.00 ft
Computed Slope = .000000 ft/ft
Diameter = 78.00 in
# of Barrels = 3.00

Elev. (ft)	Outlet Flow (cfs)	SWM Volume (cu.ft)
203.38	0	0
203.48	0.02	38
203.58	0.09	108
203.68	0.19	197
203.78	0.32	303
203.88	0.48	421
203.98	0.57	550
204.08	0.64	690
204.18	0.71	839
204.28	0.77	996
204.38	0.83	1161
204.48	0.89	1332
204.58	0.94	1510
204.68	0.98	1694
204.78	1.03	1883
204.88	1.07	2077
204.98	1.12	2275
205.08	1.16	2478
205.18	1.2	2685
205.28	1.23	2895
205.38	1.27	3109
205.48	1.31	3325
205.58	1.34	3545
205.68	1.38	3766
205.78	1.41	3990
205.88	1.44	4216
205.98	1.47	4444
206.08	1.5	4673
206.18	1.53	4903
206.28	1.56	5134
206.38	1.59	5366
206.48	1.62	5599
206.58	1.65	5832
206.68	1.68	6065
206.78	1.71	6297
206.88	1.73	6530
206.98	1.76	6762
207.08	1.78	6993
207.18	1.81	7224
207.28	1.84	7453
207.38	1.86	7680
207.48	1.89	7906
207.58	1.91	8130
207.68	1.93	8352
207.78	1.96	8571
207.88	1.98	8787
207.98	2	9001
208.08	2.03	9211
208.18	2.05	9418
208.28	2.07	9621
208.38	2.09	9819
208.48	2.12	10013
208.58	2.14	10202
208.68	4.13	10386
208.78	5.22	10564
208.88	6.44	10735
208.98	7.8	10900
209.08	9.27	11057
209.18	10.85	11206
209.28	12.53	11346
209.38	14.3	11475
209.48	17.15	11594
209.58	20.89	11699
209.68	25.24	11788
209.78	30.1	11867
209.88	35.41	11946

2–YEAR STORM ROUTING/HYDROGRAPHS

Time (min)	SWM Hyd	SWM ROUTING	HYD 10m	HYD 5m	CHANNEL
0	0	0	0	0	0
5	16.12	1.11	21.17	18.72	41
10	10.37	1.65	37.88	12.05	51.57
15	7.66	1.89	27.96	8.94	38.79
20	6.14	2.05	19.45	7.16	28.66
25	5.07	3.43	15	5.92	24.35
30	4.3	4.79	12.26	5.01	22.06
35	3.73	4.02	10.31	4.41	18.74
40	3.26	3.37	8.75	3.77	15.89
45	2.9	3.01	7.5	3.44	13.95
50	2.61	2.7	6.4	3.05	12.15
55	2.4	2.46	5.7	2.81	10.97
60	2.2	2.26	4.92	2.54	9.72
65	2.02	2.14	4.53	2.32	8.99
70	1.84	2.13	4.14	2.14	8.41
75	1.65	2.12	3.67	1.93	7.72
80	1.47	2.1	3.28	1.69	7.07
85	1.29	2.07	2.89	1.48	6.44
90	1.11	2.05	2.5	1.27	5.81
95	0.91	2.01	2.03	1.06	5.1
100	0.73	1.97	1.64	0.85	4.46
105	0.56	1.93	1.25	0.66	3.85
110	0.38	1.88	0.86	0.42	3.17
115	0.18	1.83	0.39	0.21	2.43
120	0	1.78	0	0	1.78

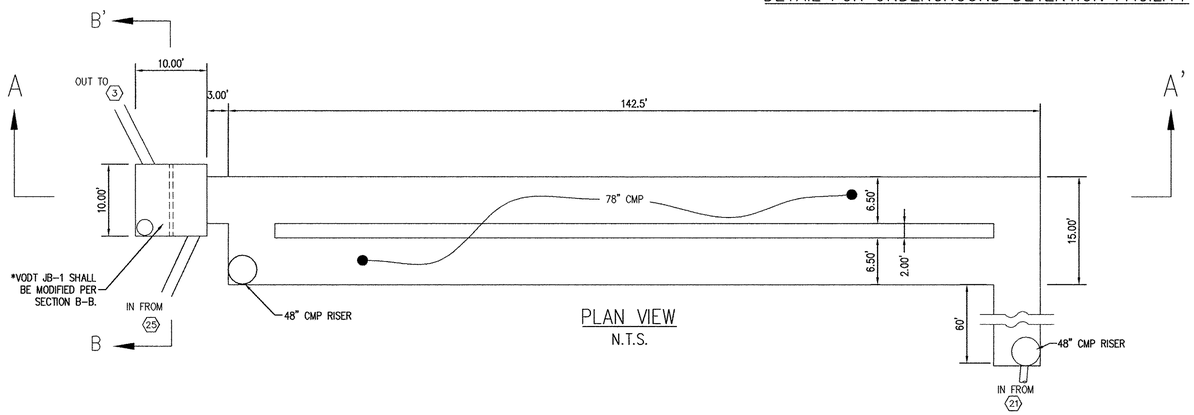
10–YEAR STORM ROUTING/HYDROGRAPHS

Time (min)	SWM Hyd	SWM ROUTING	HYD 10m	HYD 5m	CHANNEL
0	0	0	0	0	0
5	23.4	1.3	29.99	26.82	58.12
10	15.05	1.96	54.67	17.73	74.36
15	11.13	8.41	41.86	12.92	63.19
20	8.92	10.35	28.98	10.36	49.68
25	7.36	7.72	22.41	8.54	38.68
30	6.24	6.7	18.35	7.25	32.3
35	5.41	5.78	15.39	6.28	27.44
40	4.73	5.06	13.04	5.49	23.6
45	4.21	4.5	11.17	4.89	20.56
50	3.8	3.99	9.61	4.41	18.01
55	3.48	3.56	8.51	4.05	16.11
60	3.2	3.29	7.42	3.71	14.42
65	2.94	3.01	6.72	3.41	13.14
70	2.68	2.76	6.17	3.11	12.04
75	2.39	2.48	5.55	2.78	10.8
80	2.13	2.21	4.92	2.48	9.61
85	1.87	2.13	4.37	2.17	8.68
90	1.61	2.12	3.67	1.87	7.66
95	1.33	2.1	3.05	1.54	6.68
100	1.07	2.07	2.5	1.24	5.8
105	0.81	2.03	1.87	0.94	4.84
110	0.55	1.99	1.17	0.63	3.79
115	0.26	1.94	0.62	0.3	2.86
120	0	1.88	0	0	1.88

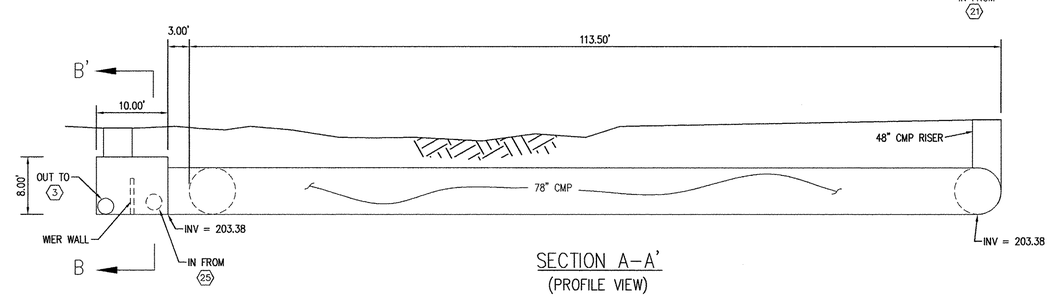
MASTER ROUTING/HYDROGRAPH SUMMARY

Node ID	Type	Return Event	HYG Vol (cf)	Q peak (min)	Q peak (cfs)	MaxWSEL (ft)	Max Pond Storage (cf)
SWMHYD	HYG	10yr	34,367	5	23.4		
SWMOUT	POND	10yr	34,362	20	10.35	209.15	11,159
HYD–10M	HYG	10yr	90,604	10	54.67		
HYD–5M	HYG	10yr	39,875	5	27.17		
CHANNEL	JCT	10yr	164,841	10	74		
SWMHYD	HYG	2yr	23,672	5	16.12		
SWMOUT	POND	2yr	23,667	30	4.79	208.74	10,494
HYD–10M	HYG	2yr	61,340	10	37.88		
HYD–5M	HYG	2yr	27,553	5	18.72		
CHANNEL	JCT	2yr	112,560	10	51.57		

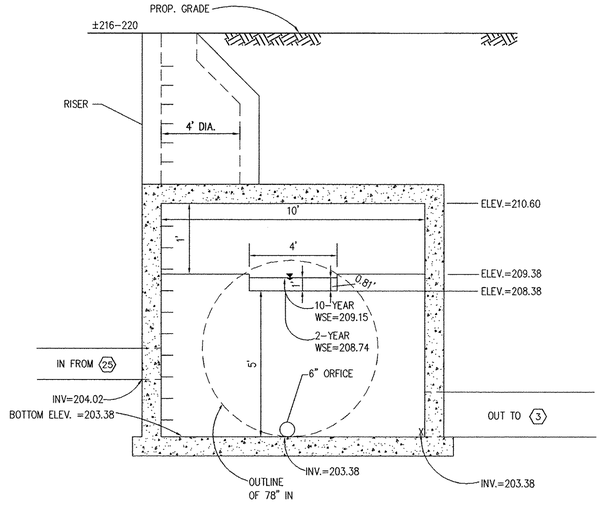
DETAIL FOR UNDERGROUND DETENTION FACILITY



PLAN VIEW
N.T.S.



SECTION A–A'
(PROFILE VIEW)



SECTION B–B'
(SECTION OF MODIFIED VDOT JB–1)
N.T.S.

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ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004–0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
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STORMWATER MANAGEMENT ROUTING

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER
10/28/16

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION

SCP	DAW	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=50' V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C12.10

Cad file name : Y:\2267 - Jonnys & Quaker\2267-01-001 (SWG)\Engineering\Eng Plans\2267-01-001-FDP-SWM-ROUTING.dwg

		Length (ft)	Avr. Slope (ft/ft)	Velocity (fps)	Time (min)	Method
	Initial 5 minute				5.0	
L1	Shallow Concentrated Flow	1100	0.0700	4.27	4.29	SCS Momograph
L2	Gutter Flow	90	0.0200	2.87	0.52	SCS Momograph
L3	Pipe Flow	190	n/a	6.00	0.53	Assumed velocity
					10.3	

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

AREA 1– DRAINAGE AREAS TO EXISTING CHANNEL OUTFALL

AREA 2– DRAINAGE AREAS TO EXISTING CHANNEL OUTFALL THROUGH EXISTING STRUCTURE 4

AREA 3– DRAINAGE AREAS CONTRIBUTING TO FLOWS DOWN JANNEY'S LANE TO THE EAST. (JANNEY'S LANE OUTFALL)

AREA 4– DRAINAGE AREAS CONTRIBUTING FLOWS TO ADJACENT PROPERTY TO THE EAST. (EASTERN SHEETFLOW OUTFALL)

AREAS WITH TIME OF CONCENTRATION OF 5 MINUTES. (ALL OTHER AREAS HAVE A TIME OF CONCENTRATION OF 10 MINUTES)

1100' - SHALLOW CONCENTRATED FLOW (L_1)

FLOW PATH

AREA 1
DA=19.05 AC
C=0.41
(HYD C)

90' GUTTER FLOW
(L_2)

SEMINARY ROAD

KEY DRIVE

EXISTING CHANNEL OUTFALL

EXISTING CHANNEL
(183')

AREA 1
DA=2.09 AC
C=0.48
(HYD B)

190' PIPE FLOW
(L_3)

AREA 3
DA=2.53 AC
C=0.53

JANNEY'S LANE

JANNEY'S LANE OUTFALL

EASTERN SHEET FLOW OUTFALL

AREA 2
DA=3.26 AC
C=0.57
(HYD A)

AREA 1
DA=1.66 AC
C=0.48
(HYD B)

AREA 2
DA=1.62 AC
C=0.54
(HYD A)

AREA 4
DA=1.49 AC
C=0.35

QUAKER LANE

CATHEDRAL ST.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
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CHAIRMAN, PLANNING COMMISION — DATE
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STORMWATER MANAGEMENT PRE-DEVELOPMENT DRAINAGE DIVIDES

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION	
SCP DESIGN	DAD DRAWN	STL CHKD
SCALE	H: 1"=100' V:	
JOB No.	2267-01-001	
DATE :	OCTOBER, 2016	
FILE No.	2267-D-CP-003	
SHEET	C12.20	

Cad file name : V:\2267 - Janneys & Quakers\2267-01-001 (ENG)\Engineering\Eng Plans\2267-01-001-TDP-TDP-pre.dwg

FOR REFERENCE ONLY AS AMENDED
BY FINAL SITE PLAN

UNCONTROLLED
DA=19.05 AC
C=0.41
(HYD 10M)
TC=10 MIN

SEMINARY ROAD

RECORDED NORTH

KEY DRIVE

EXISTING CHANNEL

EXISTING CHANNEL OUTFALL

UNCONTROLLED
DA=2.09 AC
C=0.48
TC=5 MIN
(HYD 5M)

EX 1

TO #23
DA=1.22 AC
C=0.58
TC=5 MIN
(SHEET FLOW ONTO
JANNEY'S LANE)

JANNEY'S LANE

EX 23 TO EX 23

JANNEY'S LANE OUTFALL

2

78" CMP DETENTION FACILITY

UNCONTROLLED
DA=3.93 AC
C=0.50
TC=5 MIN
(HYD 5M)

EASTERN SHEET
FLOW OUTFALL

TO #23
DA=0.68 AC
C=0.35
TC=5 MIN
(SHEET FLOW ONTO
ADJACENT PROPERTY)

27

25

EX 12

TO SWM
DA=4.73 AC
C=0.55
TC=5 MIN

QUAKER LANE

CATHEDRAL ST.

UNCONTROLLED AREAS THAT OUTFALL INTO EXISTING CHANNEL WITH A TIME OF CONCENTRATION (Tc) OF 5 MINUTES. (EXISTING CHANNEL OUTFALL – HYD–10M)

AREAS THAT OUTFALL INTO EXISTING CHANNEL THRU PROPOSED STORMWATER MANAGEMENT FACILITY WITH A TIME OF CONCENTRATION (Tc) OF 5 MINUTES. (EXISTING CHANNEL OUTFALL – SWM HYD)

UNCONTROLLED AREAS THAT OUTFALL INTO EXISTING CHANNEL WITH A TIME OF CONCENTRATION (Tc) OF 10 MINUTES. (EXISTING CHANNEL OUTFALL – HYD–10M)

AREA THAT SHEET FLOWS ONTO JANNEY'S LANE. (JANNEY'S LANE OUTFALL)

AREA THAT SHEET FLOWS ONTO ADJACENT PROPERTY TO THE EAST. (EASTERN SHEET FLOW OUTFALL)

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

ESI Peer Review

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DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
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OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: 1"=100'
V:

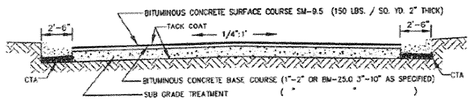
JOB No. 2267-01-001

DATE : OCTOBER, 2016

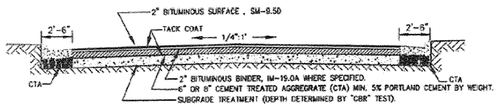
FILE No. 2267-D-CP-003

SHEET C12.30

Cad file name : V:\2267 - Janneys & Quaker\2267-01-001 (Bow)\Engineering\Eng Plans\2267-01-001-102-pdp-post.dwg



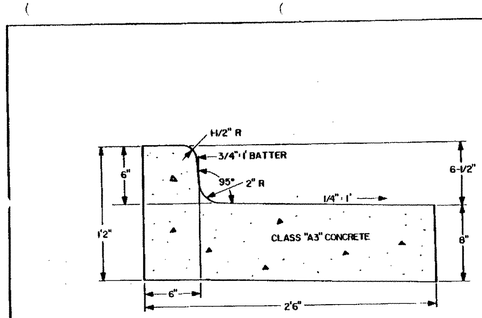
TYPICAL SECTION – FLEXIBLE BASE (ASPHALT CONCRETE)



TYPICAL SECTION – RIGID BASE (CTA)

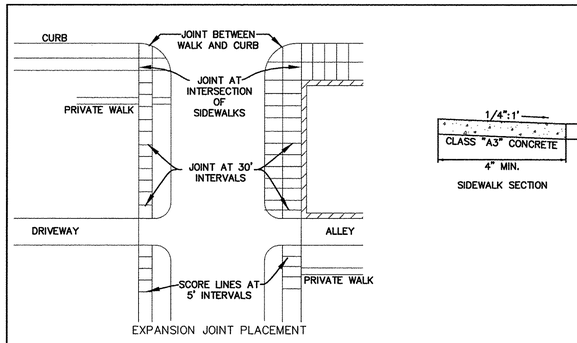
NOTES:
1. 12 1/2" MIN. FROM BASE OF SUB GRADE TREATMENT TO SURFACE.
2. DESIGN BASED ON CBR=10
3. ADD TACK COAT BETWEEN LAYERS
4. DESIGN BASED ON CBR=10

ASPHALT PAVING OF ALLEYS AND STREETS		REVISION	DATE
	TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	CSAP-1	
APPROVED DATE	ALEXANDRIA VIRGINIA	PAGE 33	



1. USE ONLY AGAINST CONC. PAVEMENT.

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA VIRGINIA	
CURB AND GUTTER REVERSE FLOW	
CSCG-2	PAGE 28



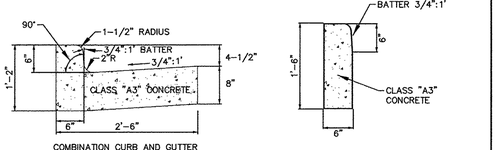
EXPANSION JOINT PLACEMENT

SIDEWALK SECTION

NOTES: 1.) JOINTS ARE OF 1/2" PRE MOLDED EXPANSION MATERIAL PRICE OF MATERIAL TO BE INCLUDED IN COST OF SIDEWALK.

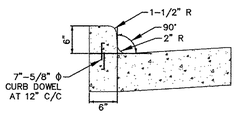
2.) SLOPE OF GRASS AREAS WILL BE 1/2" PER 1' MIN.

