

RHH or RHW-2 or USE-2 FR-CROSS-LINKED POLYETHYLENE INSULATION, 600 VOLT OPTIONAL JACKET OVERALL.

DESCRIPTION:

This specification covers the basic requirements of copper conductors insulated with flame retardant cross-linked polyethylene (XLP), classified as Type RHH or RHW-2 and as Type USE-2. Type RHH or RHW-2 is manufactured in accordance with NEC Article 310 and Type USE-2 in accordance with Article 338. This wire complies in all respects with ICEA, NEMA and UL Standards and is UL Listed. RHH or RHW-2 or USE-2 also conforms to Federal Specification J-C-30B. Sizes 12AWG through 4AWG stranded are manufactured in accordance with FAA Specification L-824 Underground Electrical Cable for Airport Lighting Circuits, Type C.

APPLICATION:

RHH or RHW-2 or USE-2 is for use in circuits not exceeding 600 volts. RHH or RHW-2 is for use in applications between buildings, in conduits or ducts or in open air, where the maximum operating temperature does not exceed 90°C (RHH) in dry locations or (RHW-2) in wet or dry locations. Type USE-2 is primarily for use in direct burial applications in wet locations at maximum continuous conductor temperature of 90°C. When installed in accordance with NEC article 230 & 338.

CONSTRUCTION DATA AND SPECIFICATIONS:

Conductors - The conductors consist of uncoated soft, solid or stranded copper meeting the requirements of ASTM B3. Unless otherwise specified, Class B stranding will be supplied. The stranding meets the requirements of ASTM B8 for concentric compressed or B496 for concentric compacted copper conductors.

Insulation - The insulation is flame retardant cross-linked polyethylene (XLP), extruded concentrically over the conductor to the wall thickness, as specified by UL 44 for Type RHH or RHW-2 conductors, UL 854 for Type USE-2, ICEA S-66-524 and NEMA WC-7. VW-1 flame retardant cross-linked polyethylene (XLP) insulation is available upon request.

Jacket - When required, a protective sunlight and ozone resistant jacket of flame retardant polyvinyl chloride (PVC) is extruded over the insulation. The jacket meets the requirements of UL 44, ICEA S-66-524/NEMA WC-7, ICEA S-95-658/NEMA WC70. UL approved Aetna 3742 non-halogen, flame resistant, low smoke, low corrosivity, non toxic, high performance jacket is available upon request. Polyethylene (PE), chlorinated polyethylene (CPE) or (-40°C) PVC jackets are available upon request.

Tests - The finished wire will meet all test requirements as specified by ICEA S-66-524/NEMA WC-7, ICEA S-95-658/NEMA WC70, UL 854 for USE-2 and UL 44 for RHH or RHW-2. Cables with a PVC jacket sizes 1/0 AWG and larger pass UL 1581, IEEE - 383 & 1202 Ribbon Burner Flame Test and are UL listed for CT Use.

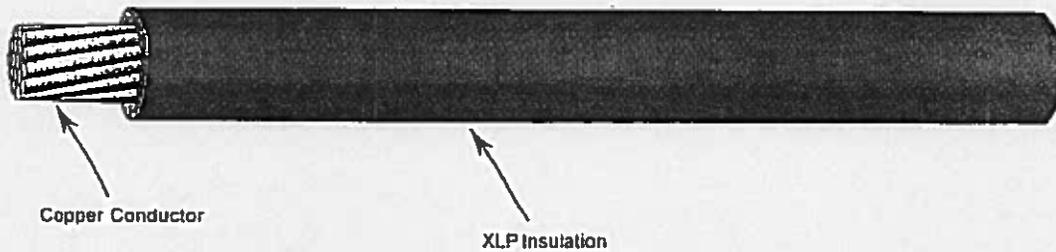
EXECUTIVE OFFICES: HARTSELLE, AL 35640
MANUFACTURING PLANT: VIRGINIA BEACH, VA
TELEPHONE: (800) 423-6505 FAX: (256) 773-2574



RHH or RHW-2 or USE-2
 CROSS-LINKED POLYETHYLENE INSULATION, 600 VOLT

SM-5-1
 Revised: 07/01/01

See New Lighting Details



90°C CONDUCTOR TEMPERATURE WET OR DRY

Product Code	Conductor		Insulation in Mils	Approximate O.D. in Inches	Ampacity* 90°C	Approximate Net Weight LBS/MFT
	Size AWG or MCM	No. of Strands				

SINGLE CONDUCTOR 600 VOLT

	14	SOLID	45	0.155	25+	20
	12	SOLID	45	0.175	30+	31
	10	SOLID	45	0.195	40+	45
	8	SOLID	60	0.250	55	72
	18 ¹	7	45	0.145	20	17
	14	7	45	0.165	25+	20
	12	7	45	0.185	30+	31
	10	7	45	0.210	40+	45
	8	7	60	0.270	55	72
→	6	7	60	0.305	75	106
	4	7	60	0.355	95	160
	3	7	60	0.380	110	202
	2	7	60	0.415	130	244
	1	19	80	0.495	150	311
	1/0	19	80	0.535	170	384
	2/0	19	80	0.580	195	476
	3/0	19	80	0.630	225	591
	4/0	19	80	0.690	260	736
	250	37	95	0.765	290	875
	300	37	95	0.820	320	1038
	350	37	95	0.875	350	1203
	400	37	95	0.920	380	1376
	500	37	95	1.005	430	1690
	600	61	110	1.115	475	1990
	750	61	110	1.220	535	2517
	1000	61	110	1.375	615	3320

Note: *Based on not more than three conductors per NEC. As RHW-2, in raceway, 90°C conductor temperature and 30°C ambient in wet or dry locations. As RHH, in raceway, 90°C conductor temperature and 30°C ambient in locations. As USE-2, direct burial, 90°C conductor temperature and 30°C ambient in wet locations.

¹Not recognized by UL or NEC Standards.

*The over current protection will not exceed 15 amperes for size 14AWG, 20 amperes for size 12AWG and 30 amperes for size 10AWG.

Sizes 12-4AWG stranded approved per FAA L-824, Type C.

Product codes apply only to black colored conductors. Other colors are available depending upon size.

The above data is approximate and subject to normal manufacturing tolerances.

Standards:

1. Listed by UL as Type RHH or RHW-2 per Standard 44
2. Listed by UL as Type USE-2 per Standard 854
3. Conforms to ICEA S-66-524/NEMA WC-7 Crosslinked Thermosetting Polyethylene Insulated Wire and Cable
4. Conforms to ICEA S-95-658/NEMA WC70 Nonshielded 0-2KV Cables
6. Conforms to Federal Specification J-C-30B

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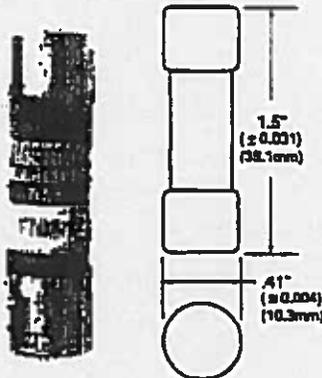
Time-Delay Ferrule Fuse

13/32" x 1-1/2"

PEDISTAL/POLE

FNM

See New Lighting Details



- Fibre tube.
- For circuits with high inrush currents.
- Formerly designated 5AB.
- Fuselron® Dual-Element fuses.

Fuseblock Catalog Numbers

Poles	Terminal Type		
	Screw With Quick Connect	Pressure Plate w/Quick Connect	Box Lug
1	BM6031SQ	BM6031PQ	BM6031B
2	BM6032SQ	BM6032PQ	BM6032B
3	BM6033SQ	BM6033PQ	BM6033B

CATALOG SYMBOL: FNM
 TIME-DELAY
 1/10 TO 30 AMPERES
 INTERRUPTING RATING - SEE CHART BELOW
 UL LISTED: STD. 248-14, 0-10/250V AC; 12-15/125V AC
 FILE #E19180, GUIDE #JDYX
 CSA CERTIFIED: 1-10/250V AC: CLASS 1422-01,
 12-15/125V AC; FILE 53787
 DC RATING: 1-15A rated 125V DC and 1.6 KAIC.

Electrical Ratings (Catalog Symbol and Amperes)

250 Volts AC IR		250 Volts AC IR		250 Volts AC IR		125 Volts AC	
FNM-1/10	FNM-1-1/8	FNM-1	FNM-12			10,000	
FNM-1/8	FNM-1-1/4	FNM-4-1/2	FNM-15			@ 125V AC	
FNM-15/100	FNM-1-4/10	FNM-5					
FNM-2/10	FNM-1-1/2	FNM-5-8/10					
FNM-1/4	35A @ FNM-1-8/10	100A @ FNM-8			32 Volts AC		
FNM-3/10	250VAC FNM-1-8/10	250VAC FNM-6-1/4	200A @ FNM-20			* FNM-20 FOR PEDISTAL	
FNM-4/10	10,000 FNM-2	10,000 FNM-7	250VAC FNM-25				
FNM-1/2	@ FNM-2-1/4	@ FNM-8	10,000 @ FNM-30				
FNM-6/10	125VAC FNM-2-1/2	125VAC FNM-9					
FNM-3/4	FNM-2-8/10	FNM-10					FNM-10 FOR POLE
FNM-8/10	FNM-3						
FNM-1	FNM-3-2/10						
	FNM-3-1/2						

If 250V AC is needed for 12-30 amps, use FNM series.

Carton Quantity and Weight

Ampere Ratings	Carton Qty	Weight	
		Lbs.	Kg.
0-30	10	.125	.057

CE logo denotes compliance with European Union Low Voltage Directive (50-1000V AC, 75-1500V DC). Refer to BIF document #8002 or contact Bussmann Application Engineering at 630-527-1270 for more information.