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA VIRGINIA	
SIDEWALK	
CSSW-1	PAGE 29

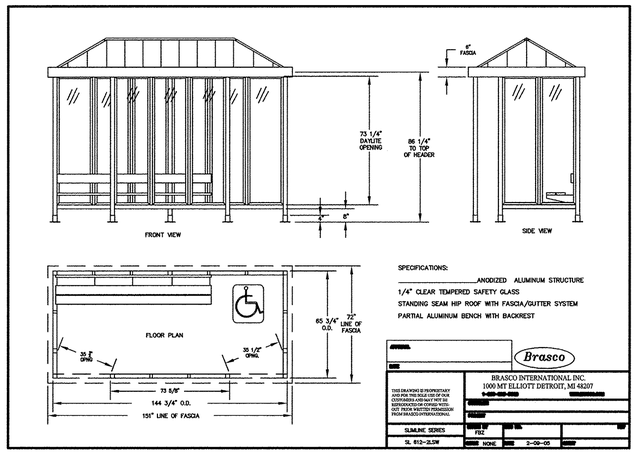


COMBINATION CURB AND GUTTER

COPING CURB



REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA VIRGINIA	
CURB AND GUTTER AND COPING CURB	
CSCG-1	PAGE 24



SPECIFICATIONS:
_____ANODIZED ALUMINUM STRUCTURE
1/4" CLEAR TEMPERED SAFETY GLASS
STANDING SEAM HIP ROOF WITH FASCIA/GUTTER SYSTEM
PARTIAL ALUMINUM BENCH WITH BACKREST

Brasco

BRASCO INTERNATIONAL INC.
1000 MT ELLIOTT DETROIT, MI 48207

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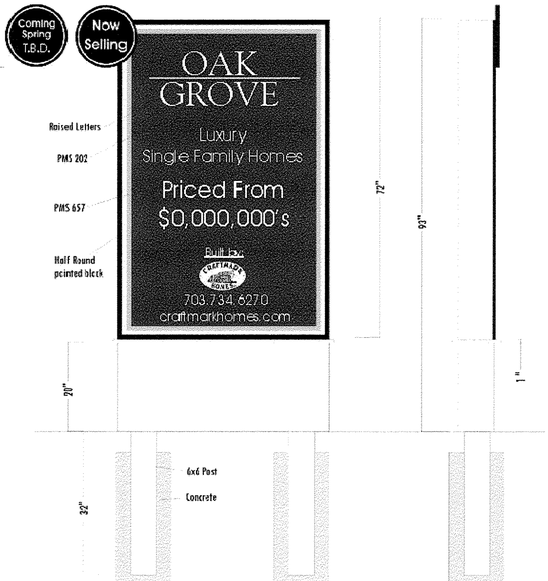
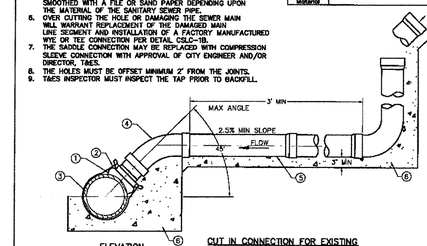


4x6 V-Sign
White and Black vinyl copy
Raised Letters with vinyl matched to red paint on backer.

NOTES:
1. CONNECTION TO A PUBLIC SANITARY SEWER SHALL REQUIRE A SEWER LATERAL CONNECTION PERMIT FROM THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES). IF THE SANITARY SEWER IS LOCATED WITHIN THE PUBLIC RIGHT OF WAY AN EXCAVATION PERMIT SHALL ALSO BE REQUIRED.
2. THE CONNECTION SHALL BE MADE PER THE RECOMMENDATIONS OF THE MANUFACTURER, AND IN THE PRESENCE OR WITH THE APPROVAL OF THE T&ES, CONSTRUCTION AND INSPECTION (C&I) INSPECTOR.
3. THE SADDLE SHALL PROPERLY MATCH THE SANITARY SEWER MAIN PIPE.
4. THE CUT ON THE EXISTING PIPE MUST BE NO LARGER THAN NECESSARY TO INSTALL SADDLE.
5. ROUGH EDGES LEFT BY SAW CUT OR CORING SHALL BE SMOOTHED WITH A FILE OR SAND PAPER DEPENDING UPON THE MATERIAL OF THE SANITARY SEWER PIPE.
6. OVER CUTTING THE HOLE OR DAMAGING THE SEWER MAIN WILL WARRANT REPLACEMENT OF THE DAMAGED MAIN LINE SEGMENT AND INSTALLATION OF A FACTORY MANUFACTURED WYE OR TEE CONNECTION PER DETAIL CSLC-1B.
7. THE SADDLE CONNECTION MAY BE REPLACED WITH COMPRESSION SLEEVE CONNECTION WITH APPROVAL OF CITY ENGINEER AND/OR DIRECTOR, T&ES.
8. THE HOLES MUST BE OFFSET MINIMUM 2' FROM THE JOINTS.
9. T&ES INSPECTOR MUST INSPECT THE TAP PRIOR TO BACKFILL.

Pipe Type	Pipe Cutting Method	Connection Type	Applicable Detail
Transite	Transite Pipe Cutter	Romac CB Saver Saddle or approved equal	CSLC-1A
Concrete	Coring	Romac CB Saver Saddle or approved equal	CSLC-1A
Cast Iron/ Ductile Iron	Tapping Machine	Romac CB Saver Saddle or approved equal	CSLC-1A
Vitrified Clay Pipe (VCP)	Saw Cut	Manufactured Y or T connection	CSLC-1B
Brick		Special design	
Non-circular pipe			
Other Material			

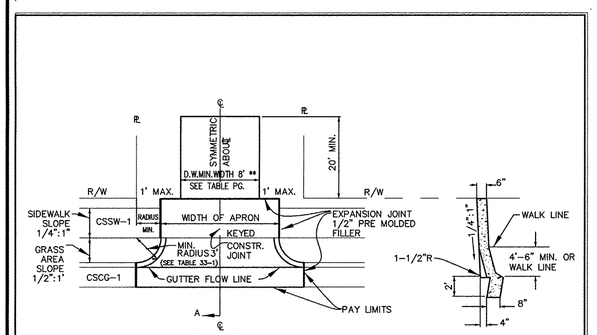


CUT IN CONNECTION FOR EXISTING SANITARY SEWER PIPE

NOTE:
1) ROMAC CB SEWER SADDLE OR CITY APPROVED EQUAL
2) ROMAC CB STRAPS 304 STAINLESS STEEL
3) EXISTING SEWER MAIN
4) 45° ELBOW/ BEND
5) PVC LATERAL SDR 26 OR SCHEDULE 40
6) CLASS "A3" CONCRETE CRADLE TO JOINT

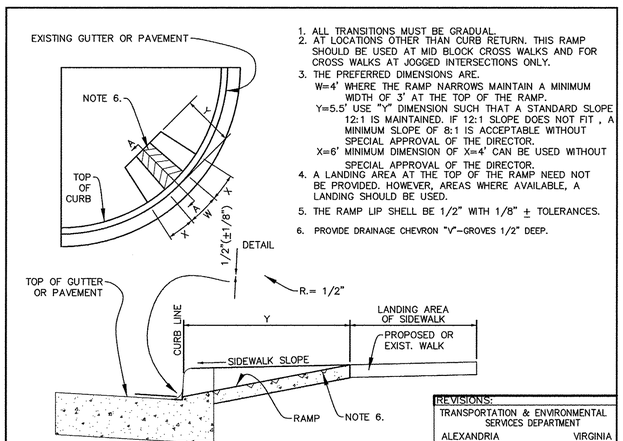
CONCRETE CRADLE TO BE USED IF COVER IS LESS THAN 5 FEET OR MORE THAN 12 FEET. CRADLE TO BE POURED TO SPRING LINE OF PIPE AND TO SUPPORT THE SANITARY LATERAL. IF COVER IS 2 FEET OR LESS, PIPE IS TO BE ENCASED IN CONFORMENCE WITH CSSE-1.

SANITARY SEWER LATERAL CONNECTION		12/03/2010 REVISION DATE
12/03/2010	TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	CSLC-1A
APPROVED DATE	ALEXANDRIA VIRGINIA	PAGE 14



NOTES: 1. DEPRESS SLAB 1-1/2" AT CENTERLINE BLEND INTO FLOW LINE.
2. PAY QUANTITIES SQ. YD. COMPLETE.
3. CLASS "A3" CONCRETE.
4. PROVIDE INTERMEDIATE CONTRACTION JOINTS AT 1/4 OF ENTRANCE WIDTH IF ENTRANCE EXCEEDS 12'.

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA VIRGINIA	
ENTRANCE RESIDENTIAL RAMP	
CSER-1	PAGE 33



1. ALL TRANSITIONS MUST BE GRADUAL.
2. AT LOCATIONS OTHER THAN CURB RETURN. THIS RAMP SHOULD BE USED AT MID BLOCK CROSS WALKS AND FOR CROSS WALKS AT JOGGED INTERSECTIONS ONLY.
3. THE PREFERRED DIMENSIONS ARE.
   W=4' WHERE THE RAMP NARROWS MAINTAIN A MINIMUM WIDTH OF 3' AT THE TOP OF THE RAMP.
   Y=5.5' USE "Y" DIMENSION SUCH THAT A STANDARD SLOPE 12:1 IS MAINTAINED. IF 12:1 SLOPE DOES NOT FIT , A MINIMUM SLOPE OF 8:1 IS ACCEPTABLE WITHOUT SPECIAL APPROVAL OF THE DIRECTOR.
   X=6' MINIMUM DIMENSION OF X=4' CAN BE USED WITHOUT SPECIAL APPROVAL OF THE DIRECTOR.
4. A LANDING AREA AT THE TOP OF THE RAMP NEED NOT BE PROVIDED. HOWEVER, AREAS WHERE AVAILABLE, A LANDING SHOULD BE USED.
5. THE RAMP LIP SHELL BE 1/2" WITH 1/8" ± TOLERANCES.
6. PROVIDE DRAINAGE CHEVRON "V"-GROVES 1/2" DEEP.

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA VIRGINIA	
CURB RAMPS FOR THE PHYSICALLY HANDICAPPED	
CSRP-1	PAGE 38

PAVING NOTES

1. SUBGRADE DEPTH FOR SUBGRADE BASED ON A DESIGN CBR VALUE OF 10. SOIL TESTS FOR SUBGRADE MUST BE SUBMITTED FOR ACTUAL DETERMINATION OF REQUIRED SUBBASE THICKNESS PRIOR TO CONSTRUCTION. (SEE GEOTECHNICAL REPORT AND INFORMATION SHEET C9.00 AND GEOTECHNICAL REPORT FOR MORE DETAILED INFORMATION).

2. A SMOOTH GRADE SHALL BE MAINTAINED FROM CENTERLINE OF THE EXISTING ROAD TO PROPOSED CURB AND GUTTER TO PRECLUDE THE FORMING OF FALSE GUTTERS AND/OR THE PONDING OF ANY WATER ON THE ROADWAY.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED _____
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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SITE PLAN DETAILS

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DD	STL
DESIGN	DRAWN	CHKD

SCALE H: NO SCALE V:

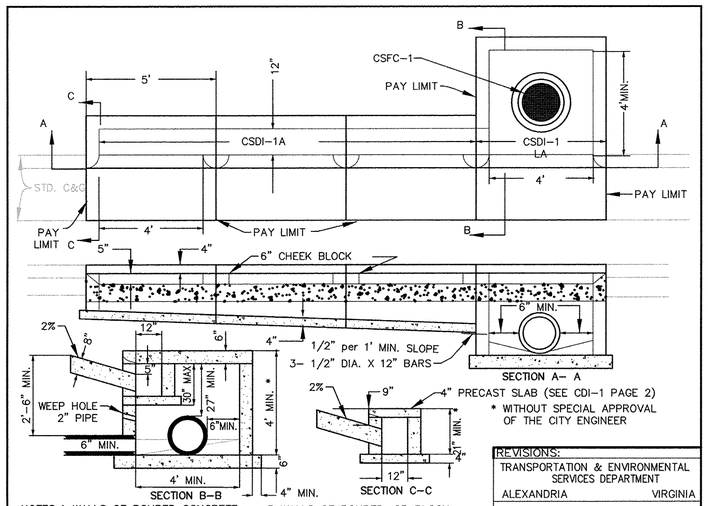
JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

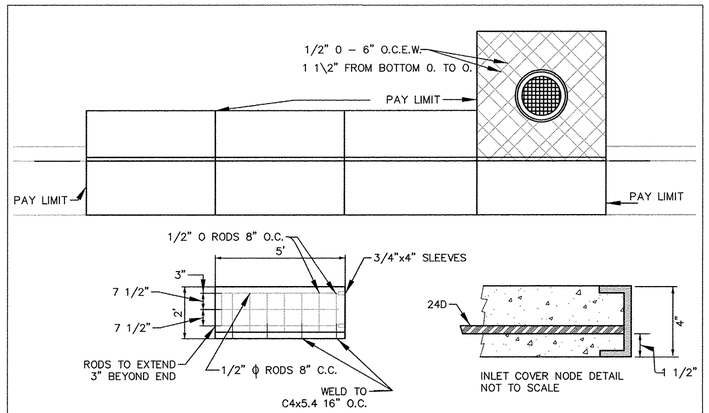
SHEET C13.00

Cad file name : V:\2267 - Donneys & Quiker\2267-01-001 (SNG)\Engineering\Eng Plans\2267-01-001-ENG-01.dwg



NOTES: 1 WALLS OF POURED CONCRETE WILL BE 6" THICK WALLS OF CONCRETE BLOCK WILL BE 8" THICK.
2 CONSTR. OF CLASS "A3"CONC.
3 WALLS OF POURED, OR BLOCK CONCRETE, OR BRICK IN MORTAR WILL BE PARGED 1/4"INSIDE.
4 CONSTR. WILL BE SUCH THAT UP TO 3 INLETS, TOTAL MAY BE ADDED.

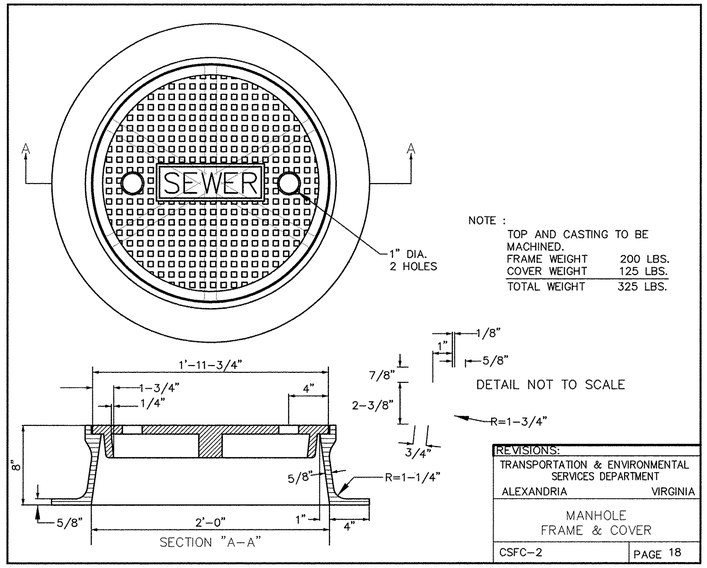
REVISIONS:
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT
ALEXANDRIA VIRGINIA
CURB DROP INLET & ADDITIONAL CURB INLETS
CSDI-1 & CSDI-1A PAGE 1



NOTES : 4"x4" ANGLE MAY BE SUBSTITUTED FOR 4" x 1-5/8" CHANNEL
ALL REINFORCING RODS WILL BE OF 1/2" DIA.

SCALE 1:2.667

REVISIONS:
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT
ALEXANDRIA VIRGINIA
CURB DROP INLET TOP SLAB & ADDITIONAL CURB INLETS TOP SLAB
CSDI-1 & CSDI-1A 2



NOTE :
TOP AND CASTING TO BE MACHINED.

FRAME WEIGHT	200 LBS.
COVER WEIGHT	125 LBS.
TOTAL WEIGHT	325 LBS.

REVISIONS:
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT
ALEXANDRIA VIRGINIA
MANHOLE FRAME & COVER
CSFC-2 PAGE 18

DETAILS NOT TO SCALE

NOTES: 1. CONSTRUCTION TO CONFORM TO PLUMBING INSPECTORS REQUIREMENTS AND SPECIFICATIONS.

REVISIONS:
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT
ALEXANDRIA VIRGINIA
LATERAL CONNECTION (SPECIAL DESIGN)
CSLC-2 PAGE 15

NOTES: 1. CONSTRUCTION TO CONFORM TO PLUMBING INSPECTORS REQUIREMENTS AND SPECIFICATIONS.
2. EXTRA STRENGTH CAST IRON PIPE OR OTHER PIPE TO BE USED PER PLUMBING INSPECTORS REQUIREMENTS.
3. ALL LATERAL FLOW WILL FALL TO TO MAIN SEWER AT 1/4" PER FOOT MIN.

PIPE SIZE	A	B	C	D	R	X
4"	3 1/2	4	4 5/16	4 13/16	4	1 5/16
5"	3 1/2	4	4 3/8	4 7/8	4 1/2	1 3/8
6"	3 1/2	4	4 1/2	5	5	1 1/2
8"	4 1/2	5 1/2	5 5/16	6 11/16	6	1 13/16

NOTES: CONTINUED
4. NO SADDLE TO BE USED ON PLASTIC MAIN. (T. OR Y REQUIRED WHEN MAIN IS BUILT.)
5. PVC PIPE IN RIGHT OF WAY MUST BE MIN. SCHEDULE 40 OR SDR 35.
6. CONCRETE CRADLE TO BE USED IF COVER IS LESS THAN 5 FEET OR MORE THAN 12 FEET. CRADLE TO BE POURED TO SPRING LINE OF PIPE. IF COVER IS 2 FEET OR LESS PIPE IS TO BE ENCASED IN CONFORMANCE WITH CSSE–1.

SCALE 1"= 1'

REVISIONS:
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT
ALEXANDRIA VIRGINIA
LATERAL CONNECTION
CSLC-1 PAGE 14

1. FIRE HYDRANT: MUELLER CENTURION – CATALOG # A423 WITH 1–1/2 INCH PENTAGON OPERATING NUT; LEFT TURN TO OPEN TWO 2–1/2" HOSE NOZZLES AND ONE 4" HOSE NOZZLE.
2. VALVE: MUELLER GATE VALVE – CATALOG # A2380–20, WITH 6 INCH MECHANICAL JOINTS. 2 INCH SQUARE NUT, LEFT TURN TO OPEN.
3. LOCATIONS IS TO BE AS SHOWN ON PLANS. VARIANCE OF THE 2' MIN. FROM THE FACE OF THE CURB SHALL BE REVIEWED ON AN INDIVIDUAL BASIS BY THE CITY ENGINEER.

SCALE 1:2.667

REVISIONS:
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT
ALEXANDRIA VIRGINIA
FIRE HYDRANT INSTALLATION
CSFH–1 PAGE 9

* CONCRETE ENCASEMENT TO BE PROVIDED WHERE LESS THAN 2' OF COVER WILL BE PROVIDED FOR STORM DRAIN WITHIN ROADWAY

CONCRETE ENCASEMENT DETAIL
N.T.S.

FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004–0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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UTILITY DETAILS (SHEET 1 OF 2)

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: NO SCALE V:
JOB No. 2267-01-001
DATE : OCTOBER, 2016
FILE No. 2267-D-CP-003
SHEET C13.10

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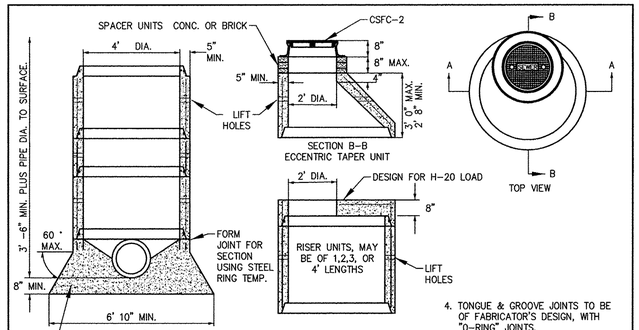
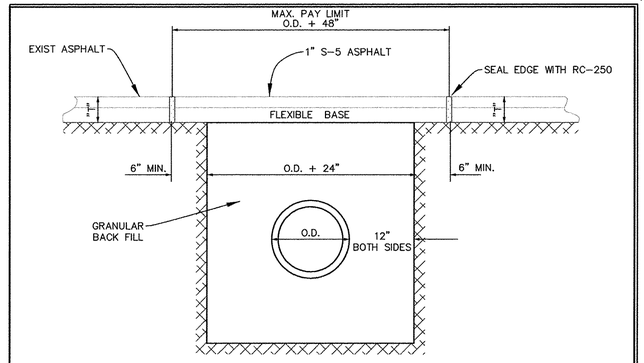


4. TONGUE & GROOVE JOINTS TO BE OF FABRICATOR'S DESIGN, WITH "O-RING" JOINTS. SEE CSMH-2A FOR DETAILS.

NOTES:
1. RISERS AND TAPER UNITS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF AASHO DESIGNATION M199 EXCEPT WALL THICKNESS IS 5" MIN. BASE TO BE POURED IN PLACE ON SAME DAY THE PIPE IS LADED THROUGH MH
2. SLOPE FLOOR FROM SPRING LINE OF SAN. SEWER; AND FROM FLOW LINE OF STORM SEWER MH.'S.
3. TWO 2" DIA. LIFT POINTS TO BE PROVIDED IN EACH RISER & TAPER UNIT ABOVE THE CENTER OF GRAVITY WITH CENTERS 180° APART. TWO LIFT HOOKS OF THE FABRICATOR'S DESIGN TO BE PROVIDED IN THE BASE.

SCALE 1:2.667

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA	VIRGINIA
TYPE-2 MANHOLE PRECAST	
CSMH-2	PAGE 5



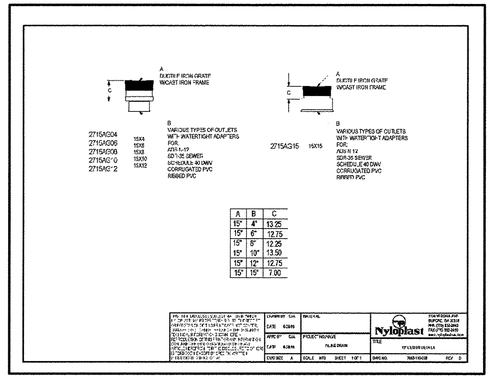
NOTES: 1: B-3 ASPHALT BASE COURSE TO BE 1" BELOW EXISTING PAVEMENT SURFACE; THICKNESS SHALL BE 6" OR "T" MINUS 1"; WHICHEVER IS GREATER. THICKNESS WILL NOT BE LESS THAN EXISTING ASPHALT PAVEMENT.

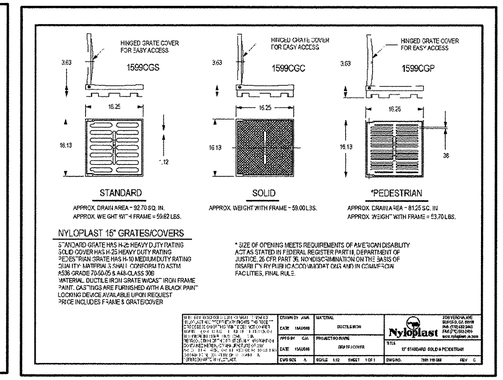
2: GRANULAR BACK FILL TO BE TAMPED PER CSJT-1 SPECIFICATIONS.

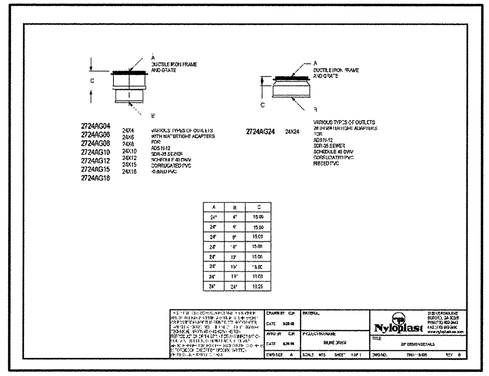
DMG

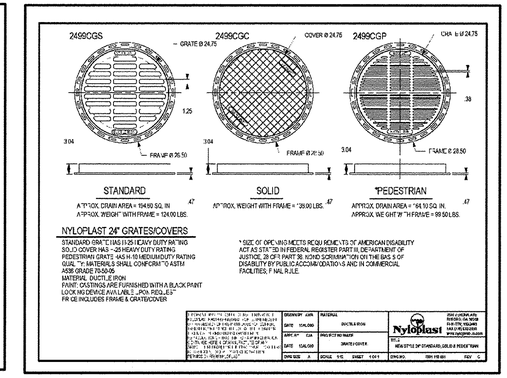
SCALE 1=1

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA	VIRGINIA
REPLACEMENT SURFACE (FLEXIBLE BASE)	
CSRS-2	PAGE 20





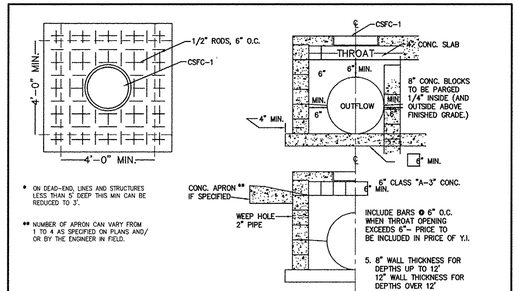




NOTES CONTINUED

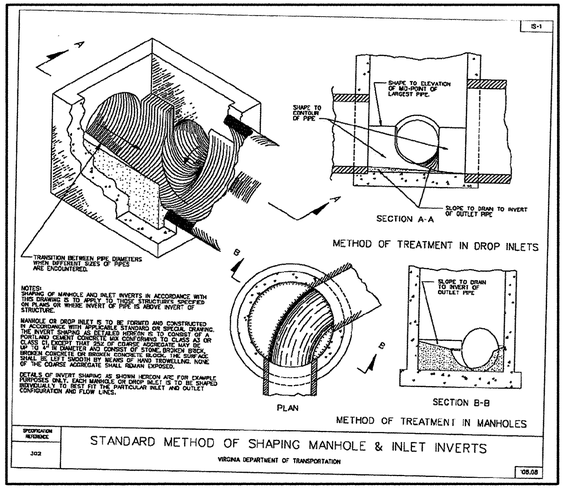
5. A MINIMUM OF 1'-6" ALONG THE OUTER CIRCUMFERENCE IS TO REMAIN BETWEEN THE EXTREMITIES OF HOLES FOR ADJACENT PIPES IN ANY UNIT.
6. ALL PIPES ARE TO BE MORTARED INTO HOLES PROVIDED.
7. BASE UNIT MUST BE 4'-0" IN HEIGHT FOR USE WITH 30" OR 36" PIPE.
8. BASIS OF PAYMENT TO BE PER MANHOLE COMPLETE IN PLACE, INCLUDING ALL NECESSARY ITEMS, FRAME AND COVER, ETC.
9. CONCENTRIC CONE TOP IS ALLOWED.
10. STEPS, WHEN USED, MUST BE NON-CORROSIVE, YIELD RATHER THAN BREAK, AND MEET A.S.T.M. AND OSHA REQUIREMENTS. THEY CAN BE STAINLESS STEEL OR REINFORCED PLASTIC STEPS AND MUST BE APPROVED BY THE ENGINEER. PRICE TO BE INCLUDED IN THE PRICE OF THE MANHOLE COMPLETE IN PLACE.

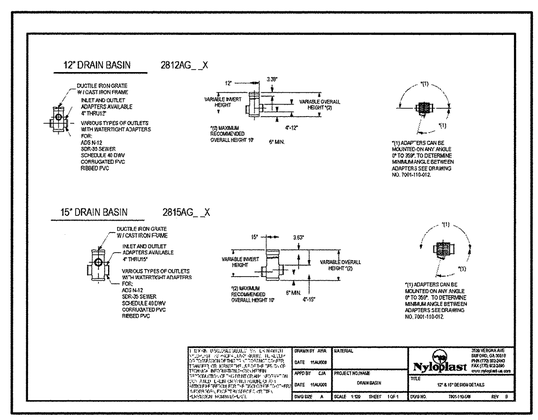
REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA	VIRGINIA
TYPE-2 MANHOLE PRE CAST	
CSMH-2	PAGE 5-1

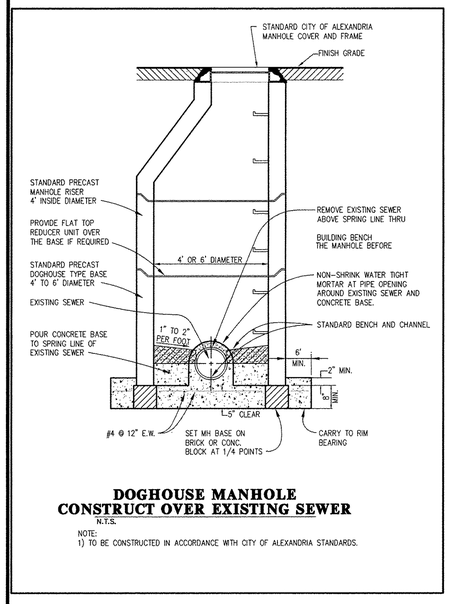


1. WHEN SPECIFIED CONCRETE APRONS TO BE INCLUDED IN PRICE OF YARD INLET.
2. AN 8" THICK CONC. APRON 2' WIDE (MIN.) WILL BE INSTALLED IN FRONT OF EACH THROAT. THEY WILL BE SHAPED TO MEET CONDITIONS AS DIRECTED IN THE FIELD.
3. CLASS "A-3" CONC. USED THROUGHOUT.
4. WALLS OF POURED OR BLOCK CONC.,OR BRICK IN MORTAR WILL BE PARGED 1/4" INSIDE (AND OUTSIDE ABOVE FINISHED GRADE.)

REVISIONS:	
TRANSPORTATION & ENVIRONMENTAL SERVICES DEPARTMENT	
ALEXANDRIA	VIRGINIA
YARD INLET (PIPE SIZE TO 60")	
CSYI-1	PAGE 3



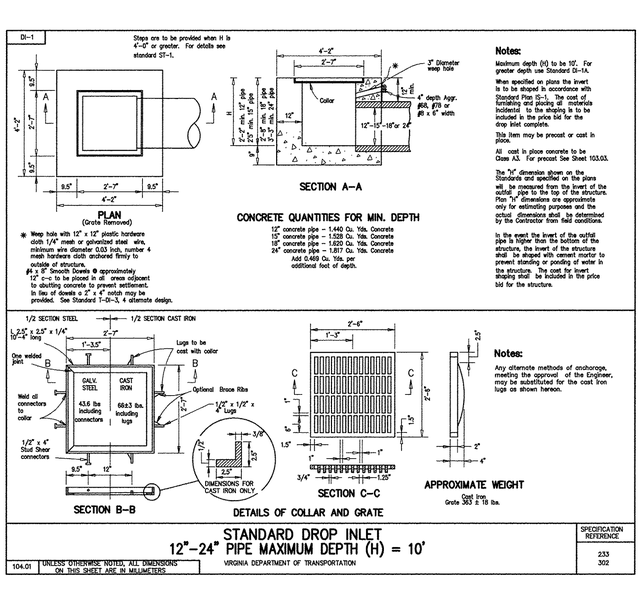




DOGHOUSE MANHOLE CONSTRUCT OVER EXISTING SEWER

N.T.S.

NOTE:
1) TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALEXANDRIA STANDARDS.



FOR REFERENCE ONLY AS AMENDED BY FINAL SITE PLAN.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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Alexandria, Virginia 22314
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UTILITY DETAILS (SHEET 2 OF 2)

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION
DATE	DESCRIPTION

SCP	DAD	STL
DESIGN	DRAWN	CHKD

SCALE H: NO SCALE V:

JOB No. 2267-01-001

DATE : OCTOBER, 2016

FILE No. 2267-D-CP-003

SHEET C13.20

Cad file name : V:\2267 - Jamieye & Quaker\2267-01-001 (NO)\Engineering\Eng Plans\2267-01-001-FDP-UTIL01.dwg

FOR REFERENCE ONLY AS
AMENDED BY FINAL SITE PLAN.

Tree	Name	Size	Condition	Recommendation
2	Japanese Maple	9/11/12	0.74	Save Tree; Cut vines at ground level; prevent regrowth on the tree
5	American Holly	7	0.75	Save Tree
6	White Oak	50	0.75	Save Tree; Crown clean of wood 2" or larger
17	Black Cherry	24	0.66	Save Tree; Crown clean of wood 2" or larger. Cut vines at ground level; prevent regrowth on the tree
20	Colorado Spruce	7	0.75	Save Tree; Relocate on-site
21	London Planetree	24	0.75	Save Tree; Cut vines at ground level; prevent regrowth on tree
28	White Oak	43	0.75	Save Tree; Crown clean of wood 2" or larger
30	Red Maple	20	0.56	Save Tree; Crown clean of wood 2" or larger
33	Norway Maple	7	0.75	Save Tree
37	White Oak	43	0.75	Save tree; Crown clean of wood 2" or larger
41	Crabapple	12	0.75	Save Tree; Thin crown 25%, cutting ½" or larger wood
42	Crabapple	12	0.75	Save Tree; Thin Crown 25%, cutting ½" or larger wood
46	Crabapple	14	0.69	Save Tree; Thin crown 25%, cutting ½" or larger wood
47	Crabapple	14	0.75	Save Tree; Thin crown 25%, cutting ½" or larger wood
49	Chestnut Oak	33	0.75	Save Tree; Crown clean of wood 2"
52	Eastern Red Cedar	18	0.75	Save Tree
53	Eastern Red Cedar	12	0.75	Save Tree
54	Eastern Red Cedar	12	0.75	Save Tree
55	Eastern Red Cedar	12	0.75	Save Tree
58	Persimmon	8	0.75	Save Tree; Cut Vines at ground level; prevent regrowth on the tree
59	Persimmon	6–Aug	0.75	Save Tree; Cut vines at ground level; prevent regrowth on the tree
67	Blue Atlas Cedar	4	0.75	Save Tree; Relocate on Site

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. ____
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISION — DATE
DATE RECORDED ____
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

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TREE PRESERVATION PLAN

OAK GROVE

CITY OF ALEXANDRIA VIRGINIA

COMMONWEALTH OF VIRGINIA
STEVEN T. LIAM
Lic. No. 40224
10/28/16
PROFESSIONAL ENGINEER

PLAN STATUS	
10/28/16	DSP EXTENSION

DATE	DESCRIPTION	
SCP DESIGN	DAW DRAWN	STL CHKD
SCALE	H: 1"=30' V:	
JOB No.	2267-01-001	
DATE :	OCTOBER, 2016	
FILE No.	2267-D-CP-003	
SHEET	C14.00	

Cad file name: I:\2267 - Jannys & Quaker\2267-01-001 (ENG)\Engineering\Dwg Plans\2267-01-001-TRP-TREE-PRES.dwg

OAK GROVE

CITY OF ALEXANDRIA, VIRGINIA

PRELIMINARY SITE PLAN - EXTENSION FOR LOT 9

October 28, 2016

CLIENT
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6820 ELM STREET
MCLEAN, VA 22101
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FAX: (703) 734-0322
CONTACT: JACK PERKINS

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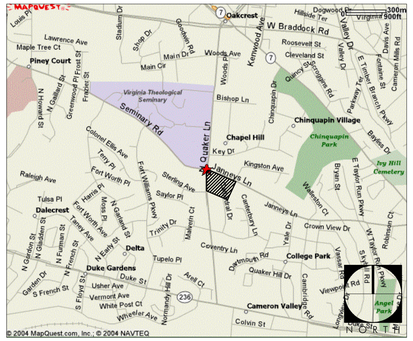
CONTACT: DAVID WALL



VICINITY MAP
NOT TO SCALE

SHEET INDEX

SHEET NUMBER	SHEET TITLE
L1.01	OVERALL LAYOUT PLAN
L1.02	LIGHTING LOCATION PLAN
L1.03	LIGHTING PHOTOMETRIC PLAN
L1.04	EXISTING TREE INVENTORY PLAN
L1.05	OVERALL LANDSCAPE PLAN
L1.06	PLANTING DETAILS
L2.01	DETAILS & SPECIFICATIONS
L2.02	DETAILS & SPECIFICATIONS
L2.03	DETAILS & SPECIFICATIONS
L2.04	DETAILS & SPECIFICATIONS

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STUDIO39

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ALEXANDRIA, VIRGINIA 22310
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FAX (703) 719-6503
CONTACT: JOSEPH PLUMPE

COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

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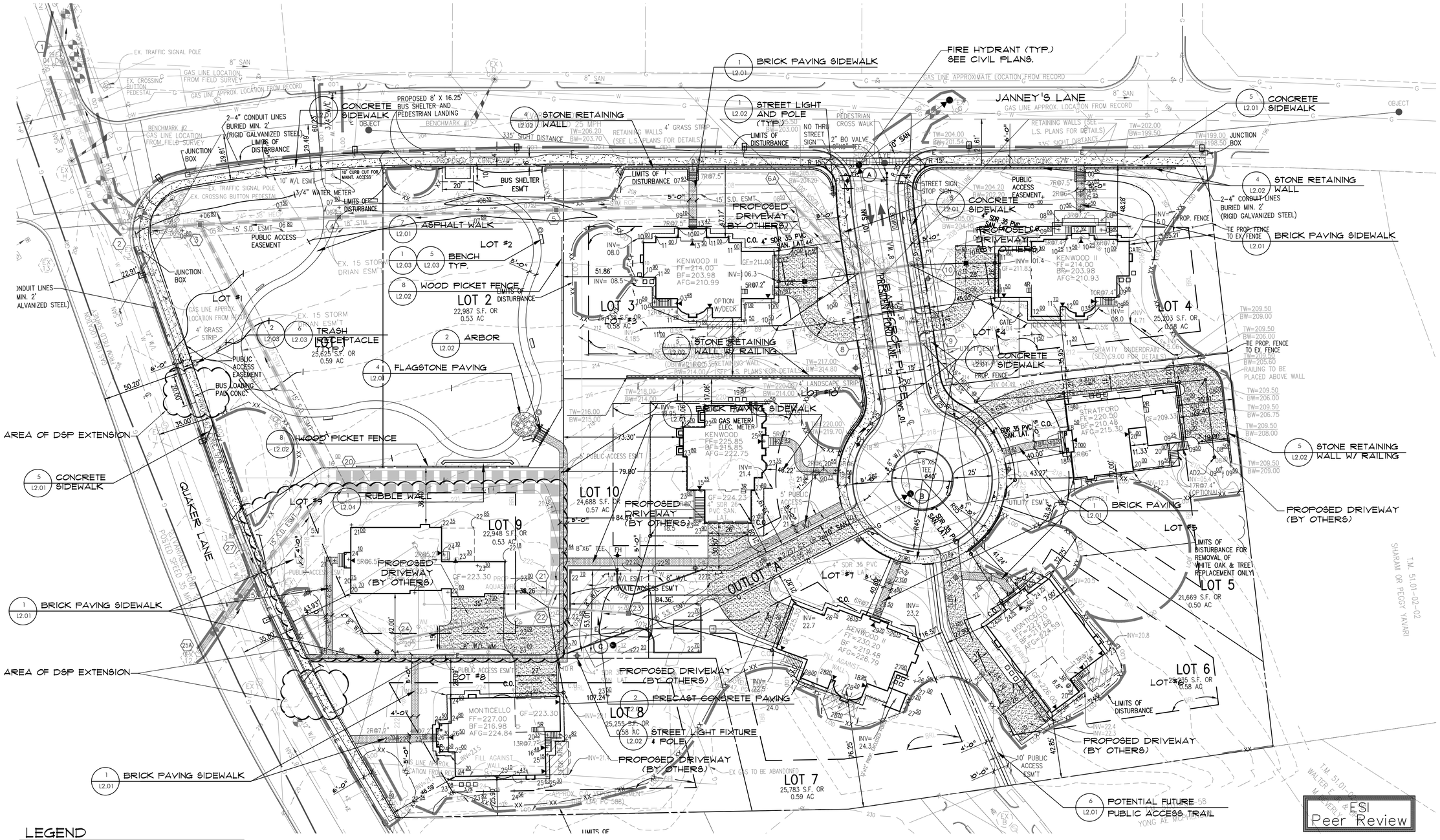

LEGEND

- PROPOSED SPECIALTY CONCRETE PAVING
- PROPOSED BRICK PAVING
- PROPOSED CONCRETE PAVING
- PROPOSED DRIVEWAY

DISTURBED AREA: 5.33 AC (233,167 SF)

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING

DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____

DIRECTOR — DATE

CHAIRMAN, PLANNING COMMISION — DATE

DATE RECORDED _____

INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

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OAK GROVE
ALEXANDRIA, VIRGINIA

ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

OVERALL LAYOUT PLAN

NORTH

DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DJ

SCALE: 1"= 30'-0"

0 15 30 60

PROJECT NO: 04002

DATE: 10.28.16

L1.01

DSP EXTENSION

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OAK GROVE

ALEXANDRIA, VIRGINIA

ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

LIGHTING LOCATION PLAN

DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DJ
NORTH

SCALE: 1"= 30'- 0"

0 15 30 60

PROJECT NO: 04002

DATE: 10.28.16

L1.02

DSP EXTENSION

ESI Peer Review

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CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING

DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.