TRON® In-Line Fuseholders

Single-Pole for 1³/₃₂" x 1¹/₂" Fuses

PEDISTAL/POLE

HEB Series

See New Lighting Details



Non-Break-A-Way Holders

Catalog Symbol: HEB-AA*, HEB-AB*, HEB-AC*, HEB-AD*, HEB-AE*, HEB-AJ, HEB-AK, HEB-AL, HEB-AR*, HEB-AY, HEB-BA*, HEB-BB*, HEB-BC*, HEB-BD*, HEB-CC*, HEB-DD*, HEB-JJ, HEB-JK, HEB-JL, HEB-JY, HEB-LJ, HEB-NN*, HEB-PP*, HEB-OO*, HEB-RR*, HEB-SS, HEB-TT*, HEB-ZA.

In-Line Fuseholders

Single-Pole
Waterproof

Agency Information:

*U.L. Recognized, Guide IZLT2, File E14853
*CSA Certified, Class 6225-01, File 47235
For break-a-way holders See Page 2

HEB — For any 1³/₃₂" x 1¹/₂" fuse. Fuseholder rated 30A, 600V (CSA Listed 15A max.). Typical fuse types: BAF, FNM, FNQ, and KTK (1/10-30A).

Example:

A single-pole, in-line holder for 1³/₃₂" x 1¹/₂" fuses. A single #12 solid wire is on the load side. A copper crimp is desired. Two #6 solid wire is on the line side. A copper set-screw is desired.

1. Choose HEB- Series.
2. Choose "A" for load side.
3. Choose "K" for line side.

Complete Catalog Number: HEB-AK.

Recommended torque on coupling nut: 10-20 In.-lb.

Packaging & Ordering Information:

HEB	A	B
	Load Terminal	Line Terminal

For Insulating boots See Page 2

Catalog and Specification Data - Non-Break-A-Way

Conductor Terminals

Type Terminal	Conductor Data			Catalog Symbol Load & Line (2) & (3)
	Size	No. Per Terminal	Solid Stranded	
Copper Crimp	#12 to #8	1	• •	A
	#12	2	• •	
	#10	2	• •	B
	#8	1	• •	
Copper Set-Screw	#4	1	• •	C
	#8	2	• •	
	#4	1	• •	D
	#6	2	• •	
	#2	1	• •	Z
	#20 to #10	1	• •	

Copper Set-Screw

	#12 to #8	1	• •	J
	#12 to #8	2	• •	K

Solid Copper Terminal for Aluminum Wire Connector

	#8 to #12	1	• •	S
	#10 to #4	1	• •	

Aluminum Crimp

	#8	1	• •	N
	#6	1	• •	
	#6	1	• •	P
	#4	1	• •	
	#3, #4	1	• •	Q
	#2	1	• •	
#1, #2	1	• •	R	
#1/0	1	• •		

Aluminum Set-Screw

	#12 to #2	1	• •	L
	#12 to #2	2	• •	Y

TRON® In-Line Fuseholders

Single-Pole for 1³/₃₂" x 1¹/₂" Fuses

HEB Series

See New Lighting Details

Break-A-Way Holders

Break-A-Way Holders consist of two parts for a complete unit. One part is the Fuseholder, which contains the Load Terminal, and the other part is the Break-A-Way, which contains the Line Terminal. These can be ordered as a complete unit or as individual parts.

Catalog Symbols:

Break-A-Way Unit:

(Includes Fuseholder, Break-A-Way part, and Insulating Boots)

HEB-AW-RLA, HEB-AW-RLC-A*, HEB-AW-RLC-B, HEB-AW-RLC-C, HEB-AW-RLC-J, HEB-AW-RYA, HEB-AW-RYC, HEB-BW-RLC-A, HEB-BW-RLC-B, HEB-BW-RYC, HEB-JW-RLC-J, HEB-JW-RYC, HEB-KW-RLC-J, HEB-KW-RYC, HEB-LW-RLA, HEB-LW-RLC-J, HEB-LW-RYA

Fuseholder Only: HEB-AW*, HEB-BW*, HEB-DW*, HEB-JW, HEB-LW

Break-A-Way Part: RLC-A, RLC-B, RLC-C, RLC-J, RYC, RLA, RYA

In-Line Fuseholders

Single-Pole

Agency Information:

- *U.L. Recognized
- *CSA Certified

Insulating Boots



Catalog Numbers	Type
1A0512	Single Conductor
1A0513	Two Conductor

Two Insulating boots come standard with the Break-A-Way units (ex. HEB-AW-RLC-A). The insulating boots are not included with the Non-Break-A-Way Holders (ex. HEB-AA) or the individual pieces of the Break-A-Way parts (ex. HEB-AW, RLC-A). Two insulating boots must be ordered for each holder when ordering them separately. When insulated boots are utilized, extra heat retention requires that fuses are sized at a minimum of 200% of the RMS load current.

Catalog and Specification Data

Break-A-Way Receptacles

Type Terminal	Conductor Data				Catalog Symbol Line Side (3)
	Size	No. Per Terminal	Solid	Stranded	
Copper Crimp	#12 to #8	1	•	•	-RLC-A
	#8	1	•	•	-RLC-B
	#4	1	•	•	-RLC-C
Copper Set-Screw	#12 to #2	1	•	•	-RLC-J
	#12 to #2	2	•	•	-RYC
Aluminum Set-Screw	#12 to #2	1	•	•	-RLA
	#12 to #2	2	•	•	-RYA
Solid Break-A-Way	(Required with Break-A-Way Receptacle)			W	

Example:

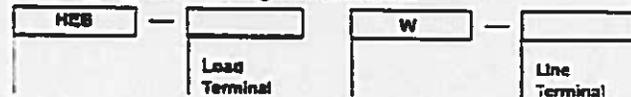
A single-pole, break-a-way, in-line holder for 1³/₃₂" x 1¹/₂" fuses. A single #12 solid wire is on the load side. A copper crimp is desired. Two #8 solid wire is on the line side. A copper set-screw is desired.

1. Choose HEB- Series.
2. Choose "AW" for load side.
3. Choose "RYC" for line side.

Complete Catalog Number: HEB-AW-RYC.

Recommended torque on coupling nut: 10-20 in.-lb.

Packaging & Ordering Information:



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TRON[®] In-Line Fuseholders

Single-Pole for Solid Neutral

See New Lighting Details

HET Series



Non-Breakaway Holders

Catalog Symbol: HET-AA, HET-AB, HET-BB, HET-JJ, and HET-JK

In-Line Fuseholders, Single-Pole

Water-Resistant

For breakaway holders, see page 2

HET — A HEB fuseholder with a permanently installed solid neutral. Easily identified by white plastic coupling nut.

Example:

A single-pole, in-line holder for a neutral is required. One solid copper #8 is on the load side, copper crimp for connection. A solid copper #6 is on the line side, and a copper crimp is required.

1. Choose HET- series.
2. Choose "A" for load side.
3. Choose "B" for line side.

Complete Catalog Number: HET-AB.

Ordering Information:

HET	—		
		Load Terminal	Line Terminal

Recommended Torque on Coupling Nut: 10-20 in-lb.

Catalog and Specification Data - Non-Breakaway

Terminal Type		Conductors			Catalog Symbol Load & Line (2 & 3)	
		Size	No. Per Terminal	Solid		Stranded
		#12 to #8	1	•	•	A
		#12	2	•	•	
		#10	2	•	•	
		#6	1	•	•	
		#4	1	•	•	
		#12 to #3	1	•	•	J
		#12 to #2	2	•	•	K
		#12 to #2	1	•	•	L

Catalog Data — Insulating Boots

Catalog Numbers	Type
2A0660	Single Conductor
2A0661	Two Conductor

Insulating boots are **not** included with **non-breakaway** parts and must be ordered separately. They come standard with the breakaway series. The HET-AW & HET-JW do not have the boots. These catalog items do not have a breakaway receptacle.

When boots are utilized, extra heat retention requires that fuses are sized at a minimum of 200% of the RMS load current.

TRON® In-Line Fuseholders

Single-Pole for Solid Neutral

HET Series

See New Lighting Details

Breakaway Holders

Catalog Symbol: HET-AW-RLC-A, HET-AW-RLC-B, HET-AW-RLC-C, HET-AW-RLC-J, HET-AW-RYC, HET-BW-RLC-B, HET-BW-RYC, HET-JW, HET-JW-RLC-J, HET-JW-RYC, and HET-AW

In-Line Fuseholders, Single-Pole

Example:

A single pole, in-line, breakaway holder for a neutral is requested. A single #10 solid, copper crimp is on the load side. A single #10, solid wire and a copper crimp is needed on the line side.

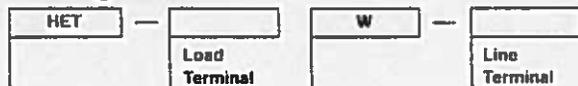
1. Choose HET- series.
2. Choose "A" from 1st page for load side.
3. Choose "W" for breakaway requirement.
4. Choose "RLC-A" for breakaway receptacle on line side.