DIRECTOR DATE

CHAIRMAN, PLANNING COMMISION DATE

DATE RECORDED

INSTRUMENT NO. DEED BOOK NO. PAGE NO.

LEGEND

- EXISTING LIGHT TO BE REMOVED
- EXISTING STREET LIGHT TO REMAIN
- PROPOSED STREET LIGHT AND POLE (TYP)

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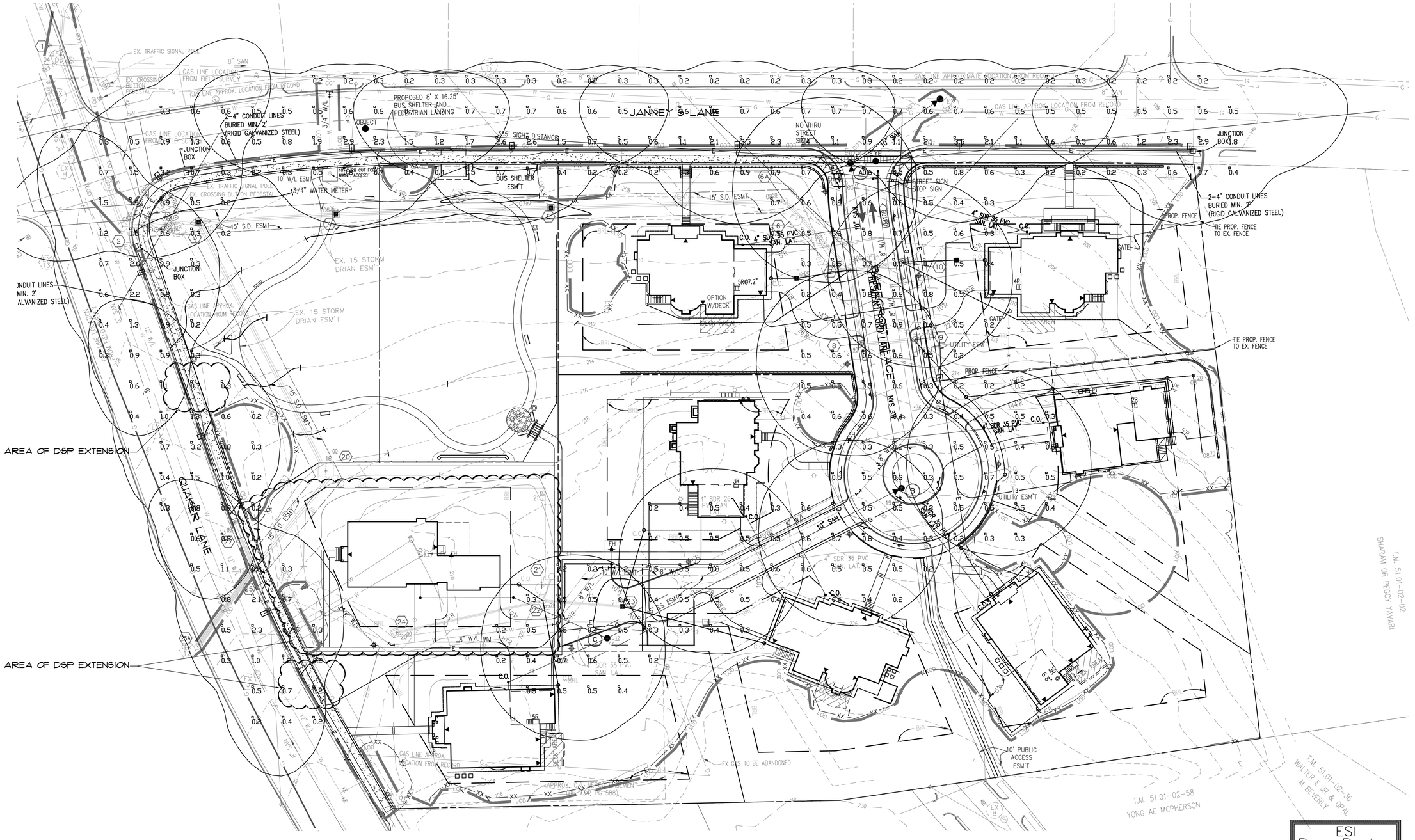

LEGEND

- EXISTING LIGHT TO BE REMOVED
- EXISTING STREET LIGHT TO REMAIN
- PROPOSED STREET LIGHT AND POLE (TYP)

Streets

Illuminance Values(Fc)
Average =1.14
Maximum =3.5
Minimum =0.3
Avg/Min Ratio=3.80
Max/Min Ratio=11.67

Luminaire Schedule						
Project: All Projects						
Symbol	Qty	Label	Arrangement	Lumens	LLF	Description
✦	7	A	SINGLE	9500	0.720	Hadco R54BANNIATRD100SQ 14 ft. Pole
☒	9	B	SINGLE	16000	0.720	Existing Cobra head 150 watt HPS, 25 ft. mounting height, 4 ft. arm

Numeric Summary							
Project: All Projects							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Grade	Illuminance	Fc	0.65	3.5	0.2	3.25	17.50

ESI
Peer Review

APPROVED VSP 2004-0005
CITY PLAN NO.
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO.
DIRECTOR DATE
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OAK GROVE
ALEXANDRIA, VIRGINIA
ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

LIGHTING PHOTOMETRIC PLAN

NORTH
DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DJ
SCALE: 1"= 30'- 0"
0 15 30 60
PROJECT NO: 04002
DATE: 10.28.16

L1.03

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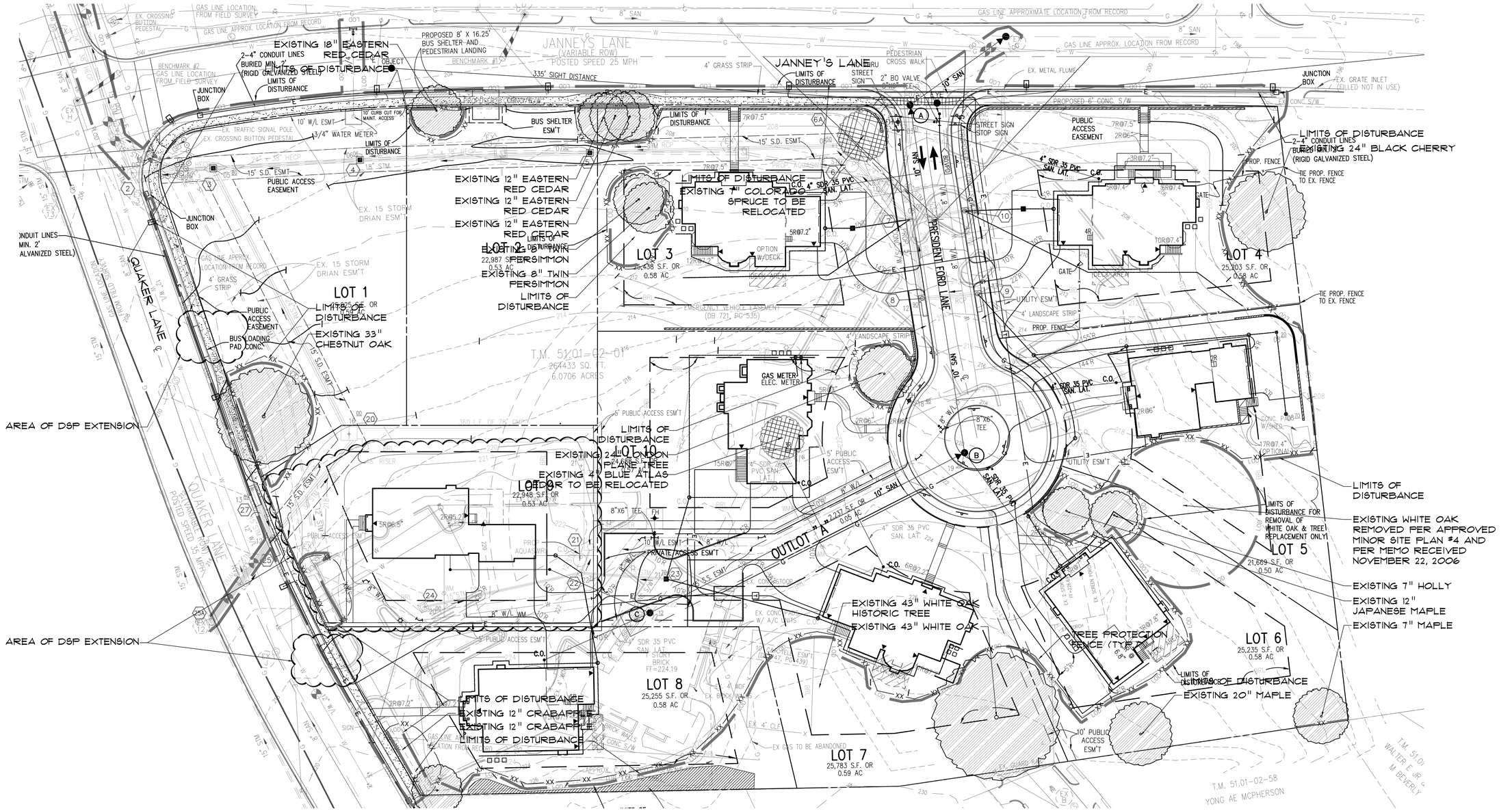

LEGEND

EXISTING TREE TO REMAIN

EXISTING TREE TO BE RELOCATED

CROWN COVERAGE TABULATION NOTES:

1. CROWN COVERAGE TABULATION IS TAKEN FROM THE "LANDSCAPE GUIDELINES" PUBLISHED BY THE CITY OF ALEXANDRIA, SECTION VI.
2. RELOCATION OF EXISTING CEDAR AND SPRUCE IS TO BE DETERMINED AND COORDINATED WITH THE CITY ARBORIST.

EXISTING CROWN COVERAGE = 12,750 SQ. FT.

DISTURBED AREA: 5.33 AC (233,167 SF)

TREE PRESERVATION NOTES:

1. All work performed shall meet or exceed industry standards. In the event cultural treatments prescribed are not covered by an existing standard, all work shall meet or exceed standards approved by the City of Alexandria Urban Forester. Industry standards shall mean those most recently published by International Society of Arboriculture (ISA), American National Standards Institute (ANSI), and/or Tree Care Industry Association (TCIA).
2. Prior to any construction activity, all individual trees and groups of trees shown to be preserved on the tree preservation plan shall be protected by fencing a minimum of four feet in height, placed at the limits of clearing and grading, or as determined during the pre-construction meeting. Tree protection fencing should be 14 gauge steel woven wire "farm fence", on 6 foot steel posts driven into the ground 18 inches and placed not more than 10 feet apart; or super silt fence or chainlink fence. The tree protection fencing shall be made clearly visible to all construction personnel with signs posted on it stating in Spanish and English that it is a tree preservation area and no entry is permitted. The fencing shall be installed prior to any work being conducted on the site, including the demolition of any existing structures or fences.
3. All construction activity beyond the limits of clearing and grading shown on the site plan and the Tree Preservation Plan shall be prohibited unless approved by the City of Alexandria Urban Forester.
4. The engineer, architect, or site superintendent shall flag the limits of clearing and grading prior to the preconstruction meeting.
5. The site superintendent, City of Alexandria Urban Forester, and Project Arborist shall walk the limits of clearing and grading to discuss tree issues and the importance of not violating the limits of clearing and grading. Which trees are to be removed from within tree save areas shall be determined at this time.
6. Root Pruning: Root pruning shall be performed along the limits of clearing and grading prior to any other site disturbance. Root pruning shall be performed wherever grades will be altered within the root zone of a tree on or off site that is to be preserved and shall be conducted at the limits of clearing and grading or the dripline of the trees designated to be preserved, whichever is greater, given the site constraints. A trencher, vibratory plow, or stump grinder shall be used to a depth of 18 inches. Immediately after root pruning, the trench shall be backfilled. Wherever possible, root pruning trenches should be mulched with wood chips or mulch four inches deep. Root pruning shall be done prior to any site work or installation of siltation control measures.
7. Clearing Operations: Trees to be removed shall be felled in such a manner as to preserve the trees that are to remain. Trees directly adjacent to but within the limits of clearing and grading shall be felled by hand, with a chain saw, and the stumps shall remain in place. If, due to site constraints, the stumps must be removed, this shall be done only after root pruning along the limits of clearing and grading has occurred, and shall be done in a manner that does not injure trees to be preserved.
8. Off-site and jointly owned trees that may be impacted by construction should be reviewed at the pre-construction meeting.
9. The tree care contractor shall perform tree removals as specified. Trees within the tree preservation areas, which are individually identified by the Project Arborist to be removed, shall be felled by hand with a chain saw and the stumps shall remain in place. Such trees shall be felled in a manner that does not injure trees to be preserved. Trees to be removed from the tree preservation area shall be dropped into the area to be cleared, or placed down. These trees shall be moved into the area to be cleared without injuring remaining vegetation. Dead trees shall be removed from tree preservation areas only if they pose a hazard. Trunks of dead trees shall remain in tree preservation areas unless they pose a hazard. Stumps shall remain in the tree preservation areas unless otherwise stated in the tree preservation plan.
10. After trees are removed from the tree preservation areas, erosion control system and tree preservation fencing shall be put in place before beginning the actual clearing/grading process.
11. Silt fence or super silt fence, if required, may be installed in the root pruning trench. If super silt fence is used, it may serve as tree preservation fencing.Other types of tree preservation fencing shall be placed between the area to be cleared and the root pruning trench.
12. The tree care contractor shall prune trees as specified in the tree preservation plan. All work shall meet or exceed industry standards, and an international Society of Arboriculture Certified Arborist shall be on site while tree care operations are taking place.
13. Should entry into a tree save area be necessary, the site superintendent shall contact the Project Arborist and City of Alexandria Urban Forester first. Measures as prescribed by the Project Arborist to minimize or mitigate damage resulting from entry shall be taken.
14. At bond release, the site shall be reviewed to determine the need for further tree care or removal.
15. Demolition Operations: Buildings, concrete pads, and concrete or asphalt paths and driveways or roadways, debris and junk within or adjacent to tree preservation areas shall be removed in such a way that trees to be preserved are not damaged. Equipment shall at all times remain on concrete or wood-chip padded surfaces rather than positioning on soil or vegetation. Buildings near trees to be saved shall be pulled over, away from trees, using cables, rather than pushed over with equipment. Concrete and debris within tree preservation areas shall be pulled up and loaded onto equipment without the equipment leaving the concrete or wood-chip padded surfaces.
16. No construction materials or equipment shall be stored or staged beyond the limits of disturbance.

ESI
Peer Review

APPROVED DSP # 2004-0005
CITY PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING
DIRECTOR _____ DATE _____
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____
DIRECTOR _____ DATE _____
CHAIRMAN, PLANNING COMMISION _____ DATE _____
DATE RECORDED _____
INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

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OAK GROVE
ALEXANDRIA, VIRGINIA
ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

EXISTING TREE INVENTORY PLAN

DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DJ
NORTH

SCALE: 1"= 30'- 0"
0 15 30 60

PROJECT NO: 04002
DATE: 10.28.16

L1.04

DSP EXTENSION

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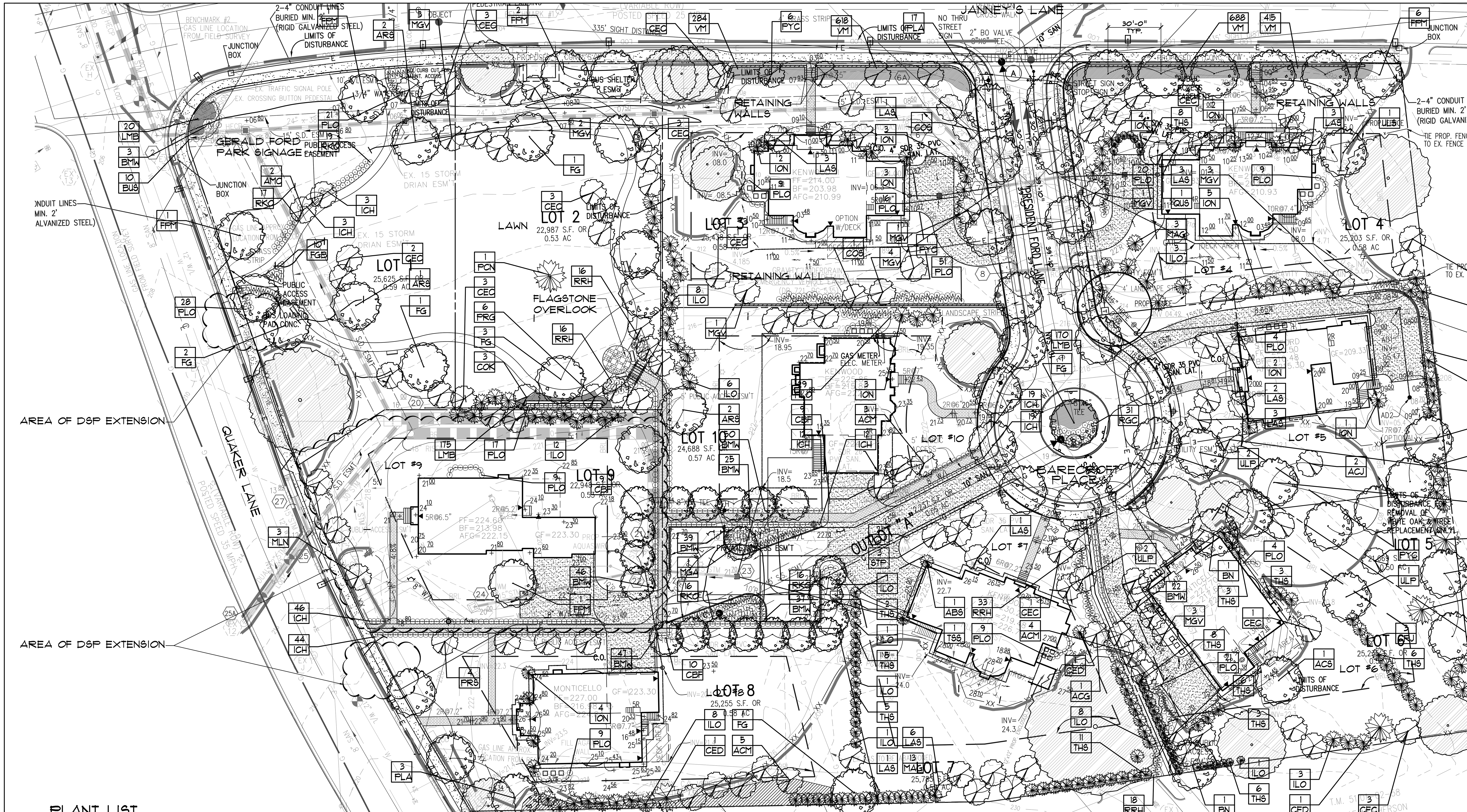

NOTES:
1. ALL MATERIALS' SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE INDUSTRY STANDARD FOR GRADING PLANT MATERIAL- THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1).
2. NO CONSTRUCTION MATERIALS OR EQUIPMENT SHALL BE STORED OR STAGED BEYOND THE LIMITS OF DISTURBANCE.

*PLANTINGS ON ALL LOTS HAVE BEEN MODIFIED BY OWNER. PLAN ILLUSTRATES CURRENT LOCATION OF TREES. SHRUB MASSINGS HAVE BEEN MODIFIED.

PLANT LIST

	QUANITY	KEY	GENUS	SPECIES	VARIETY	COMMON NAME	HEIGHT	CALIPER	REMARKS
SHADE TREE	5	ARS	Acer	rubrum	'Red Sunset'	Red Sunset Maple	12 - 14'	2 1/2 - 3"	B&B, full uniform crown, symmetrical branching, full specimen
	19	CBF	Carpinus	betulus	'Fastigiata'	Upright European Hornbeam	12 - 14'	2 1/2 - 3"	B&B, full uniform crown, symmetrical branching, full specimen
	11	FPM	Fraxinus	pennsylvanica	'Marshall's Seedless'	Marshall's Seedless Ash	12 - 14'	2 1/2 - 3"	B&B, full uniform crown, symmetrical branching, full specimen
	11	FG	Fagus	grandifolia		American Beech	12 - 14'	2 1/2 - 3"	B&B, full uniform crown, symmetrical branching, full specimen
	22	PLA	Platanus	acerifolia		London Plane Tree	12 - 14'	2 1/2 - 3"	B&B, full uniform crown, symmetrical branching, full specimen
	2	BN	Betula	nigra		River Birch	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	ACS	Acer	sp.		Maple	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	5	ULP	Ulmus	parvifolia		Chinese Elm	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	QUS	Quercus	sp.		Oak	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	ULS	Ulmus	sp.		Elm	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
EVERGREEN TREE	6	CED	Cedrus	deodara		Deodar Cedar	6 - 8'	3 1/2 - 5'	B&B, full to ground with good seasonal flush
	57	ILO	Ilex	opaca		American Holly	6 - 8'	3 1/2 - 5'	B&B, full to ground with good seasonal flush
	33	ION	Ilex	x	'Nellie R. Stevens'	Nellie R. Stevens Holly	6 - 8'	3 1/2 - 5'	B&B, full to ground with good seasonal flush
	1	PCN	Picea	ovobata		Siberian Spruce	6 - 8'	3 1/2 - 5'	B&B, full to ground with good seasonal flush
	66	THS	Thuja	sp.		Arborvitae	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	ABS	Abies	sp.		Fir	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	TSS	Tsuga	sp.		Hemlock	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	3	CRJ	Cryptomeria	japonica		Japanese Cedar	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	16	MAG	Magnolia	grandiflora		Southern Magnolia	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	MGA	Magnolia	grandiflora	'Alta'	'Alta' Magnolia	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	4	PIS	Picea	sp.		Spruce	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
ORNAMENTAL TREE	12	ACM	Acer	ginnala		Amur Maple	6 - 8'	1 1/2" min.	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
	5	COK	Cornus	kousa		Kousa Dogwood	6 - 8'	1 1/2" min.	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
	25	CEC	Cercis	canadensis		Eastern Redbud	6 - 8'	1 1/2" min.	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
	21	MGV	Magnolia	virginiana		Sweetbay Magnolia	6 - 8'	1 1/2" min.	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
	6	PRG	Prunus	sargentii		Sargent Cherry	6 - 8'	1 1/2" min.	B&B, uniform branching, full specimen
	4	PRS	Prunus	sp.		Cherry	6 - 8'	1 1/2" min.	B&B, uniform branching, full specimen
	3	STP	Stewartia	japonica		Japanese Stewartia	6 - 8'	1 1/2" min.	B&B, uniform branching, full specimen
	3	MLN	Malus		'Snowdrift'	Snowdrift Crabapple	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	23	LAS	Lagestroemia	sp.		Crapemyrtle	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	1	ACG	Acer	griseum		Paper Bark Maple	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	2	AMC	Amelanchier	canadensis		Serviceberry	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	8	PYC	Pyrus	calleryana		Bradford Pear	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	2	ACJ	Acer	japonica		Japanese Maple	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen
	2	COS	Cornus	sp.		Dogwood	8 - 10'	2 1/2" min.	B&B, uniform branching, full specimen

	QUANITY	KEY	GENUS	SPECIES	VARIETY	COMMON NAME	HEIGHT	SPREAD	REMARKS
SHRUBS	182	ICH	Ilex	crenata	'Hoogendorn'	Hoogendorn Holly	15 - 18"	18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
	31	RGC	Rhododendron		'Girard's Crimson'	Girard's Crimson Azalea	18 - 24"	18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
	326	PLO	Prunus	laurocerasus	'Otto Luykens'	Otto Luykens Cherry Laurel	18 - 24"	18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
	125	RKO	Rosa		'Knock Out'	Knock Out Rose	18 - 24"	18 - 24"	3 gal., healthy, vigorous, well-rooted & established in container
	83	RRH	Rhododendron		'Nancy of Robin Hill'	Nancy of Robin Hill Rhododendron	15 - 18"	18 - 24"	3 gal., healthy, vigorous, well-rooted & established in container
	266	BMW	Buxus	microphylla	'Wintergreen'	Wintergreen Boxwood	15 - 18"	15 - 18"	3 gal., healthy vigorous, well-rooted & established in container
	10	FGB	Fothergilla	gardenii	'Blue Mist'	Blue Mist Fothergilla	15 - 18"	18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
	10	BUS	Buxus	sp.		Boxwood	15 - 18"	18 - 24"	3 gal., healthy, vigorous, well-rooted & established in container
G.C.	2005	VM	Vinca	minor		Periwinkle	2"peat pot		12" o.c., full specimen, healthy, vigorous, well-rooted and established
	345	LMB	Liriope	muscari	'Big Blue'	Big Blue Liriope	1 qt.		12" o.c., full specimen, healthy, vigorous, well-rooted and established

*REPLACEMENT TREE PLANT LIST

QUANITY	KEY	GENUS	SPECIES	VARIETY	COMMON NAME	HEIGHT	CALIPER	REMARKS
3	QUW	Quercus	alba		White Oak	12 - 14'	2 1/2 - 3"	B&B, full uniform crown, symmetrical branching, full specimen
3	ILO	Ilex	opaca		American Holly	6 - 8'	3 1/2 - 5'	B&B, full to ground with good seasonal flush
3	ACM	Acer	ginnala		Amur Maple	6 - 8'	1 1/2 " min.	B&B, multi-trunk, 3 cane minimum, full symetrical branching

NOTES
1. SEE SHEET L2.01 FOR DETAILS AND SPECIFICATIONS.
2. SEE SHEET L2.02 FOR LANDSCAPE DETAILS.

ESI Peer Review

CROWN COVERAGE TABULATION

CROWN COVERAGE TABULATION IS TAKEN FROM THE "LANDSCAPE GUIDELINES" PUBLISHED BY THE CITY OF ALEXANDRIA, SECTION VI. LARGE SHADE TREES ARE COUNTED AS 1,250 SF. EACH. MEDIUM SHADE TREES ARE COUNTED AS 750 SF. EACH. MEDIUM ORNAMENTAL AND EVERGREEN TREES ARE COUNTED AS 500 SF. EACH. SMALL ORNAMENTAL AND EVERGREEN TREES ARE COUNTED AS 250 SF. EACH.

LOT	AREA	REQUIRED COVERAGE	PROPOSED COVERAGE	AS-BUILT COVERAGE
PARK	48,612 SF	12,153 SF	30,250 SF	31,500 SF
3	25,438 SF	6,277 SF	11,500 S.F.	10,250 S.F.
4	25,207 SF	6,186 SF	11,000 S.F.	24,500 S.F.
5	21,669 SF	5,576 SF	7,250 S.F.	14,750 S.F.
6	25,235 SF	6,626 SF	6,750 S.F.	25,250 S.F.
7	25,801 SF	6,197 SF	7,000 S.F.	25,250 S.F.
8	25,255 SF	6,306 SF	12,750 S.F.	20,500 S.F.
9	22,948 SF	6,457 SF	10,750 S.F.	N/A
10	24,688 SF	6,371 SF	8,000 S.F.	N/A

TOTAL COVERAGE REQUIRED= 62,149 SF
TOTAL COVERAGE PROVIDED= 154,500 SF

*STREET TREES PROVIDED ON PUBLIC PROPERTY = 22,500 SF
TOTAL PROPOSED COVERAGE WITH STREET TREES = 177,000 SF

DISTURBED AREA: 5.27 AC (229,726 SF)

LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE RELOCATED
- PROPOSED SHADE½ TREE 2'-1/2" - 3' CALIPER
- PROPOSED ORNAMENTAL TREE 1' 1/2" - 2' CALIPER
- PROPOSED EVERGREEN TREE 6' - 8' TALL
- PROPOSED SHRUB 18" - 24" TALL
- PROPOSED STREET LIGHTS
- PROPOSED SPECIALTY PAVING

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING

DIRECTOR | DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. ____________

DIRECTOR | DATE

CHAIRMAN, PLANNING COMMISION | DATE

DATE RECORDED ____________
INSTRUMENT NO. | DEED BOOK NO. | PAGE NO.

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6416 Grovedale Drive, Suite 100-A
Alexandria, Virginia 22310
Tel: 703.719.6500 Fax: 703.719.6503
Email: frontdesk@studio39.com

OAK GROVE
ALEXANDRIA, VIRGINIA
ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

OVERALL LANDSCAPE PLAN

NORTH
DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DJ
SCALE: 1"= 30'- 0"
0 15 30 60
PROJECT NO: 04002
DATE: 10.28.16

L1.05

DSP EXTENSION

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PLANTING NOTES

1. THIS PLAN FOR PLANTING LOCATIONS ONLY.
2. Contractor shall be solely responsible for all plant maintenance‡ including shrubs and groundcover, and shall maintain area in a weed and debris free condition throughout the one-year guarantee period, unless otherwise specified.
3. ALL DIMENSIONS to be taken from back of curb.
4. Contractor shall layout and clearly stake all proposed improvements included on this plan.
5. Contractor is responsible for contacting UTILITY company prior to beginning construction for location of all UTILITY lines. Trees shall be located a minimum of 5' from sewer/water connections. Contractor shall be liable for damage to any and all public or private utilities.
6. Contractor to verify plant list totals with quantities shown on plan. Landscape Architect shall be alerted by Contractor of any discrepancies prior to final bid negotiation. Unit prices for all material shall be supplied to the Owner at bidding time.
7. All materials shall be subject to approval by the Landscape Architect, RPCA, AND P‡Z departments. Owner shall receive tag from each plant species and a list of plant suppliers. Where any requirements are omitted from the Plant List, the plants furnished shall meet the normal requirements for the variety per the American Standard for Nursery Stock, latest edition, published by the American Association of Nurserymen (AAN). Plants shall be pruned prior to delivery only upon the approval of the Landscape Architect. Plant material substitutions are required to have written approval from city DPCA and P‡Z directors.
8. Where trees are planted in rows, they shall be uniform in size and shape.
9. Sizes specified in the plant list are minimum sizes to which the plants are to be judged. Failure to meet minimum size on any plant will result in rejection of that plant.
10. All plants shall be freshly dug, sound, healthy, vigorous, well-rooted plants and established in the container in which they are sold. The plants shall have tops which are good quality and are in a healthy growing condition.
11. All container grown material shall be healthy, vigorous, well-rooted plants and established in the container in which they are sold. The plants shall have tops which are good quality and are in a healthy growing condition.
12. Groups of shrubs shall be placed in a continuous mulch bed with smooth continuous lines. All mulched bed edges shall be curvilinear in shape following the contour of the plant mass. Trees located within four feet of shrub beds shall share same mulch bed.
13. No existing trees shall be removed without written authorization from the Owner except where noted on plans. No grubbing shall occur within existing tree areas.
14. Trees shall be located a minimum of 3' - 4' from walls and walks within the project. If conflicts arise between actual size of area and plans, Contractor shall contact Landscape Architect for resolution. Failure to make such conflicts known to the Owner or Landscape Architect will result in Contractor's liability to relocate materials.
15. Large growing plants are not to be planted in front of windows, under building overhangs, or in drainage swales. Shrubs planted near H.V.A.C. units to be located so that shrubs at maturity will maintain 1' airspace between unit and plant.
16. Contractor to slightly adjust plant locations in the field as necessary to be clear of drainage swales and utilities. Finished planting beds shall be graded so as to not impede drainage away from buildings.
17. Tree staking and guying shall be done per details. Contractor shall ensure that trees remain vertical and upright for the duration of the guarantee period.
18. All tree pits, shrub beds and prepared planting beds are to be completely excavated in accordance with the planting details.
19. Mulch is to be fine bark type for trees and shrubs. Fine bark mulch is to be used for perennial beds and within the "existing trees to remain." Contractor to submit sample for approval prior to installation.
20. Crown of root ball shall be higher (after settling) than adjacent soil.
21. Tags and twine are to be removed and burlap is to be rolled back one-third on all B‡B plant material. Remove burlap if it is non-biodegradable. For street trees tags, twine, cord, burlap and wire basket to be cut 12" down side of rootball and removed from project site.
22. Shrubs, bulbs and groundcovers shall be triangularly spaced at spacing shown on planting plans.
23. Shade Trees: Height shall be measured from the crown of the root ball to the top of mature growth. Spread shall be measured to the end of branching equally around the crown from the center of the trunk. Measurements are not to include any terminal growth. Single trunk trees shall be free of "v" crotches that could be points of weak limb structure or disease infestation. Shrubs: Height shall be measured from the ground to the average height of the top of the plant. Spread shall be measured to the end of branching equally around the shrub mass. Measurements are not to include any terminal growth.
24. Contractor shall inspect all bulbs and bring any damaged material to the attention of the Owner prior to planting.
25. All seasonal color shall be triangularly spaced at spacing shown on planting plans. One year (four rotations) of seasonal color is to be bid. Install the first rotation which is "in season" at time that adjacent plantings are installed.
26. All substitutions of plant material are to be requested in writing to the Landscape Architect and approved by the Owner. If Contractor fails to submit a written request, it will result in liability to the Contractor.
27. All Contractors shall be required to completely remove all trash, debris and excess materials from the work area and the property (especially at all curb, gutters and sidewalks) daily during installation.
28. Dead plants are to be removed from the job by the contractor weekly. Contractor shall maintain an updated, comprehensive list of all dead materials removed from the job site. A copy of the list is to be submitted to the owner at the end of every month during the contract period.
29. Topsoil required for soil mixes and special seeding areas shall be provided by Landscape Contractor. Contractor must load, haul, mix, and spread all topsoil and other soil additives are required.
30. The intent of the project is to have natural drifts of bulbs/perennials in planting. Keep sweeps of similar bulbs/perennials similar bulbs in separate groups.
31. Contractor shall be responsible to regrade, hydro-seed, straw mulch, and tack all lawn areas disturbed as the result of his work.
32. All existing soil to be removed from perennial beds to a depth of 12" and replaced with soil mix per detail.
33. Contractor shall guarantee all landscape improvements, including seeding, for one full year as required by the Specifications. Contractor must contact the Owner at least ten working days in advance to schedule acceptance inspection(s). Contractor must replace all dead or unacceptable plants during the following recommended planting season.
34. The Specifications for all work included in this contract shall be Landscape Specifications Guidelines for Baltimore-Washington Metropolitan Area, current edition, unless otherwise noted on these plans.
35. Any planting which is shown adjacent to condenser units shall be planted as required to screen the units. Should the condenser units be installed in locations different from those shown on the plan it will be the Contractor's responsibility to install the materials around the condensers and to adjust other adjacent planting accordingly.

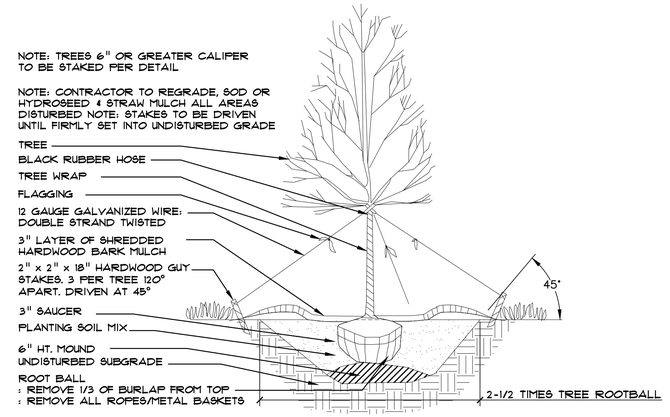
PLANTING MIX NOTES

1. The recommended planting medium should contain good top soil that will sustain plant growth.
2. The top soil shall not be lacking in potassium, phosphorus, magnesium or calcium. The top soil shall not contain any materials toxic to plant growth.
3. The top soil shall be a sandy clay loam or a silty clay loam with well aggregated clays and a minimum of 4% (four percent) organic matter.
4. The soils pH range should be within 5.5 to 6.5 and adjusted as necessary for individual plant species requirements.
5. A soil test shall be performed by a full-service testing company and the results shall be provided to the Landscape Architect prior to installation of planting medium.
6. If a local, reputable testing company cannot be employed, A‡L Labs is available to conduct the testing. Contact them at:

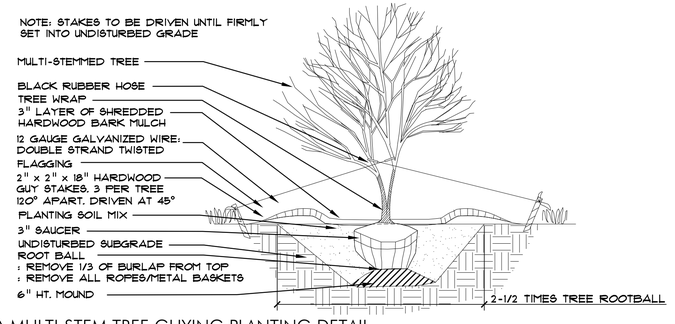
   A‡L Analytical Laboratories, Inc.
   2790 Whitten Road
   Memphis, TN 38133
   1-800-264-4522

7. The lab shall perform an S‡A test and submit the results to Studio 39 Landscape Architecture, PC.

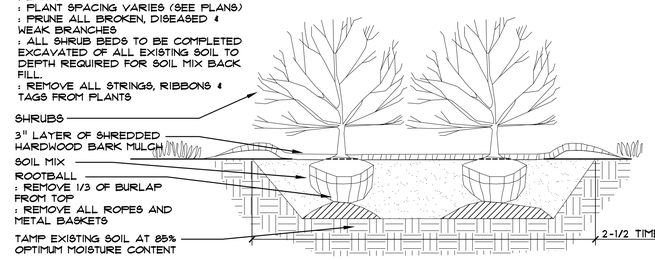
FOR REFERENCE ONLY - AS AMENDED BY FINAL SITE PLAN



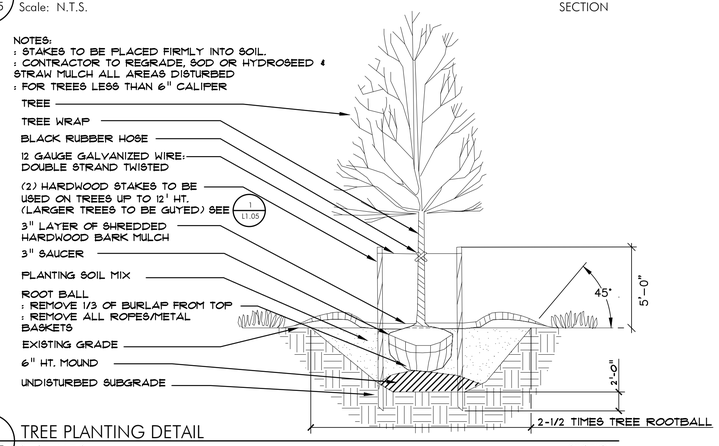
1 L1.05 — TREE GUYING PLANTING DETAIL (6" OR GREATER CALIPER)
Scale: N.T.S. SECTION