Complete Catalog Number: HET-AW-RLC-A

Catalog and Specification Data

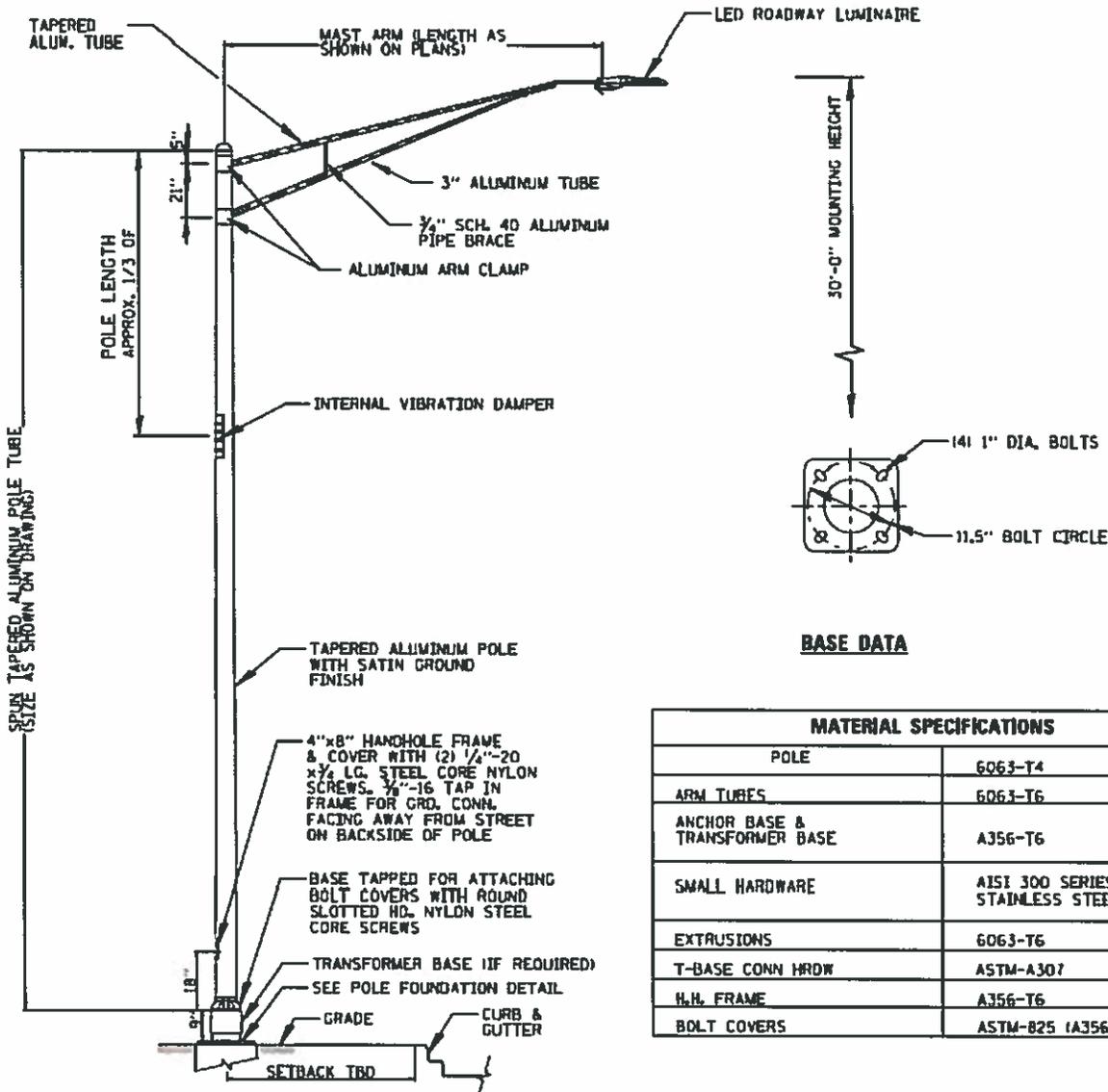
Terminal Type	Conductor Size	Conductor Data		Catalog Symbol Line Terminal (3)
		No. Per Terminal	Solid Stranded	
Copper Crimp 	#12 to #8	1	• •	-RLC-A
	#6	1	• •	-RLC-B
	#4	1	• •	-RLC-C
Copper Set-Screw 	#12 to #3	1	• •	-RLC-J
	#12 to #3	2	• •	-RYC
	Solid Breakaway 			

Ordering Information:



Recommended Torque on Coupling Nut: 10-20 in-lb.

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BASE DATA

MATERIAL SPECIFICATIONS	
POLE	6063-T4
ARM TUBES	6063-T6
ANCHOR BASE & TRANSFORMER BASE	A356-T6
SMALL HARDWARE	AISI 300 SERIES STAINLESS STEEL
EXTRUSIONS	6063-T6
T-BASE CONN HRDW	ASTM-A307
H.H. FRAME	A356-T6
BOLT COVERS	ASTM-825 (A356)

(REFER TO LIGHTING PLANS FOR LOCATIONS)

NOTES:

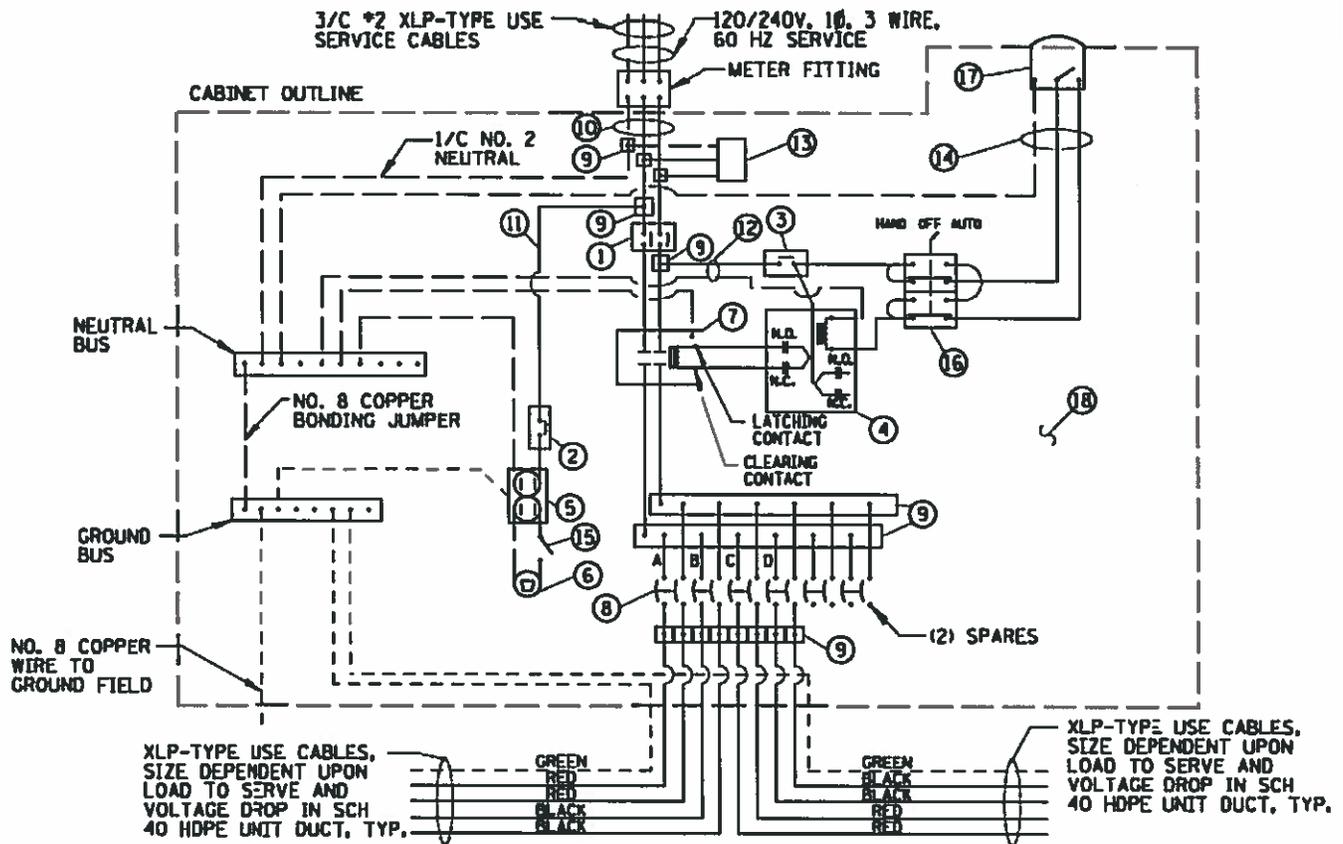
1. LIGHT POLES SHALL MEET WIND LOADING & VIBRATION REQUIREMENTS ACCORDING TO THE LATEST AASHTO STANDARDS AND ARTICLE 1069.01 IN STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ALL STEEL SHALL BE FROM A DOMESTIC SOURCE.
2. THE LIGHT STANDARD SHALL MEET THE ILLUMINATION REQUIREMENTS AS SPECIFIED IN THE LUMINAIRE PERFORMANCE TABLES IN THE SPECIFICATIONS. ALL LUMINAIRES SHALL HAVE A MULTI-TAP BALLAST WIRED FOR 240 VOLTS OPERATION.
3. ALL LIGHT STANDARDS SHALL BE FROM THE SAME MANUFACTURER, OR APPROVED EQUAL.
4. LIGHT POLE SHALL BE U/L LISTED.
5. ANTI-SEIZE LUBRICANT SHALL BE APPLIED TO ALL BOLTED AREAS DURING INSTALLATION.



LIGHT STANDARD DETAIL

N.T.S.

_____ PHASE CONDUCTOR
 - - - - - NEUTRAL CONDUCTOR
 - - - - - GROUND CONDUCTOR



LIGHTING CONTROLLER WIRING DETAIL
N.T.S.