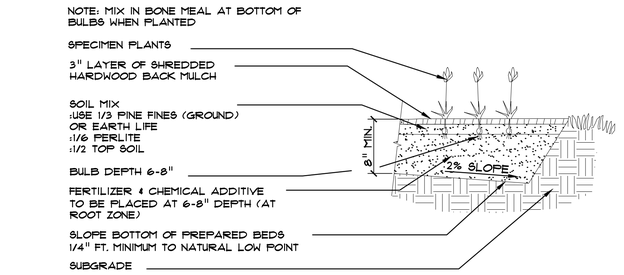
2 L1.05 — MULTI-STEM TREE GUYING PLANTING DETAIL
Scale: N.T.S. SECTION



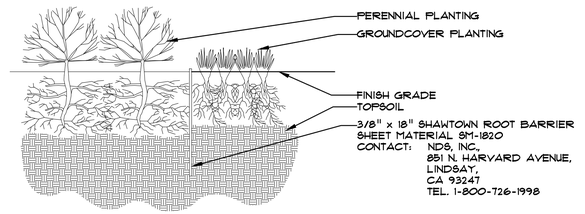
3 L1.05 — SHRUB PLANTING DETAIL
Scale: N.T.S. SECTION



4 L1.05 — TREE PLANTING DETAIL
Scale: N.T.S. SECTION



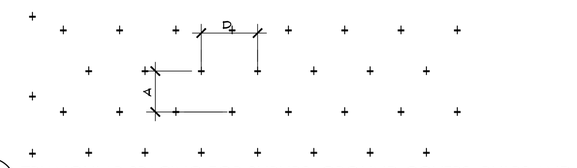
5 L1.05 — ANNUALS AND PERENNIALS PLANTING DETAIL
Scale: N.T.S. SECTION



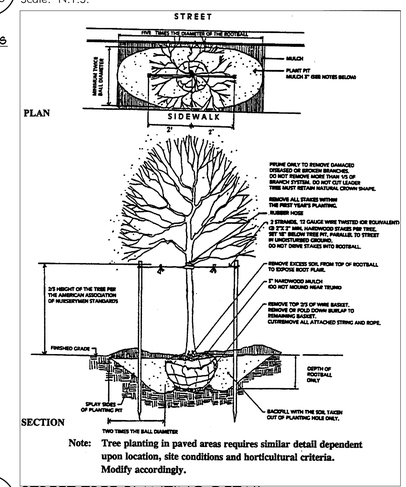
6 L1.05 — LANDSCAPE PLANTING ROOT BARRIER
Scale: N.T.S. SECTION

PLANT SPACING CHART

SPACING "D"	ROW "A"	NUMBER OF PLANTS PER SQUARE FOOT
6" o.c.	5.20"	4.61
8" o.c.	6.93"	2.60
10" o.c.	8.66"	1.66
12" o.c.	10.40"	1.15
15" o.c.	13.00"	0.73
18" o.c.	15.60"	0.51
24" o.c.	20.80"	0.29



7 L1.05 — TRIANGULAR SPACING FOR SHRUBS, GROUND COVERS, BULBS AND PERENNIALS
Scale: N.T.S. PLAN



7 L1.05 — STREET TREE PLANTING DETAIL
Scale: N.T.S. PLAN

ESI Peer Review

APPROVED 2004-0005
CITY PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____
DIRECTOR DATE
CHAIRMAN, PLANNING COMMISION DATE
DATE RECORDED _____
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

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OAK GROVE
ALEXANDRIA, VIRGINIA
ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

PLANTING DETAILS

DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DJ
NORTH
SCALE: AS SHOWN

PROJECT NO: 04002
DATE: 10.28.16

L1.06

DSP EXTENSION

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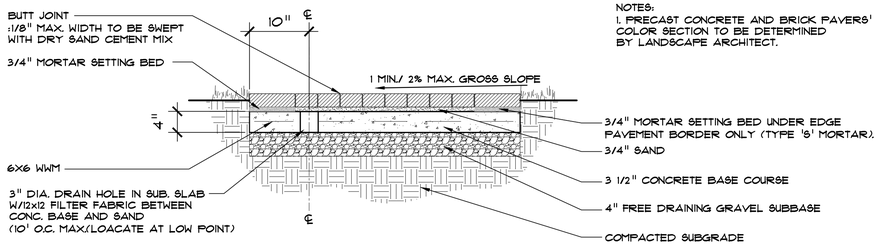
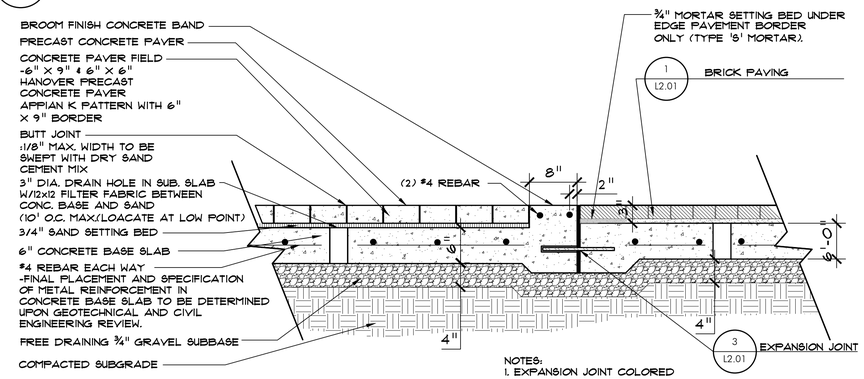


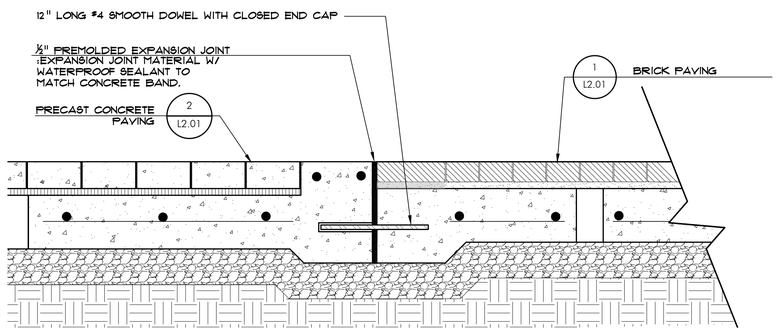
NOTES:
1. PRECAST CONCRETE AND BRICK PAVERS' COLOR SECTION TO BE DETERMINED BY LANDSCAPE ARCHITECT.

1 / L2.01 BRICK PAVING SIDEWALK
Scale: 1" = 1'-0" SECTION

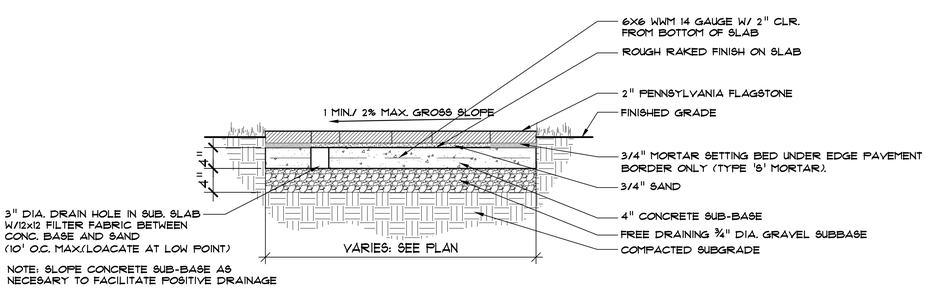


NOTES:
1. EXPANSION JOINT COLORED TO MATCH CONCRETE.
2. PRECAST CONCRETE AND BRICK PAVERS' COLOR SECTION TO BE DETERMINED BY LANDSCAPE ARCHITECT.

2 / L2.01 PRECAST CONCRETE PAVING
Scale: 1" = 1'-0" SECTION

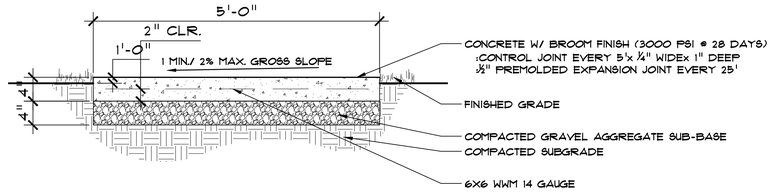


3 / L2.01 EXPANSION JOINT
Scale: 1-1/2" = 1'-0" SECTION

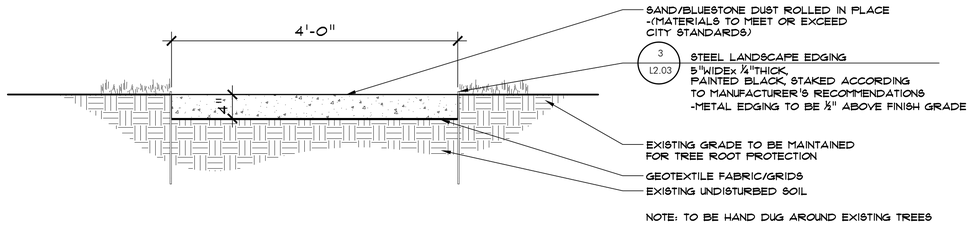


NOTE: SLOPE CONCRETE SUB-BASE AS NECESARY TO FACILITATE POSITIVE DRAINAGE

4 / L2.01 FLAGSTONE PAVING
Scale: 1/1" = 1'-0" SECTION

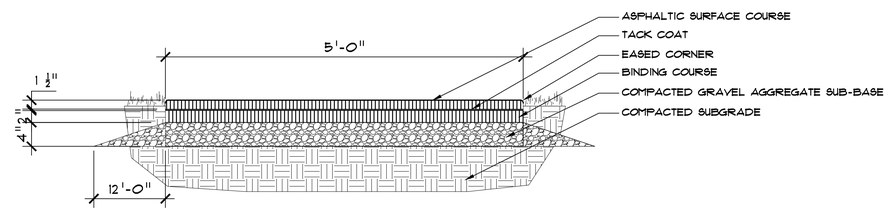


5 / L2.01 CONCRETE SIDEWALK
Scale: 1/1" = 1'-0" SECTION



NOTE: TO BE HAND DUG AROUND EXISTING TREES

6 / L2.01 PUBLIC ACCESS TRAIL (FOR INFORMATIONAL PURPOSES ONLY)
Scale: 1/1" = 1'-0" SECTION



7 / L2.01 ASPHALT WALK
Scale: 1/2" = 1'-0" SECTION

ESI Peer Review

APPROVED
CITY PLAN NO. DSP # 2004-0005
DEPARTMENT OF PLANNING & ZONING
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OAK GROVE
ALEXANDRIA, VIRGINIA
ELM STREET DEVELOPMENT

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

DETAILS & SPECIFICATIONS

DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DD
NORTH
SCALE: AS SHOWN
PROJECT NO: 04002
DATE: 10.28.16

L2.01

DSP EXTENSION

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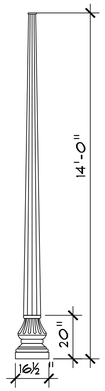


STREETLIGHT SPECIFICATIONS:

MODEL #:	R53BANN1AFTRD100SQ 100W HIGH PRESSURE SODIUM WITH FULL TOP REFLECTOR
MANUFACTURER:	HADCO
QUANTITY:	PER PLAN
COLOR:	BLACK
CONTACT:	JIM LILLEY 410.552.1999

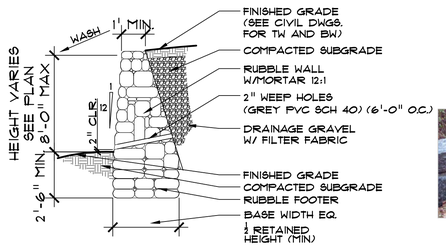
STREETLIGHT POLE SPECIFICATIONS:

MODEL #:	OA405-14 WASHINGTON 405 14' MOUNTING HEIGHT FIBERGLASS ANCHOR BASE
MANUFACTURER:	W.J. WHATLEY, INC
QUANTITY:	PER PLAN
COLOR:	BLACK
CONTACT:	DON HOFFMAN 301.621.1650

SEE 9/L2.02 FOR FOOTING DETAIL

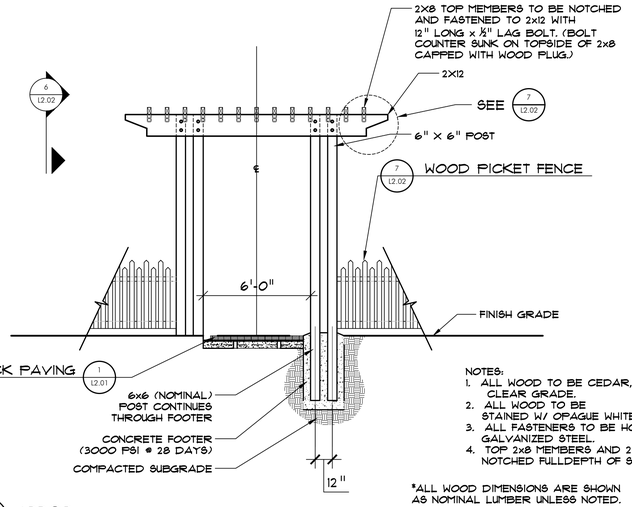
1/L2.02 STREET LIGHT AND POLE (TYP.)
Scale: N.T.S. SPECIFICATION

NOTES:
1. MORTAR TO BE PORTLAND CEMENT, TYPE 2
2. BACKFILL TO BE #8M OR BETTER
3. SOIL VALUE IS 2500 PSF PE EC3 REPORT DATED 5/25/00
4. STONE RUBBLE TO BE SOLID CARDEROCK STONE, VENEER GRADE, WITH DRY IMPRESSION WORKMANSHIP.
5. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL BY LANDSCAPE ARCHITECT/ STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
6. STONE FACE JOINTS TO BE ⅜" MIN/ ⅝" MAX WIDTH, RAKE JOINT TO 1-½" DEPTH.



CONSTRUCTED CARDEROCK STONE WALL

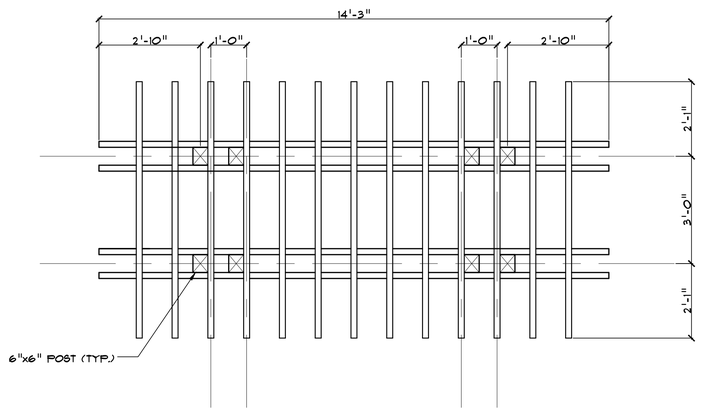
4/L2.02 STONE RETAINING WALL
Scale: N.T.S. SECTION/ELEVATION



NOTES:
1. ALL WOOD TO BE CEDAR, CLEAR GRADE.
2. ALL WOOD TO BE STAINED W/ OPAQUE WHITE STAIN.
3. ALL FASTENERS TO BE HOT DIPPED GALVANIZED STEEL.
4. TOP 2x8 MEMBERS AND 2x12 BEAMTO BE NOTCHED FULLDEPTH OF SEAT CONNECTION.

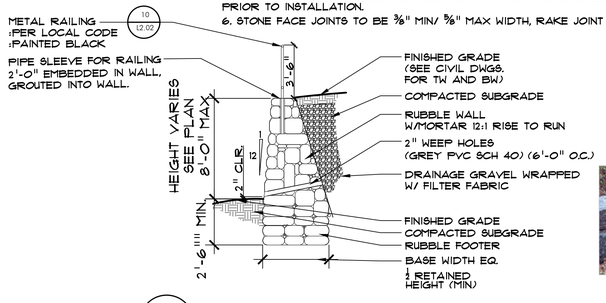
*ALL WOOD DIMENSIONS ARE SHOWN AS NOMINAL LUMBER UNLESS NOTED.

2/L2.02 ARBOR
Scale: 3/8" = 1'-0" FRONT ELEVATION



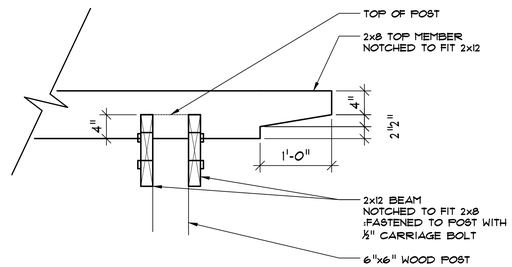
3/L2.02 ARBOR
Scale: 1/2" = 1'-0" PLAN

NOTES:
1. MORTAR TO BE PORTLAND CEMENT, TYPE 2
2. BACKFILL TO BE #8M OR BETTER
3. SOIL VALUE IS 2500 PSF PE EC3 REPORT DATED 5/25/00
4. STONE RUBBLE TO BE SOLID CARDEROCK STONE, VENEER GRADE, WITH DRY IMPRESSION WORKMANSHIP.
5. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF METAL RAILING AND STONE WALL FOR APPROVALBY LANDSCAPE ARCHITECT/ STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
6. STONE FACE JOINTS TO BE ⅜" MIN/ ⅝" MAX WIDTH, RAKE JOINT TO 1-½" DEPTH.

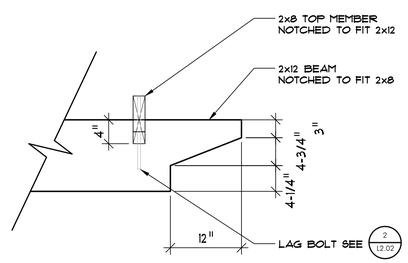


CONSTRUCTED CARDEROCK STONE WALL

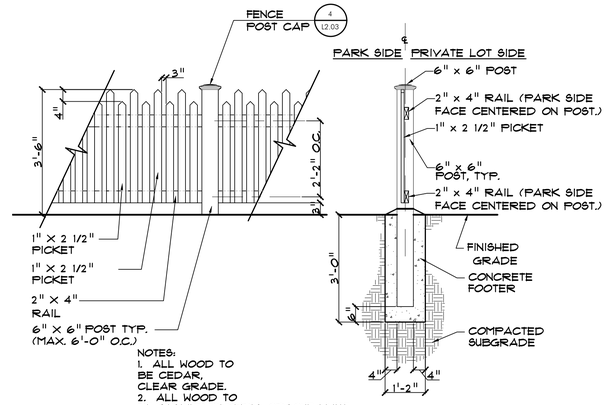
5/L2.02 STONE RETAINING WALL W/ GUARDRAIL
Scale: N.T.S. SECTION/ELEVATION



6/L2.02 ARBOR - END OF JOIST
Scale: 1" = 1'-0" SECTION



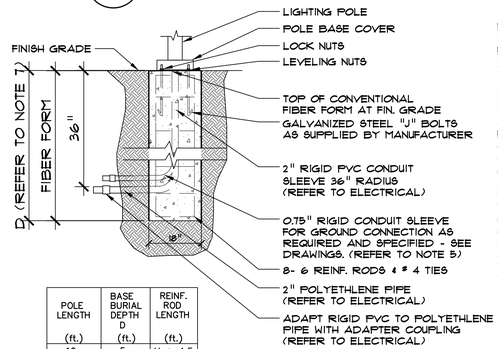
7/L2.02 ARBOR - END OF BEAM
Scale: 1" = 1'-0" SECTION



NOTES:
1. ALL WOOD TO BE CEDAR, CLEAR GRADE.
2. ALL WOOD TO BE STAINED OLYMPIA OPAQUE WHITE.
3. ALL FASTENERS TO BE HOT DIPPED GALVANIZED STEEL.