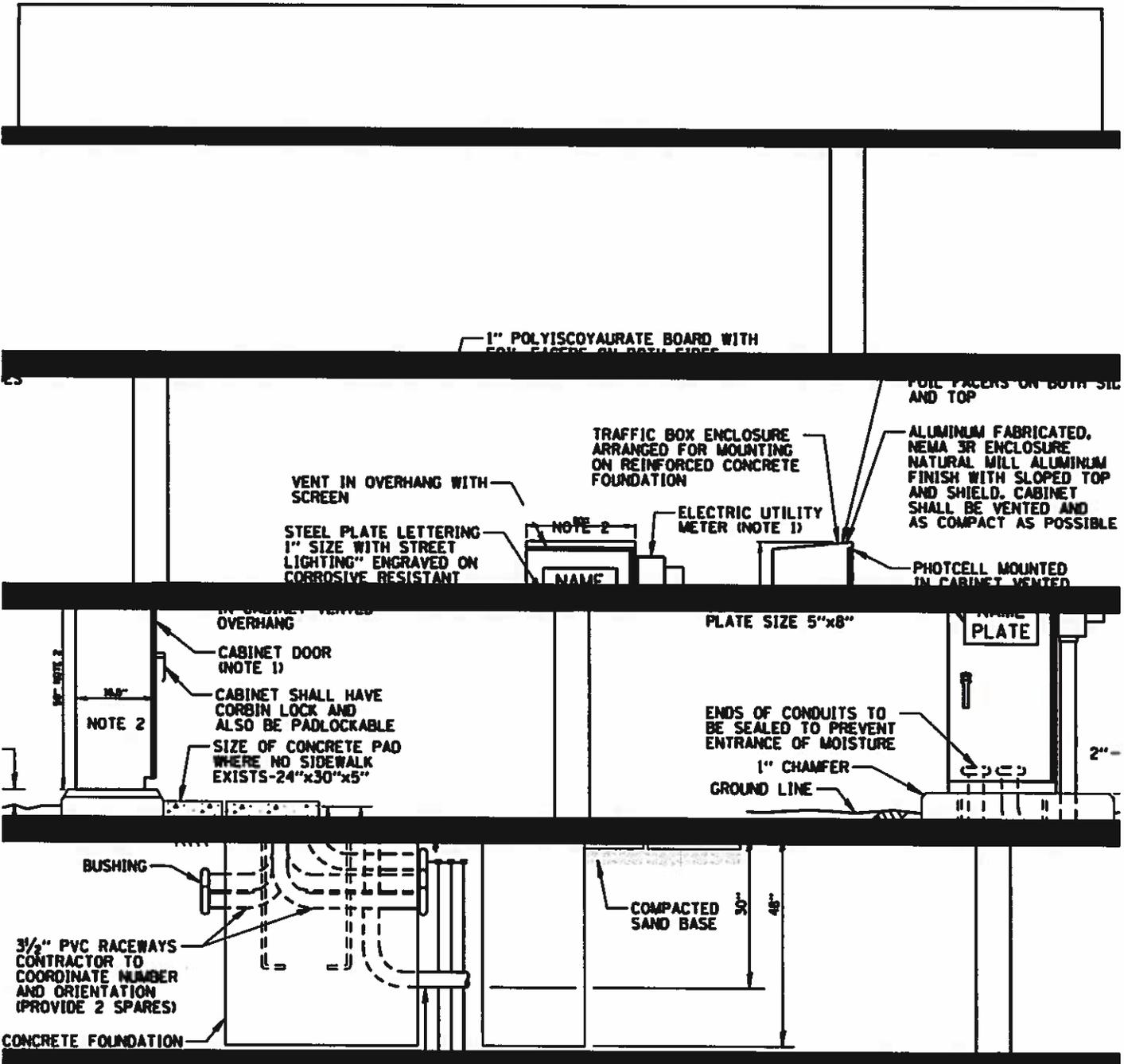
ITEM	SPECIFICATION	MFG./MODEL NO. OR APPROVED EQUAL
① MAIN CIRCUIT BREAKER	100 AMPERE, 2P, 240V SERVICE RATING, 10KAIC	SIEMENS NO. ED22B100
② LAMPHOLDER CIRCUIT BREAKER	20 AMPERE, 1P, 120V RATING, 10KAIC	SIEMENS NO. ED21B020
③ PHOTOELECTRIC CONTROL CIRCUIT BREAKER	15 AMPERE, 1P, 120V RATING, 10KAIC	SIEMENS NO. ED21B015
④ AUXILIARY RELAY	120 V OPERATED DPDT 60 HZ COIL 2 NO & 2 NC CONTACTS	MAGNECRAFT NO. 389 FXBXC1 - 120A
⑤ CABINET RECEPTACLE AND BOX	COMMERCIAL GRADE GFCI 20A/120V, MOUNTED IN A WEATHERPROOF CAST ALUMINUM SINGLE GANG BOX WITH WEATHERPROOF COVER	RECEPTACLE, LEVITON NO. 8899, BOX: APFLETON NO. WSM150 COVER: APFLETON NO. WHG1
⑥ CABINET LIGHT AND BOX	120V WEATHERPROOF LAMPHOLDER MOUNTED IN A CAST ALUMINUM BOX & EXT. GRADE 100W LAMP	LIGHT & BOX: RAB NO. VX1000G
⑦ CONTACTOR	100 AMPERE, 2 POLE, 120 V COIL, MECH HELD	SQUARE D NO. 8903 S00 10 V02
⑧ BRANCH LINE CIRCUIT BREAKERS	6 - 20 AMPERE, 2P, 240V RATING, 10KAIC	SIEMENS NO. ED22B020
⑨ POWER DISTRIBUTION BLOCK	600 VOLT, INSULATED, SIZE AS REQUIRED	MARATHON
⑩ SERVICE CABLES	3-600V (XLP-TYPE USE) NO. 2	N/A
⑪ LAMPHOLDER WIRE	2-600V XLP NO. 12	N/A
⑫ CONTROL WIRE	2-600V XLP NO. 12	N/A
⑬ SURGE ARRESTOR	10 K AMPERE RATING	SQUARE D NO. SDSA 1175
⑭ PHOTOELECTRIC CONTROL WIRE	3-600V XLP NO. 12	N/A
⑮ DOOR SWITCH	20A/120V, DOOR MOUNTED SNAP ACTION TYPE PLUNGER SWITCH	OMRON NO. A-20C0-K
⑯ HAND-AUTO-OFF CONTROL SWITCH	20A, 3 POS. MTD IN CAST ALUM. ENCLOSURE	SQUARE D NO. 9001 KYK 111
⑰ PHOTOCCELL	120V, MTD. ON CABINET, DELAY TYPE, SPST-NC	FISHER PIERCE NO. FPFA-105M
⑱ BACK PANEL	1/2" THICK SOLID PHENOLIC LAMINATE	ARBORON

NOTES:

1. ALL ITEMS LISTED IN LIGHTING CONTROLLER COMPONENT SCHEDULE SHALL BE CONSIDERED INCIDENTAL TO THE PRICE BID FOR "LIGHTING CONTROLLER" INCLUDING CABINET AND FOUNDATION.
2. THE LIGHTING CONTROLLER TOGETHER WITH ALL OF ITS COMPONENTS SHALL BE UL LISTED AS AN "ENCLOSED INDUSTRIAL CONTROL PANEL" UNDER UL508A.
3. CONNECTION OF SURGE ARRESTOR TO LINE SIDE OF MAIN CIRCUIT BREAKER SHALL NOT BE "DOUBLE LOGGED."

LIGHTING CONTROLLER COMPONENT SCHEDULE





NOTES:

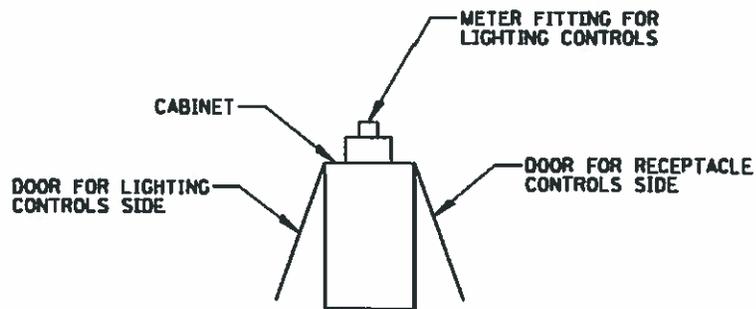
1. SEE DETAIL FOR CABINET METER FITTING & DOOR ORIENTATION.

2. CABINET DIMENSIONS SHOWN ARE APPROXIMATE, CABINET SHALL BE AS COMPACT AS POSSIBLE, CONTRACTOR TO COORDINATE.

**LIGHTING CONTROLLER
CABINET AND FOUNDATION**

CABIN
N.T.S.



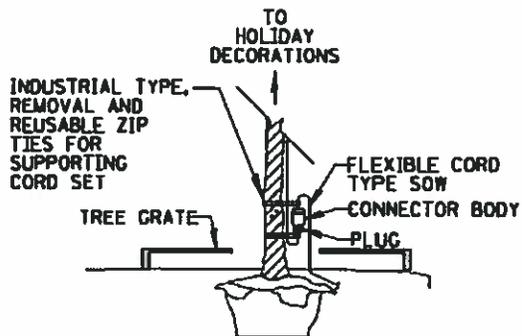
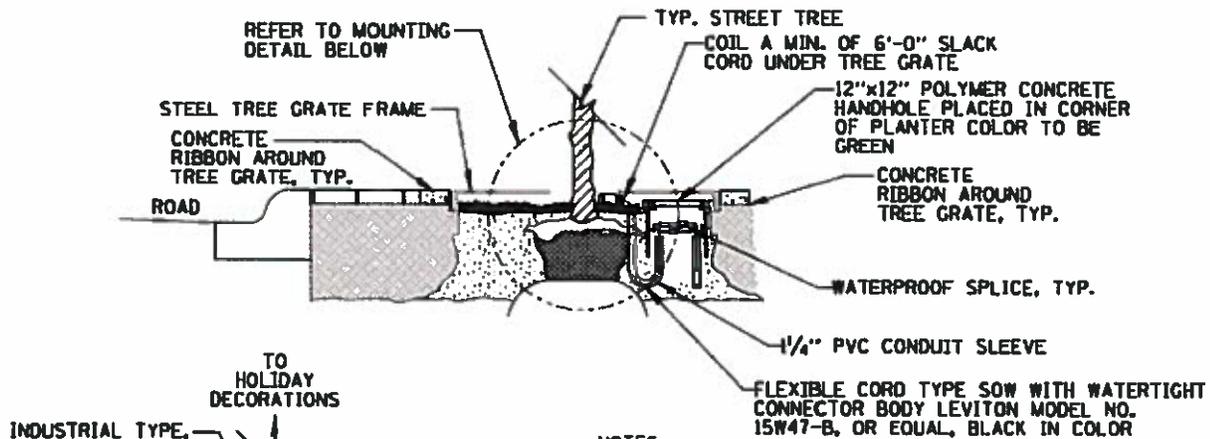


STREETSIDE

CABINET METER FITTING
& DOOR ORIENTATION

N.T.S.





MOUNTING DETAIL FOR IN USE SERVICE

NOTES:

1. THE PROPOSED WATERTIGHT CORD CONNECTORS SHOWN SHALL BE USED IN CONJUNCTION WITH ONLY CORRESPONDING LEVITON WATERTIGHT PLUG MODEL NO. 14W47-B, BLACK IN COLOR, RATED IN-USE PER NEC.
2. PROVIDE A RECEPTACLE IN ALL TREE GRATES.
3. CONTRACTOR SHALL SUPPLY SEPARATE CORD SET, 10 FT. IN LENGTH AND BLACK IN COLOR, WITH MATCHING LEVITON CONNECTOR ENDS (ONE END W/ PLUG AND ONE END W/ RECEPTACLE).

RECEPTACLE CORD ASSEMBLY, IN TREE GRATES DETAIL

N.T.S.

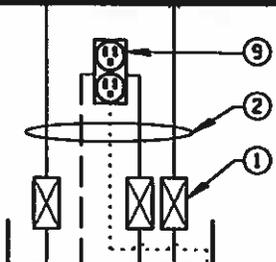


T

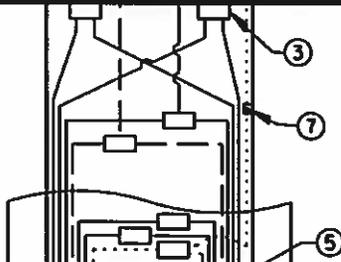
—— PHASE CONDUCTOR
..... GROUND CONDUCTOR
- - - NEUTRAL CONDUCTOR

① CONNECTOR KIT METHOD
WITH A FUSE (5A FOR

TO 240 VOL
ROADWAY
LUMINAIRE

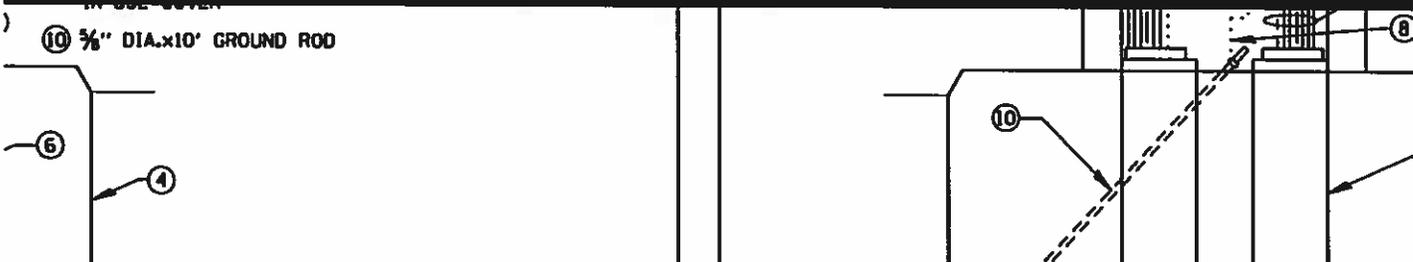


- ② NO. 10 A.W.G. WIRE
- ③ MULTIPLE COMPRESSION FITTINGS (SPLICE)
- ④ FOUNDATION
- ⑤ WIRE AS SHOWN ON PLANS



- ⑥ LIGHTING DUCT IN PVC RACEWAY
- ⑦ POLE GROUND LUG
- ⑧ #6 SOLID GROUND WIRE MECHANICALLY CLAMPED TO GROUND ROD
- ⑨ 120V-20A RECEPTACLE MTD. APPROX. 10'-0" ABOVE POLE BASE WITH WEATHERPROOF IN-USE COVER

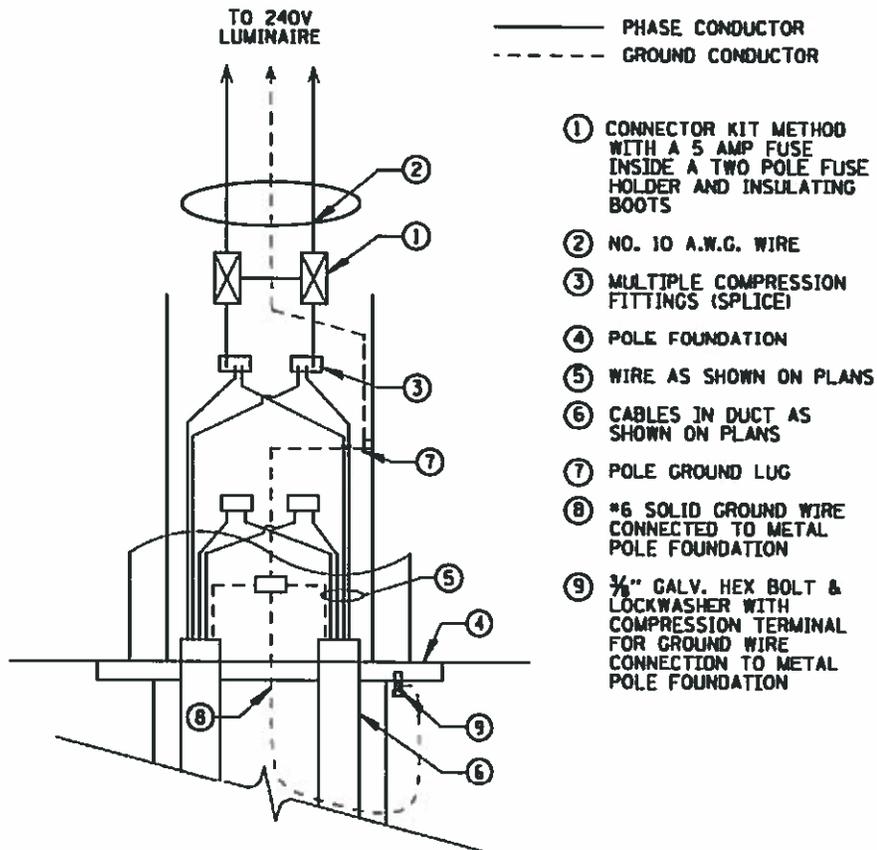
⑩ 3/4" DIA.x10' GROUND ROD



**PROPOSED LIGHT POLE
HANDHOLE WIRING DIAGRAM
FOR RECEPTACLE POLES**

N.T.S.

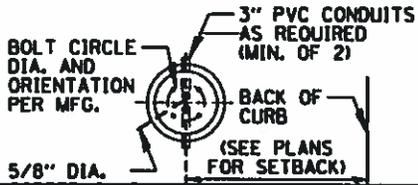




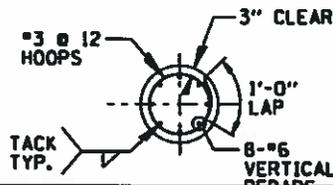
POLE HANDHOLE WIRING DIAGRAM

N.T.S.



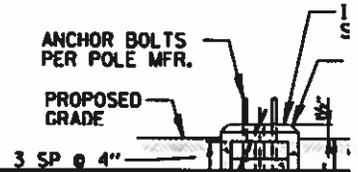


SECTION A-A



PLAN

DOT CLASS
I CONCRETE
1" CHAMFER



5/8" DIA.,
10' LENGTH
GROUND ROD
(NOTE 1)



SOIL CONDITIONS	DESIGN DEPTH "D"	SOIL CONDITIONS	DESIGN DEPTH OF FOUNDATION
		SOFT CLAY ($Q_u=0.375$ TON/SF)	13'-0"
		MEDIUM CLAY ($Q_u=0.75$ TON/SF)	9'-6"
		STIFF CLAY ($Q_u=1.50$ TON/SF)	7'-0"
		LOOSE SAND ($\phi=34\%$)	9'-0"
		MEDIUM SAND ($\phi=37.5\%$)	8'-3"
		DENSE SAND ($\phi=40\%$)	7'-9"

NOTES:

FOUNDATION WITH 8 FEET

1. GROUND ROD SHALL BE CAST INTO CONCRETE FOUNDATION

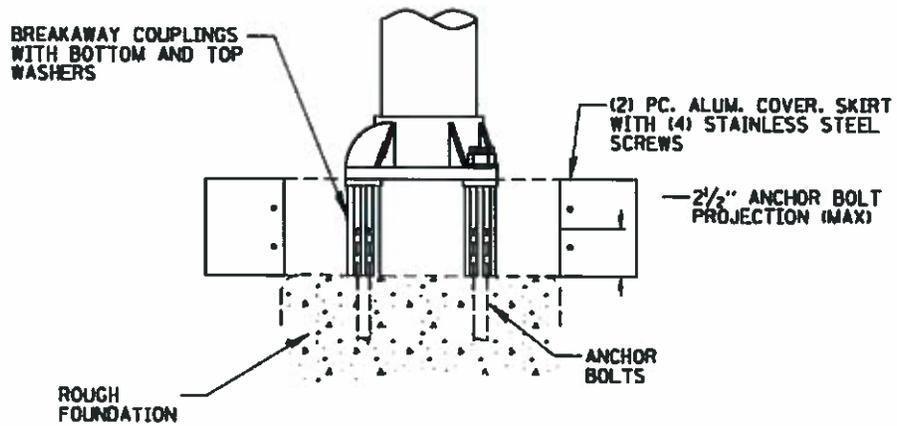
IN CONTACT WITH SOIL.

2. FOUNDATIONS SHALL BE VIBRATED IN ACCORDANCE WITH 100T STANDARD PRACTICES.



CONCRETE FOUNDATION DETAIL

N.T.S.



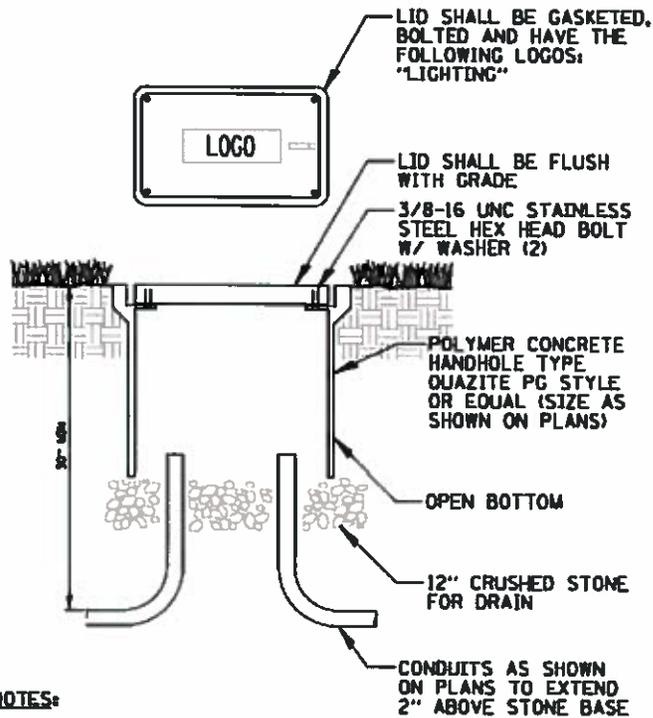
NOTES:

1. SHALL BE FACTORY PAINTED BLACK IF UTILIZED IN HISTORIC DISTRICT AND UNPAINTED IN COMMERCIAL AND COMMERCIAL COLLECTOR ROADWAYS.