*ALL WOOD DIMENSIONS ARE SHOWN AS NOMINAL LUMBER UNLESS NOTED

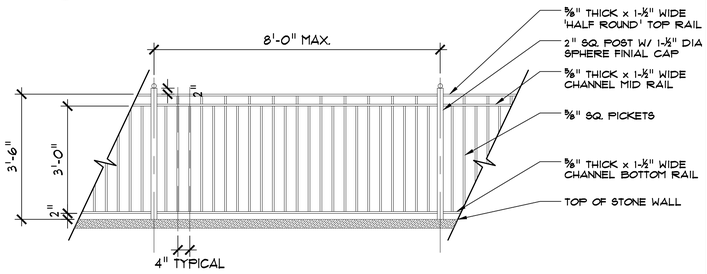
8/L2.02 WOOD PICKET FENCE
Scale: 1/2" = 1'-0" ELEVATION/SECTION



POLE LENGTH (ft.)	BASE BURIAL DEPTH D (ft.)	REINF. ROD LENGTH (ft.)
10	5	H + 4.5
19	7	H + 6.5
23	7	H + 6.5
25	7	H + 6.5

NOTES:
1. ALL DIMENSIONS ARE IN NOMINAL FEET OR INCHES.
2. TOP OF FOUNDATION SHALL BE TROWELLED SMOOTH AND LEVEL.
3. CLASS OF CONCRETE SHALL BE 3000 P.S.I. CONCRETE SHALL BE VIBRATED.
4. MINIMUM OF TWO SLEEVES REQUIRED FOR EACH CONC. FOUNDATION UNLESS OTHERWISE SHOWN.
5. PROVIDE A 0.75" DIA. 10' STEEL COPPER COATED GROUND ROD ADJACENT TO POLES AS SPECIFIED ON PLAN AND CONNECT TO METAL POLE WITH BARE COPPER CONDUCTOR.
6. CONTRACTOR TO VERIFY OPENING SIZE IN POLE BASE PLATE PRIOR TO SETTING CONDUIT SLEEVES.
7. SUBJECT TO SOIL CONDITIONS, REFER TO SOIL REPORT.

9/L2.02 LIGHT POLE FOOTER
Scale: N.T.S. SECTION



10/L2.02 METAL RAILING
Scale: 1/2" = 1'-0" ELEVATION

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
10/28/16
LANDSCAPE ARCHITECT

REVISIONS:

DETAILS & SPECIFICATIONS

DESIGN: JP/DD/LH
DRAWN: DD/LH/TF
CHECKED: JP/DD
SCALE: AS SHOWN
PROJECT NO: 04002
DATE: 10.28.16

L2.02

DSP EXTENSION

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BENCH SPECIFICATIONS

MODEL #: 57-60R
CAST IRON SUPPORT
WITH PHILIPPINE MAHOGANY
SLATS

MANUFACTURER: VICTOR STANLEY, INC.

QUANTITY: PER PLAN

COLOR: BLACK

CONTACT: CLAIRE COOLIDGE
301.855.8300

1 / L2.03 — BENCH
NTS — SPECIFICATION

TRASH RECEPTACLE SPECIFICATIONS:

MODEL #: SD-42 STEEL FRAME
36 GALLON WITH S-2ASD
FORMED DOME LID

MANUFACTURER: VICTOR STANLEY, INC.

QUANTITY: PER PLAN

COLOR: BLACK

CONTACT: CLAIRE COOLIDGE
301.855.8300

2 / L2.03 — TRASH RECEPTACLE
Scale: NTS — SPECIFICATION

STEEL LANDSCAPE EDGING

MODEL: ¼" THICK STEEL EDGING
5" DEEP 16' LONG.
16" STAKES, 7 PER 16'
SECTION OF EDGING.

MANUFACTURER: RYERSON TULL

QUANTITY: PER PLAN

COLOR: BLACK

CONTACT: 804.222.8855

NOTES: OVERLAP PER MANUFACTURE'S
RECOMMENDATIONS

3 / L2.03 — STEEL LANDSCAPE EDGING
NTS — SPECIFICATION

FENCE POST CAP

MODEL: TS-NC-2E 6x6 HATTERAS
NEWPORT CLASSIC STYLE
FLAT TOP SLIP OVER

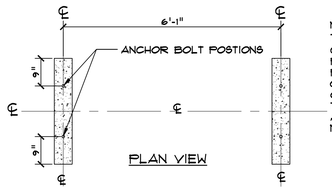
MANUFACTURER: HOOVER FENCE

QUANTITY: PER PLAN

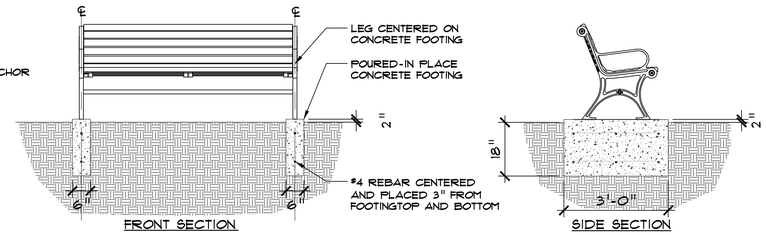
COLOR: CEDAR

CONTACT: 330.598.2335

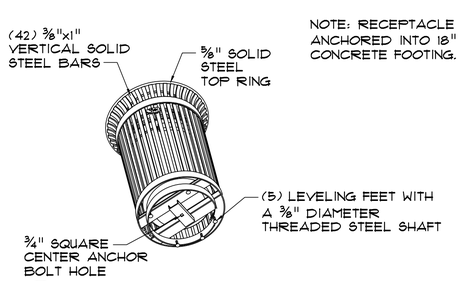
4 / L2.03 — FENCE POST CAP
NTS — SPECIFICATION



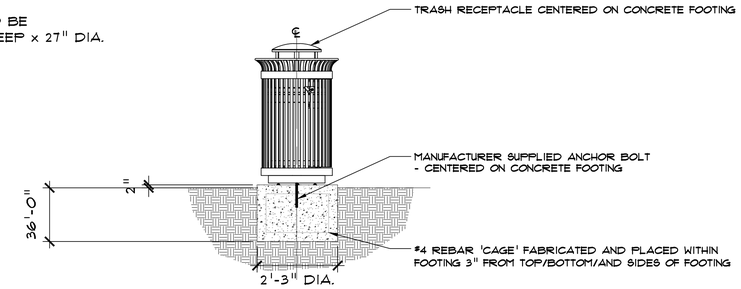
NOTE: BENCH TO BE ANCHORED TO 6" WIDE x 35" LONG x 18" DEEP CONCRETE PAD AND 2" ABOVE GRADE PER EACH PAIR OF LEGS. CONCRETE ANCHOR PAD TO BE FLUSH W/ FINISH GRADE OF GRAVEL. BENCH TO BE CENTERED ON ANCHOR PAD AND ANCHORED TO PAD W/ STAINLESS STEEL BOLTS AND ANCHOR BOLTS PER MANUFACTURER.



5 / L2.03 — BENCH ANCHORING
1/2" = 1'-0" — PLAN/ SECTION



NOTE: RECEPTACLE TO BE ANCHORED INTO 18" DEEP x 27" DIA. CONCRETE FOOTING.



6 / L2.03 — TRASH RECEPTACLE ANCHORING
NTS — SPECIFICATION/SECTION

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
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&
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NORTH

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L2.03

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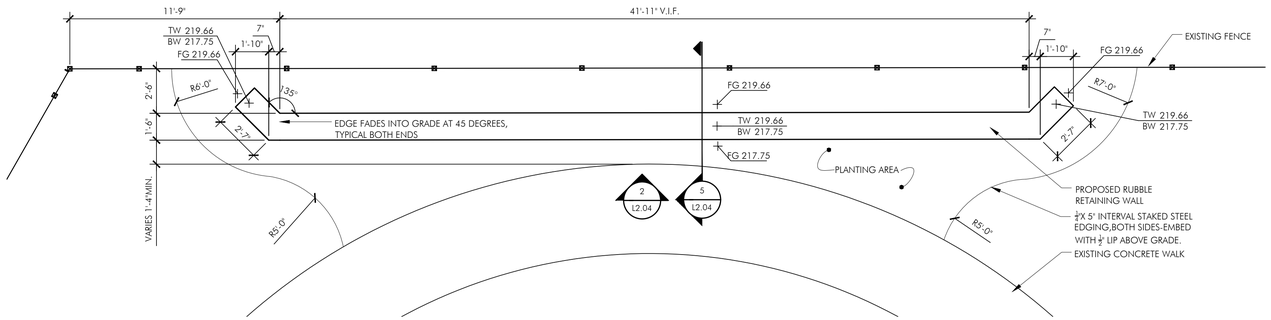
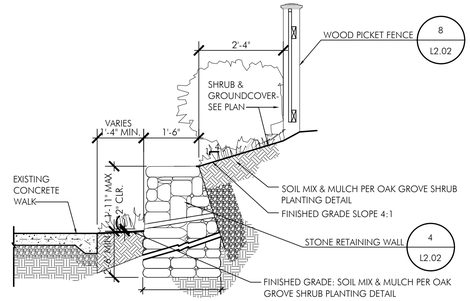
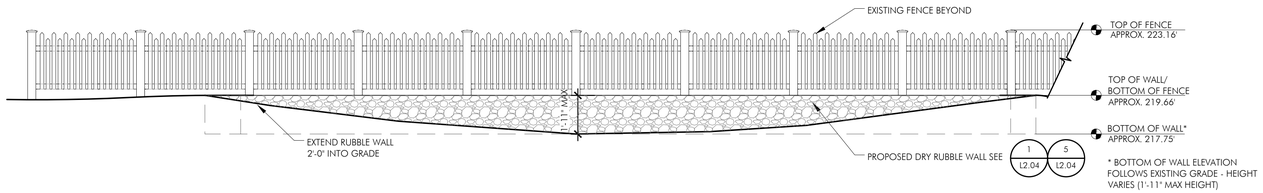


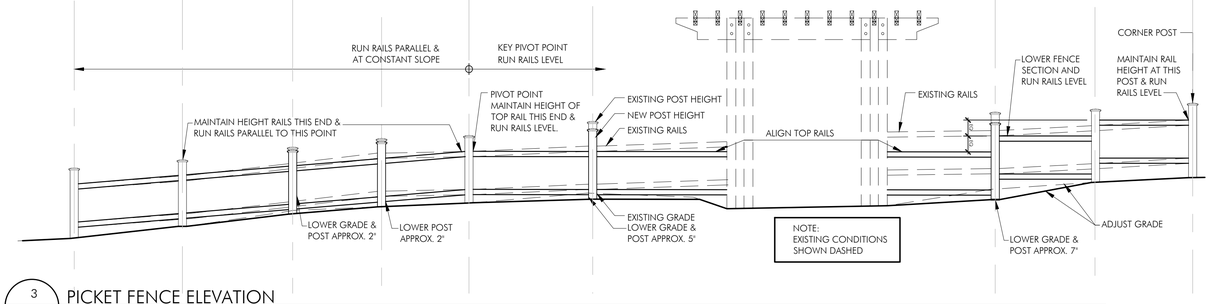
1 L2.04 RUBBLE WALL PLAN
SCALE: 1/4" = 1'-0" SECTION



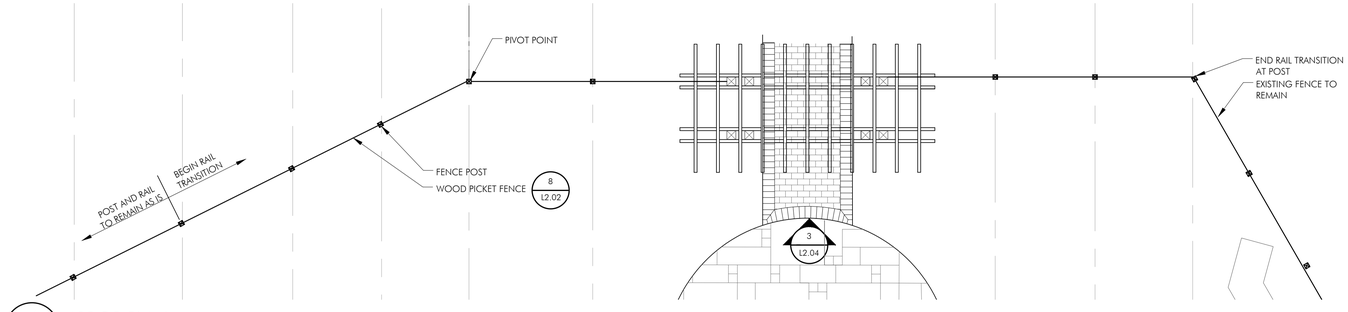
5 L2.04 RUBBLE WALL SECTION
SCALE: 1/2" = 1'-0" SECTION



2 L2.04 RUBBLE WALL ELEVATION
SCALE: 1/4" = 1'-0" ELEVATION



3 L2.04 PICKET FENCE ELEVATION
SCALE: 1/4" = 1'-0" ELEVATION



4 L2.04 ARBOR PLAN
SCALE: 1/4" = 1'-0" PLAN

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L2.04

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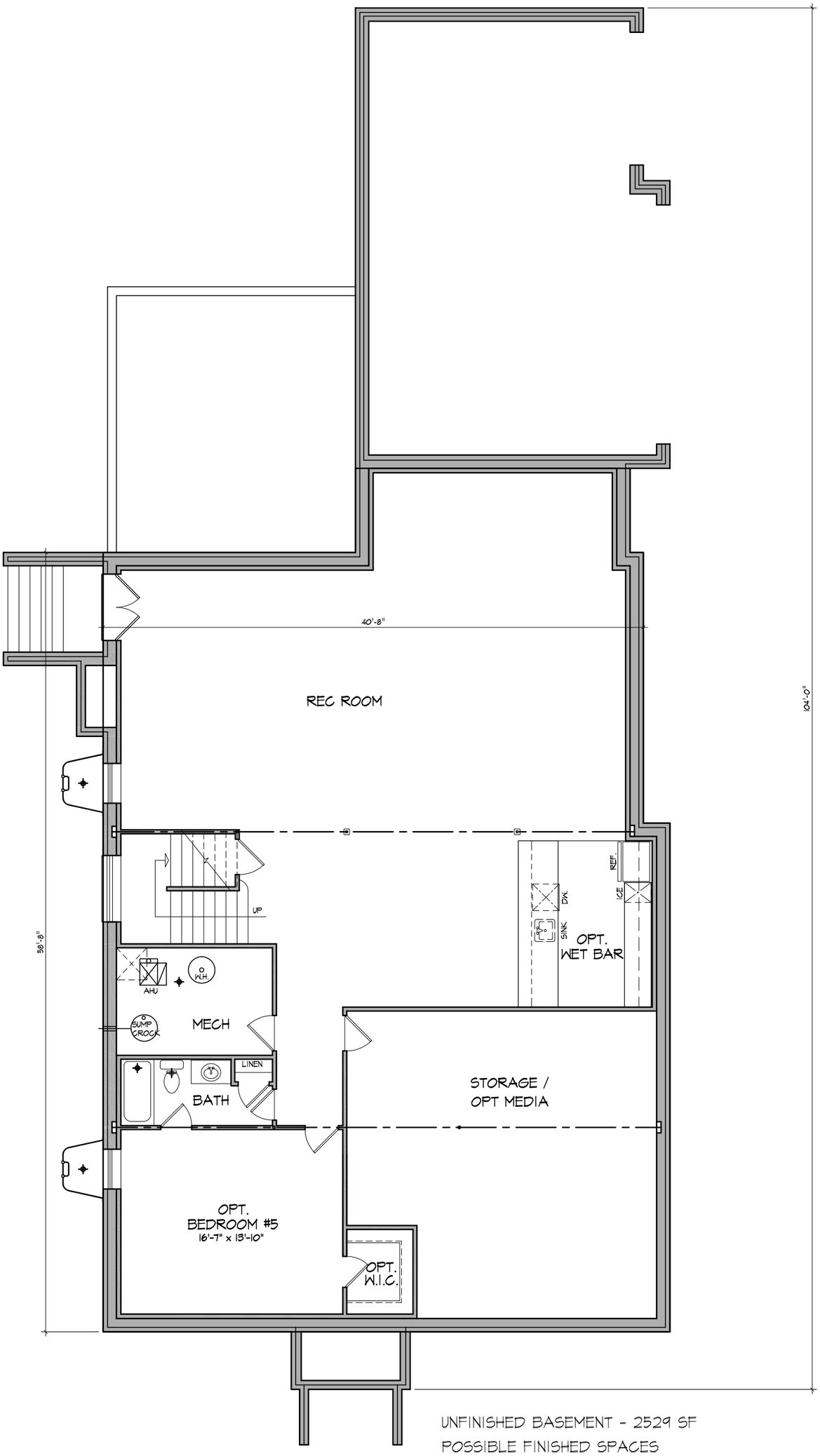


UNFINISHED BASEMENT - 2529 SF

POSSIBLE FINISHED SPACES

REC ROOM -	1367 SF
BEDROOM -	312 SF
MEDIA ROOM -	543 SF
BATH & HALL-	112 SF

UNFINISHED

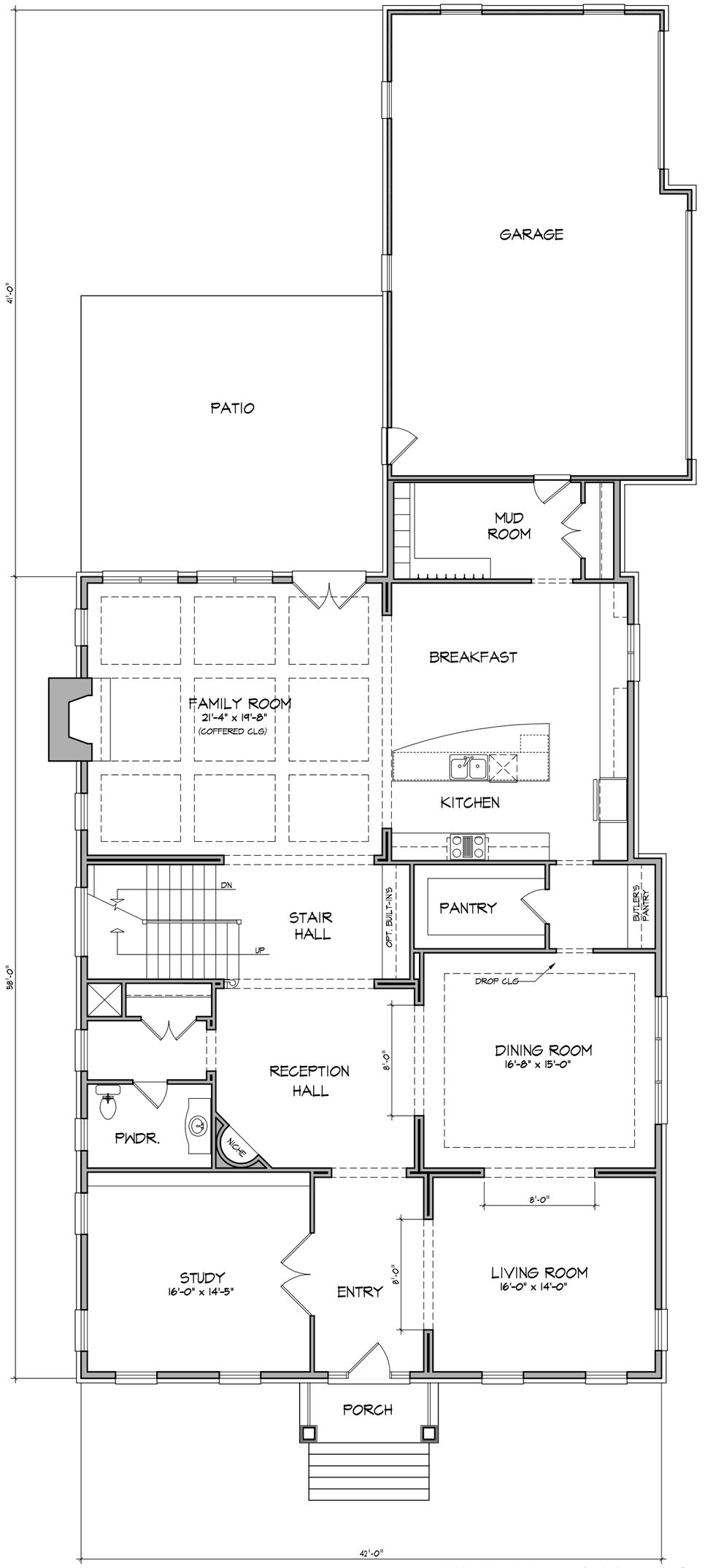
STAIR -	88 SF
MECHANICAL -	107 SF

BASEMENT FLOOR PLAN

*FINISHED FLOOR AREAS DO NOT INCLUDE STAIRWAYS OR MECHANICAL SPACES

SCALE 1/8"=1'-0"