BREAKAWAY COUPLING DETAIL

N.T.S.





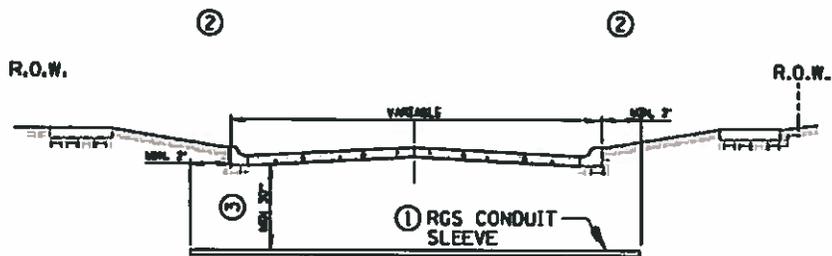
NOTES:

1. ALL SPLICES SHALL BE WATERPROOF. SEE SPLICING DETAIL.
2. POLYMER CONCRETE HANDHOLE AND LID SHALL BE GREY.
3. BOX & LID SHALL MEET/EXCEED ANSI TIER 15 LOADING REQUIREMENTS REQUIREMENTS AND BE TESTED IN ACCORDANCE WITH THE LATEST EDITION OF THE ANSI/SCTE 77 "SPECIFICATIONS FOR UNDERGROUND ENCLOSURE INTEGRITY", AND THE PROVISIONS OF PARAGRAPHS 5.2.3 AND 5.2.4 OF WESTER UNDERGROUND COMMITTEE GUIDE 3.6.

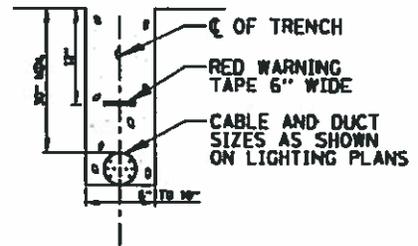
POLYMER CONCRETE HANDHOLE

N.T.S.





ROADWAY CROSSING



TRENCH CROSS SECTION

- ① SLEEVE SHALL BE HEAVY WALL RIGID GALVANIZED STEEL (RGS) CONDUIT.
- ② SLEEVE SHALL EXTEND A MINIMUM OF 2 FT. BEYOND BACK OF CURB.
- ③ SLEEVE SHALL BE A MINIMUM OF 30" BELOW ROADWAY OR CURB BOTTOM.

ELECTRIC CONDUIT INSTALLATION

N.T.S.



EXISTING ELECTRIC SERVICE

CONTRACTOR TO INSTALL SUFFICIENT CABLE SLACK TO REACH ELECTRIC SERVICE SECONDARY/TRANSFORMER WITHOUT SPLICING

NOTE 31

ELECTRIC SERVICE PROVIDER
10 FT. ABOVE

CONDUIT
5, AS

PEDESTAL
14 MADE
FLEX

HEIGHT AS REQUIRED
BY ELECTRIC
SERVICE PROVIDER

FURNISHED BY CONTRACTOR
INSTALLED BY ELECTRIC SERVICE PROVIDER

FURNISHED & INSTALLED BY CONTRACTOR

ELECTRIC SERVICE TO INSTALL FROM GRADE AND UP

10'-2" GALV. C 2 HOLE STRAP REQUIRED

DISCONNECT API 10 X BY PETROF

GRADE LINE

NORTH AMERICA, LTD.
ADVANCED PEDESTALS, LTD.

2" RIGID GALVANIZED STEEL OR AS SPECIFIED ON DRAWINGS (RGS) ELBOW

5/8" x 10' COPPERWELD GROUND ROD W/ #4 AWG BARE COPPER GROUND WIRE ATTACHED W/ CLAMPS LISTED FOR DIRECT

TO LIGHT POLE OR LIGHTING CONTROLLER, CONDUIT AND WIRE SIZE TO BE DETERMINED IN DESIGN

2" OR SIZE ON DRAWING

BURIAL SERVICE

RGS CONDUIT WITH CORRESPONDING WIRE QUANTITY AND SIZE TO MATCH LIGHTING CONTROLLER WIRING DIAGRAM

NOTES:

CONFORM TO ELECTRIC SERVICE PROVIDER'S SPECIFICATION AND REQUIREMENTS FOR THE SUPPLY SERVICE."

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE IBC BOOK OF "INFORMATION" OF ELECTRIC SERVICE

ALL MATERIAL SHOWN ABOVE SHALL BE INCLUDED IN THE PRICE BID FOR THIS SECTION. THE HORIZONTAL SERVICE FROM THE POLE TO CONTROLLER SHALL BE

2. FURNISHING AND INSTALLING (EXCEPT FOR POLE) SHALL BE THE RESPONSIBILITY OF THE "ELECTRIC SERVICE INSTALLATION" CONTRACTOR. CONDUIT AND WIRING FROM PC TO CONTROLLER SHALL BE PAID FOR SEPARATELY.

CONDUIT BUSHING AND SEALING

3. CONTRACTOR TO PROVIDE A GROUNDING COMPOUND AT TOP OF RISER.

REQUIRED.

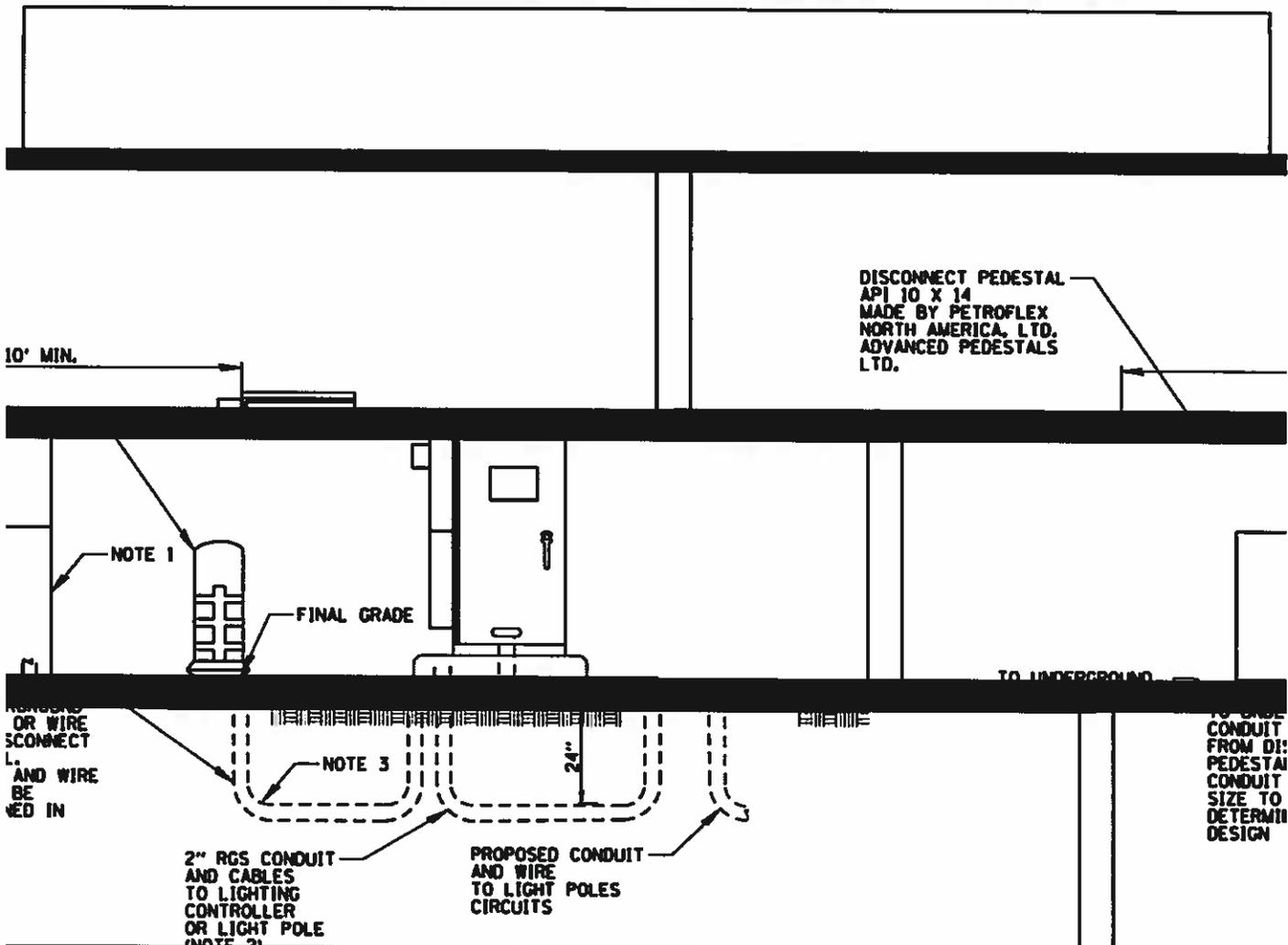
4. IF LIGHTING CONTROLLER IS FROM A PEDESTAL MAY BE ELIMINATED

CONNECTION POLE

ELECTRIC SERVICE OVERHEAD C

N.T.S.





REMOVE
OR WIRE
CONNECT
L.
AND WIRE
BE
VED IN

NOTE 1

FINAL GRADE

DISCONNECT PEDESTAL
API 10 X 14
MADE BY PETROFLEX
NORTH AMERICA, LTD.
ADVANCED PEDESTALS
LTD.

TO UNDERGROUND

NOTE 3

24"

2" RGS CONDUIT
AND CABLES
TO LIGHTING
CONTROLLER
OR LIGHT POLE
NOTE 2

PROPOSED CONDUIT
AND WIRE
TO LIGHT POLES
CIRCUITS

TO SIZE
CONDUIT
FROM DI:
PEDESTAL
CONDUIT
SIZE TO
DETERMINE
DESIGN

NOTE 2

NOTES:

1. ELECTRIC SERVICE PEDESTAL OR TRANSFORMER LOCATED IN EASEMENT. COM ED WILL PROVIDE CONNECTORS FOR CABLES AND CONNECT CABLES WITHIN THE COM ED ENCLOSURE. COM ED WILL IDENTIFY CUSTOMER'S STREET LIGHT CABLE.
2. WIRE SIZE TO MATCH WIRE SIZE CALLED OUT IN LIGHTING CONTROLLER WIRING DIAGRAM.
3. IF LIGHTING CONTROLLER IS REQUIRED,

DISCONNECT PEDESTAL CAN BE ELIMINATED.

IN

**ELECTRIC SERVICE UNDERGROUND CONNECTION
TO PEDESTAL/TRANSFORMER**
N.T.S.



LE CAP
APPLIED
EALANT,
DATE

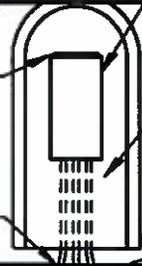
COMPRESSION TYPE
COPPER SLEEVE

HEAT-SHRINKING
WITH FACTORY
WATERPROOF SI
(SIZED TO ACC

NUMBER OF CABLES)

TRIMMED CABLES

ELECTRIC BRANCH
CABLE (SIZE AS
NOTED ON CONTRACT



COPPER SLEEVE
(SIZED FOR ACTUAL
NUMBER OF CABLES
AND MFG. SUGGESTED
CRIMP TOOL USED)

SEALANT TAPE OR
INSERT (AROUND
AND THROUGH
CROTCH SPACE)

EXPOSED SEALANT

#10 AWG ELECTRIC

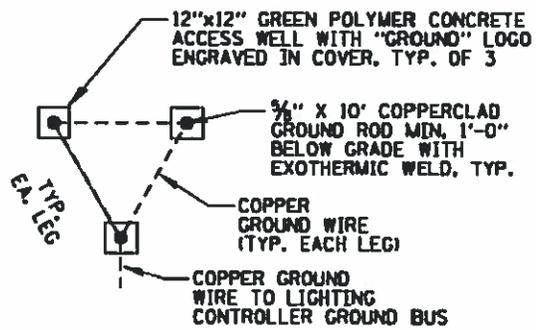
DRAWINGS)

CABLE TO LUMINAIRE

SPLICING ELECTRIC CABLE IN POLE

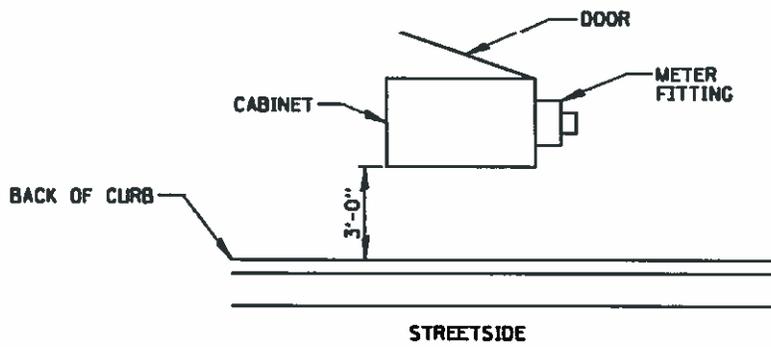
N.T.S.





GROUND FIELD DETAIL (TYP.)
 N.T.S.

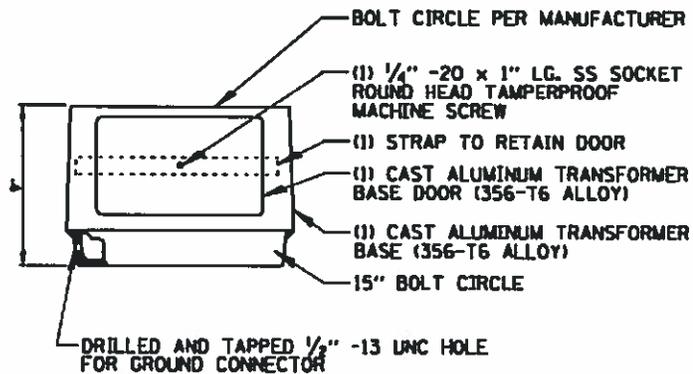




CABINET METER FITTING
& DOOR ORIENTATION

N.T.S.



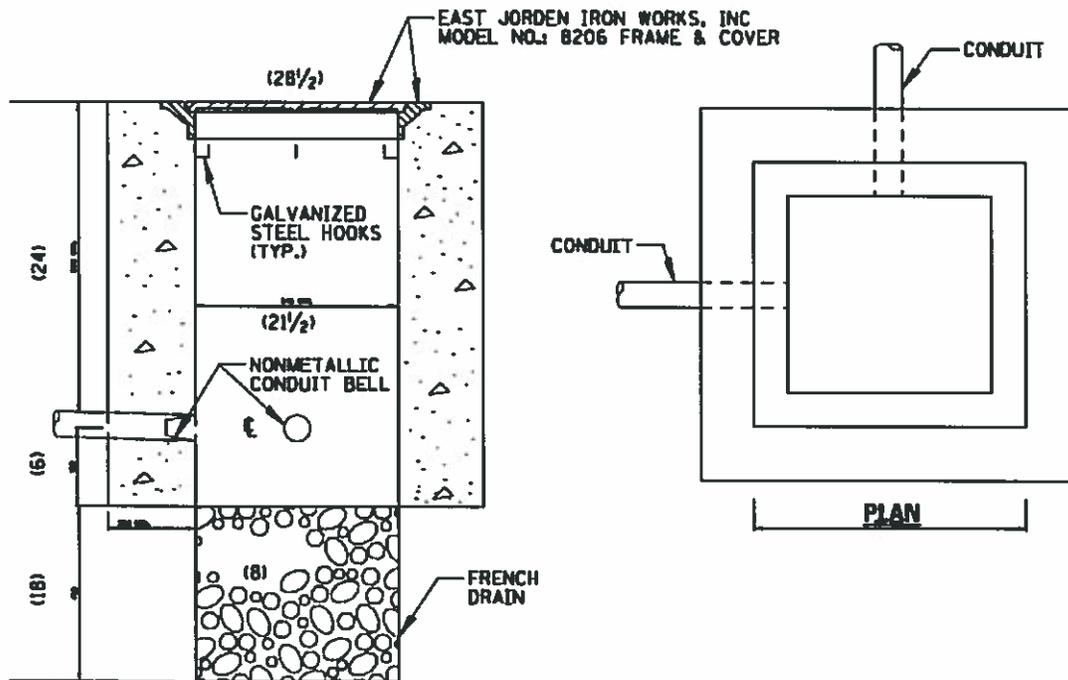


NOTES:

1. BEFORE INSTALLATION OF BREAKAWAY BASE, USER SHOULD CONSULT WITH AUTHORIZED DISTRIBUTOR REGARDING USERS PROPOSED APPLICATION, LOAD REQUIREMENTS AND INSTALLATION METHODS. FAILURES CAN RESULT FROM USERS MISAPPLICATION OR IMPROPER INSTALLATION. TO APPROACH OPTIMUM STATIC LOADS, USE THE LARGEST POSSIBLE BOLT CIRCLES. SHIMS SHALL NOT BE ALLOWED.
2. SHALL BE FACTORY PAINTED BLACK IF UTILIZED IN HISTORIC DISTRICT AND UNPAINTED IN COMMERCIAL AND COMMERCIAL COLLECTOR ROADWAYS.

BREAKAWAY TRANSFORMER BASE
 N.T.S.





ELEVATION

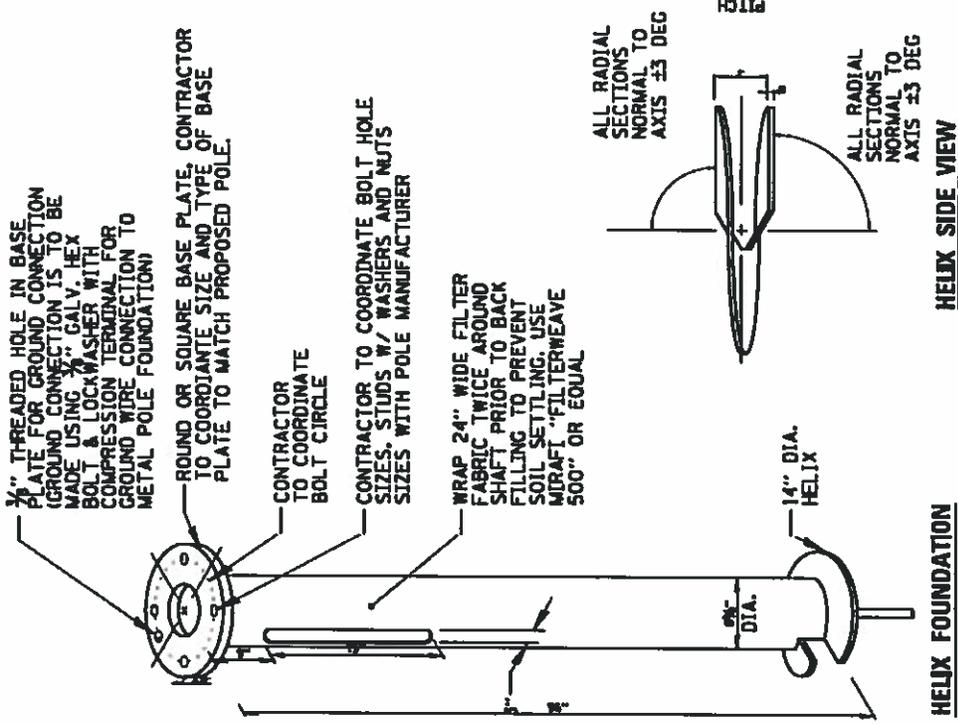
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SHOWN.
2. FRAME AND COVER CAN BARE 64 KG (140 LBS.) MIN. LOAD

CONCRETE HANDHOLE

N.T.S.