4 2 0 1 2 4 8 16



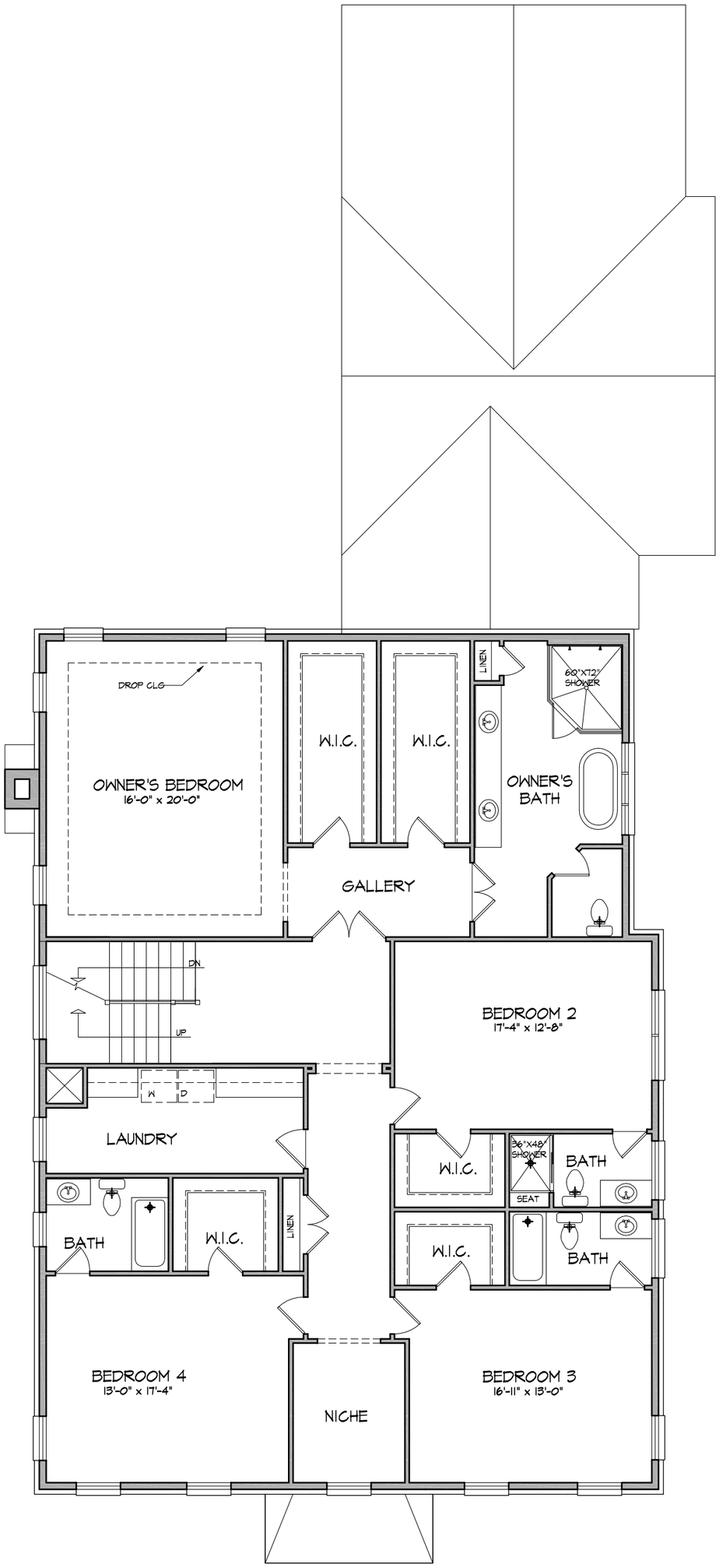
FIRST FLOOR PLAN

*FINISHED FLOOR AREAS DO NOT INCLUDE STAIRWAYS OR MECHANICAL SPACES

FINISHED FLOOR AREA - 2423 SF
GARAGE - 722 SF
COVERED FRONT PORCH - 44 SF
NOT COUNTED
STAIRWAY - 84 SF
MECHANICAL - 6 SF

SCALE 1/8"=1'-0"

4 2 0 | 2 4 8 16



SECOND FLOOR PLAN

*FINISHED FLOOR AREAS DO NOT INCLUDE STAIRWAYS OR MECHANICAL SPACES

FINISHED FLOOR AREA - 2308 SF

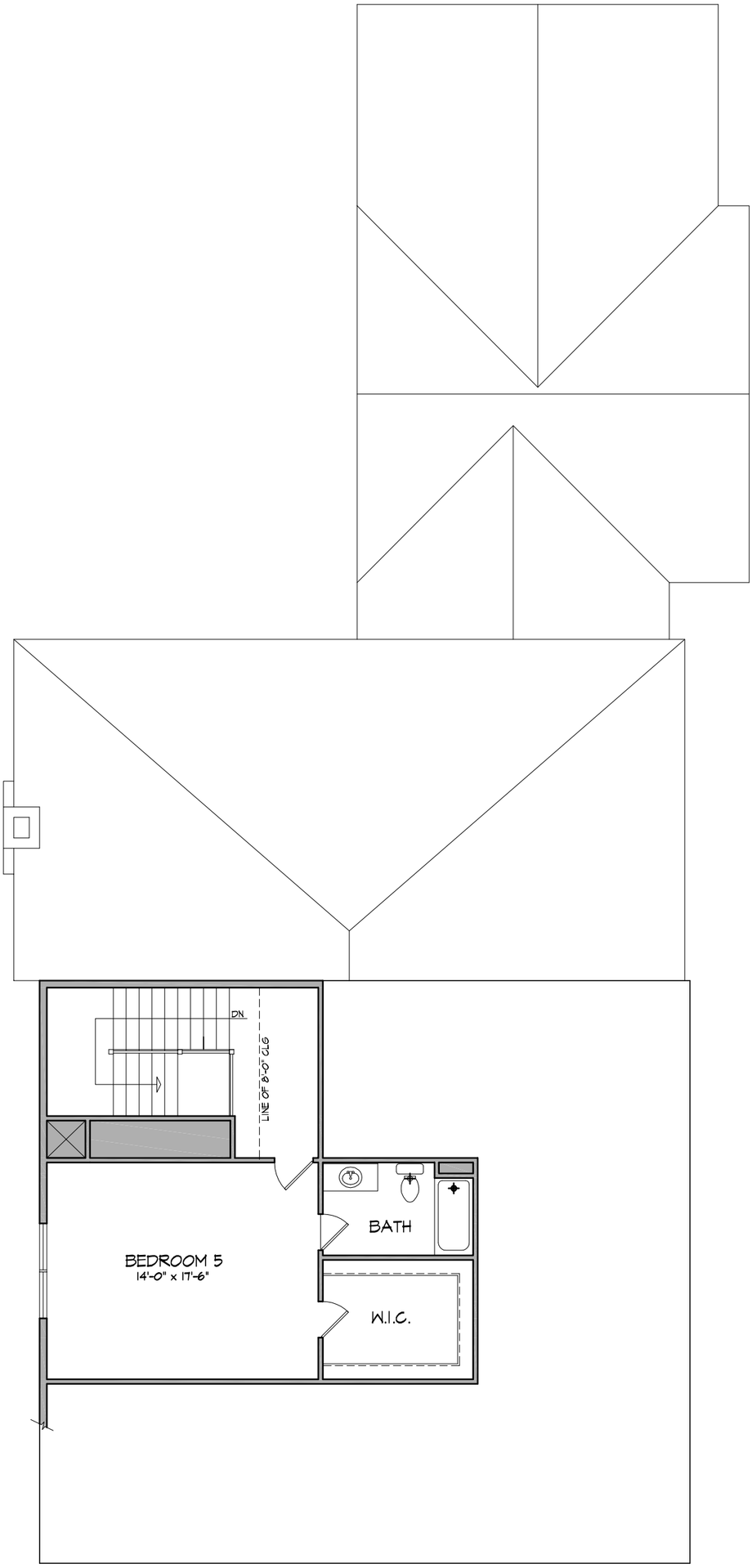
NOT COUNTED

STAIRWAY - 81 SF

MECHANICAL - 6 SF

SCALE 1/8"=1'-0"

4 2 0 1 2 4 8 16



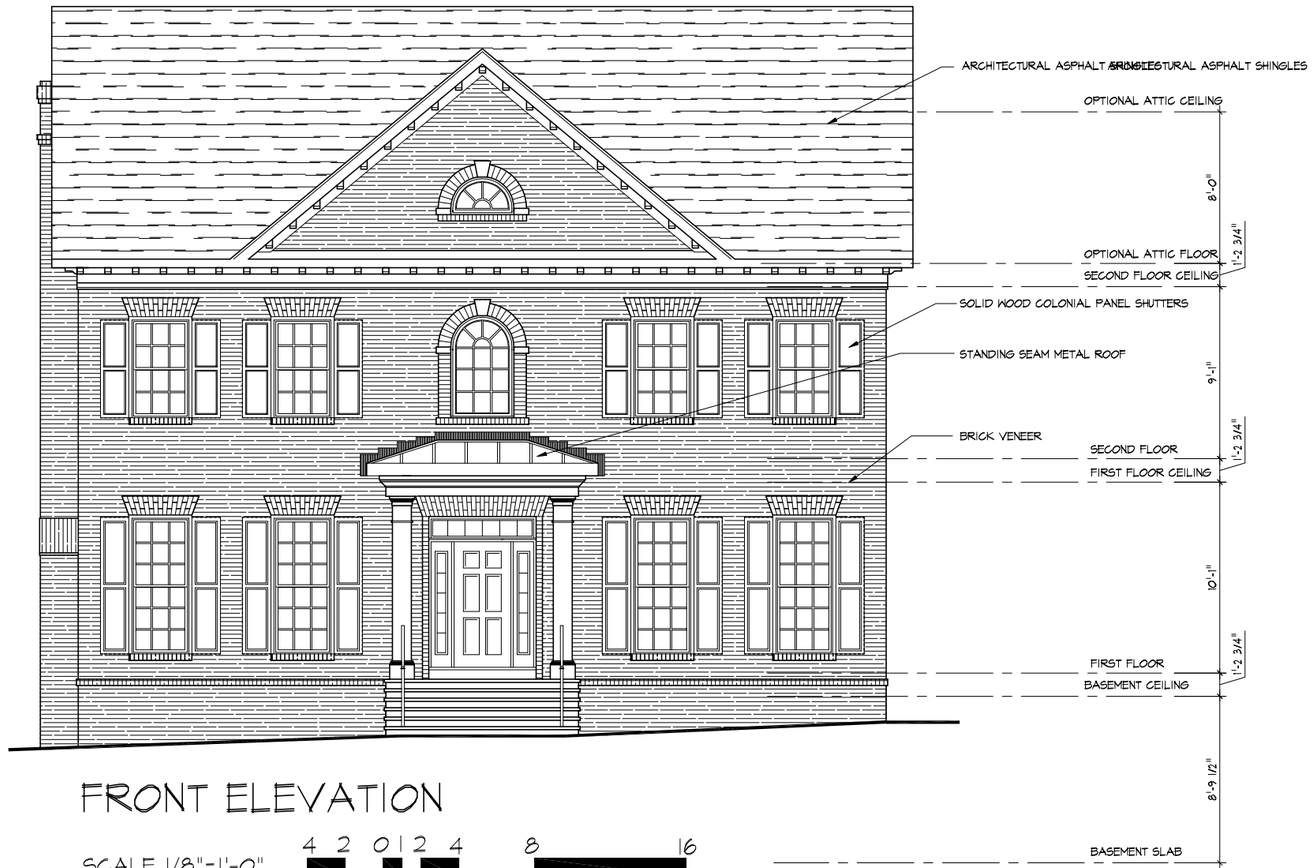
OPTIONAL
ATTIC FLOOR PLAN

*FINISHED FLOOR AREAS DO NOT INCLUDE STAIRWAYS OR MECHANICAL SPACES

FINISHED FLOOR AREA - 480 SF
NOT COUNTED
STAIRWAY - 107 SF
MECHANICAL - 35 SF

SCALE 1/8"=1'-0"

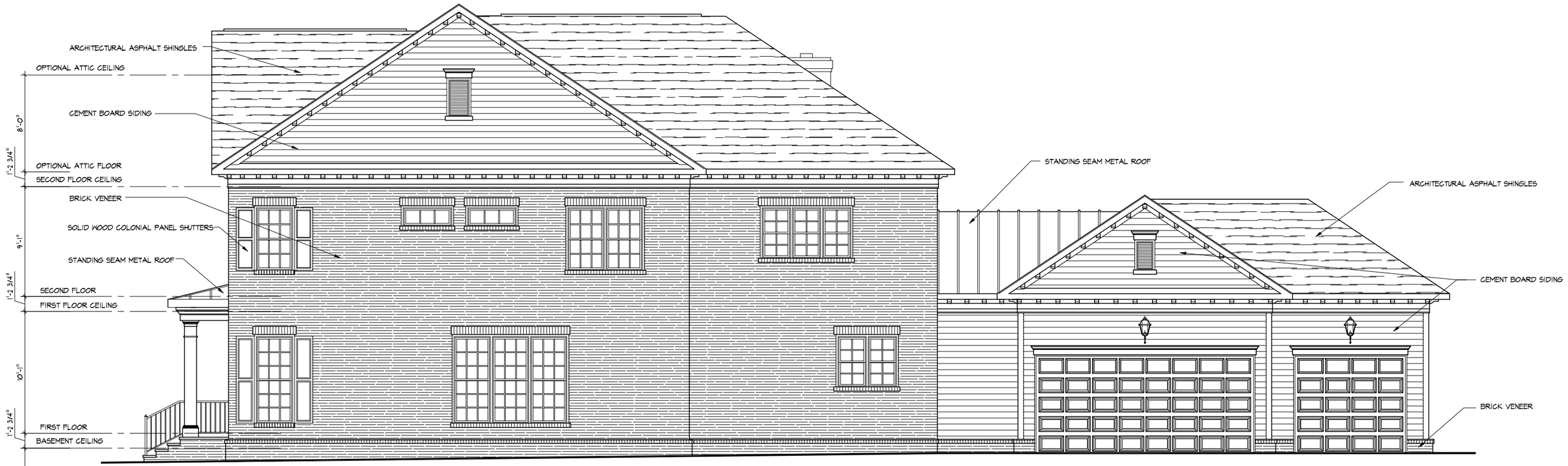
4 2 0 1 2 4 8 16



FRONT ELEVATION

SCALE 1/8"=1'-0"

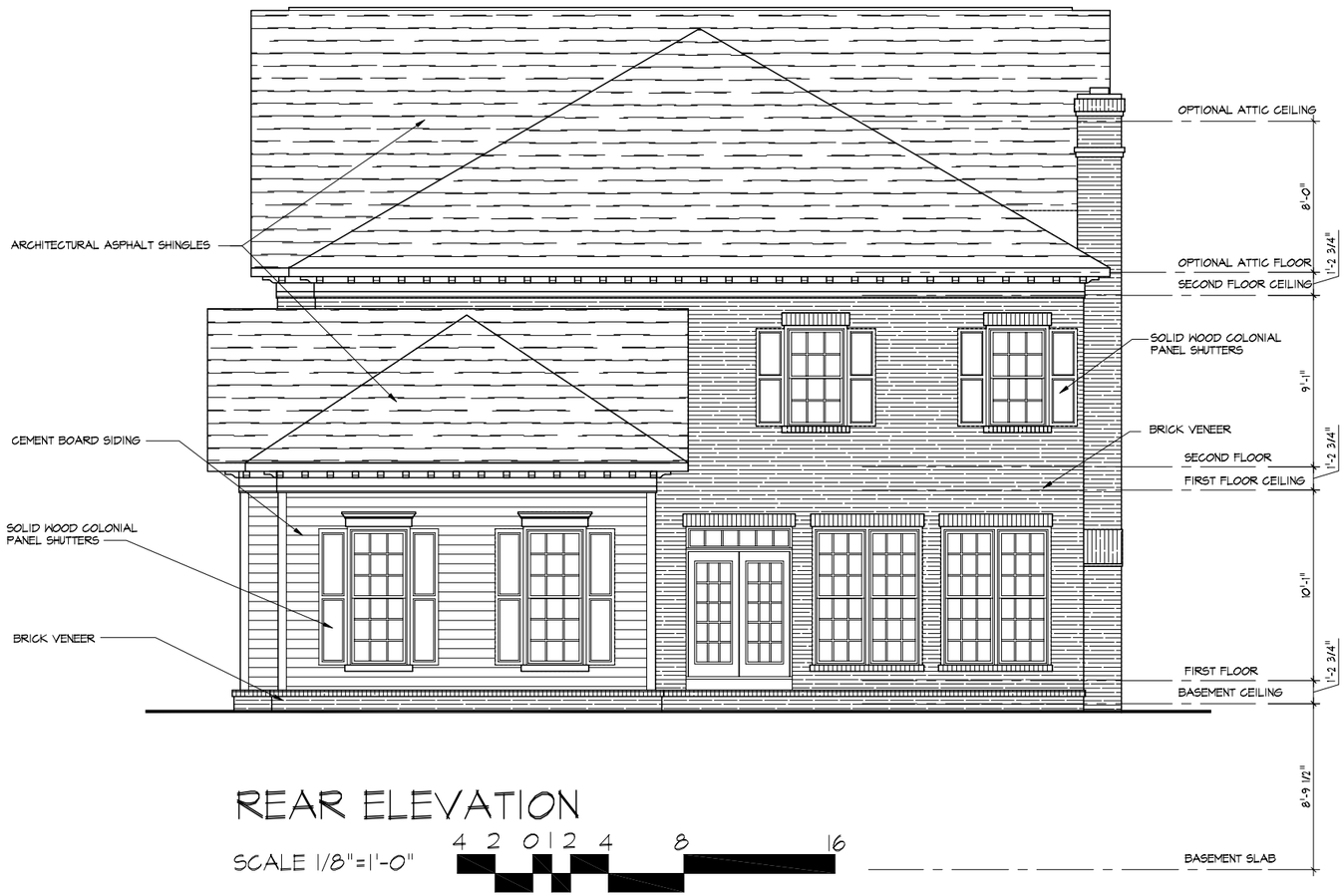
4 2 0 1 2 4 8 16



RIGHT SIDE ELEVATION

SCALE 1/8"=1'-0"

4 2 0 1 2 4 8 16



REAR ELEVATION

SCALE 1/8"=1'-0"

4 2 0 1 2 4 8 16

LEFT SIDE ELEVATION

SCALE 1/8"=1'-0"

4 2 0 1 2 4 8 16