- NOTES:**
1. FINISH: HOT DIP GALVANIZED PER AASHTO M111 (LATEST REVISION). BASEPLATE TO BE PERPENDICULAR TO SHAFT AXIS (± 1 DEG) AND HOLE CENTERLINE CONCENTRIC ($\pm .188$) TO SHAFT AXIS.
 2. STENCIL MIN $1/2$ IN. LETTERS MANUFACTURER'S NUMBER AFTER GALVANIZING.
 3. PILOT POINT AND SHAFT AXES TO BE CONCENTRIC (± 125 FIM) AND IN LINE (± 2 DEG).
 4. FLAME CUT SLOT PERPENDICULAR TO THE BASEPLATE. PREHEAT, TUMBLEBLAST, HANDGRIND, AND CLEAN BASEPLATE, HELIX AND PILOT POINT ON ALL WELDED AREAS.
 5. FLAMECUT IRREGULARITIES PERMISSIBLE: (1) VALLEYS, NOT TO EXCEED $7/8$ IN. BELOW NOMINAL SURFACE LEVEL, (2) PEAKS OR POSITIVE IRREGULARITIES NOT TO EXCEED $1/2$ IN. ABOVE NOMINAL SURFACE LEVEL OR INTERSECTIONS OF NOMINAL SURFACES.
 6. MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
 7. ALL MATERIAL IS TO BE NEW, UNUSED AND MILL TRACEABLE MEETING THE FOLLOWING SPECIFICATIONS:
 - BASEPLATE: ASTM A36-(LATEST REVISION) STRUCTURAL (CONFORM TO AASHTO TECH. BUL. #270)
 - SHAFT: ASTM A252 (LATEST REVISION) GRADE 2, STEEL PIPE PILES, ALT. MATERIAL, ASTM A53 (LATEST REVISION) TYPE E OR S, GRADE B, STEEL PIPE OR STRUCTURAL STEEL TUBING.
 - HELIX: ASTM A635 (LATEST REVISION) $3/8$ " THICK HOT ROLLED STEEL PLATE OR COIL.
 - PILOT POINT: ASTM A575 (LATEST REVISION) $1/4$ " DIA. HOT ROLLED STEEL BAR.
 - BOLTS: 1 " DIA. HOT DIP GALVANIZED STUDS IN ACCORDANCE WITH AASHTO M314 OR ASTM F1554.
 10. BASEPLATE IS PERMANENTLY STAMPED WITH MANUFACTURER'S IDENTIFICATION "ABC" IN $1/2$ " LETTERS AND DATE CODE IN $1/4$ " LETTERS.

LIGHT POLE METAL FOUNDATION DETAIL
N.T.S.

SECTION 6-305: LANDSCAPE AND TREE PRESERVATION

A. Purpose. The purpose of this Section is to establish meaningful standards for the design, installation, maintenance and preservation of landscaping and natural areas throughout the Village.

B. Applicability.

1. **General.** No permit for the construction, reconstruction, extension, repair or alteration of any building, structure or use of land and no building or land or any part of any building or land, may be occupied or used until landscaping has been provided in accordance with the requirements of this Section.
2. **Responsibility for Compliance.** The following shall comply with all requirements provided in this Section, except where noted:
 - a. All new single-family detached dwellings and attached 2-unit dwellings (duplexes) shall comply with the provisions of Sections 6-305.E Landscape Plan and 6-305.F Maintenance and Preservation, where applicable.
 - b. New residential developments of two (2) buildable lots or more.
 - c. New residential developments of three (3) units or more within a common building envelope.
 - d. New non-residential developments.
 - e. New mixed-use developments.
 - f. New vehicular parking areas.
 - g. Modifications to an existing building or site (see Section 6-305.B.3 Modifications).
 - h. Any project requiring a Special Use Permit, Map Amendment, or Appearance Review, as determined by the Development Services Department.
3. **Modifications.** An existing building or site may be renovated or repaired without providing additional landscaping except when:
 - a. An addition, alteration, or enlargement to an existing building, excluding single-family dwellings, expands the original building square footage by twenty-five percent (25%) or more, singularly or collectively.
 - b. There is a creation of, or increase in, residential units within an existing building, excluding single-family dwellings.
 - c. The restoration of any building, accessory buildings or structures or portion thereof damaged by fire, explosion, flood, casualty or other natural disaster of any kind is undertaken.

C. Special Conditions.

1. **Alternate Landscape Plans.**

The Board of Trustees may approve landscape plans whose makeup may not meet the specified quantities stated herein, if such plans are clearly superior to what could be achieved by using those minimum standards and are consistent with the purposes of this Section, as determined by the Development Services Department.
2. **Additional Landscaping.**

The Board of Trustees may require additional landscaping or site furnishings (e.g. benches, walls, park equipment) above quantities specified herein in order to mitigate a specified problem or in order to ensure a development is consistent with the objectives of this Section and/or adopted Village policy.
3. **Changes to Approved Landscape Plan.**

Changes to an approved landscape plan shall require approval by the Board of Trustees, except when the conditions detailed in Section 6-305.F Maintenance and Preservation are met, or approved in accordance with the following:

- a. The Village may authorize minor revisions by way of an administrative Appearance Review to an approved landscape plan, including the substitution of equivalent plantings, where such revisions do not diminish the benefits of the approved landscape plan, as determined by the Development Services Department. See Section 5-106 Appearance and Related Plan Review for further details.

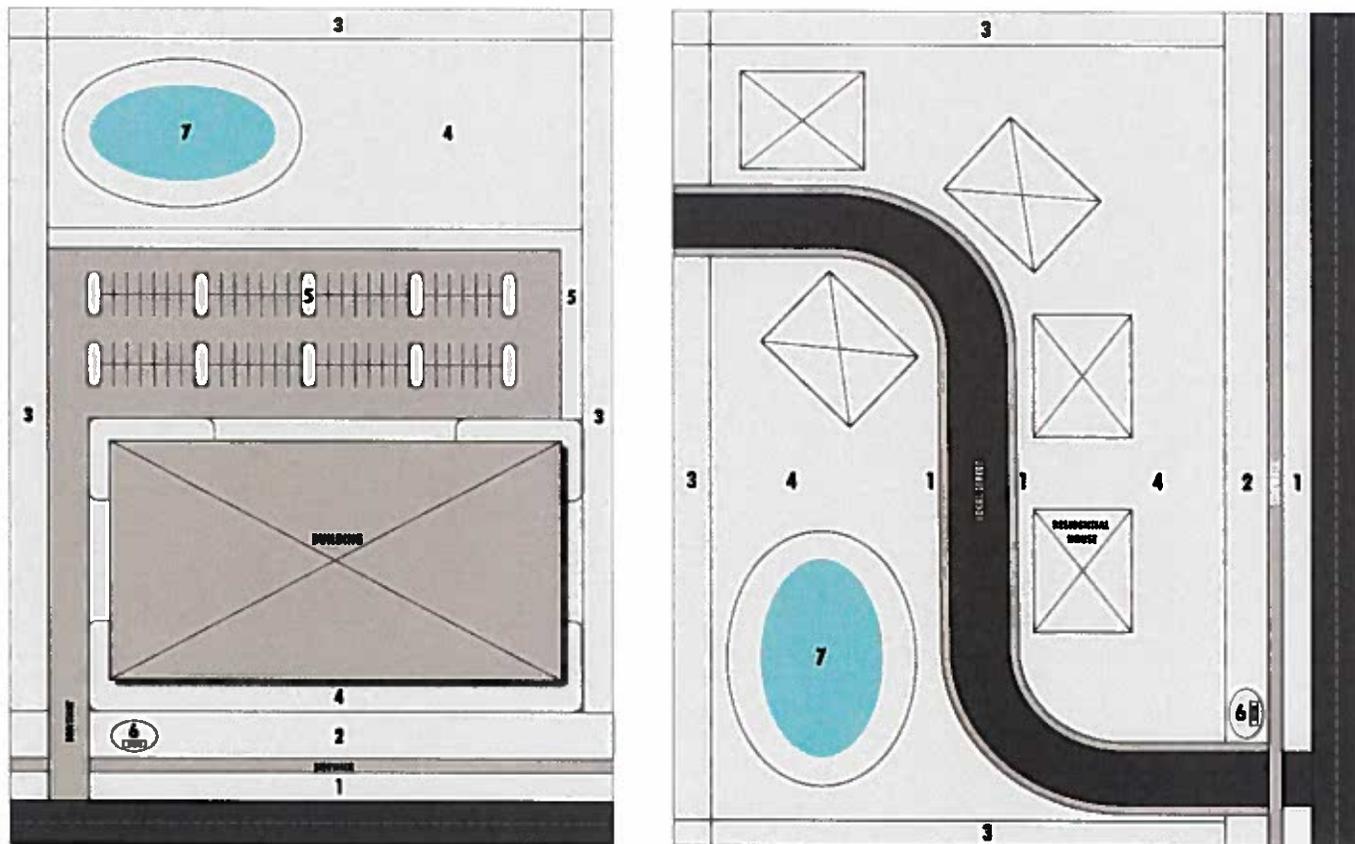
D. Landscape Zones

1. **General.** Landscape zones refer to distinct areas within a particular site and the specific landscape requirements that apply therein. There are seven (7) different landscape zones, as described in this Section. Not all parcels will contain every landscape zone (e.g. some developments will not have signage landscaping). Landscape zone requirements shall meet or exceed the requirements detailed in this Section.

a. **Landscape Zones.**

1. Landscape Parkway
2. Landscape Corridors
3. Landscape Bufferyards
4. Foundation and Interior Landscape
5. Parking Lot Area Landscape
6. Signage Landscape
7. Stormwater Management Area Landscape

Figure 6-305.D.1.a (A) - Landscape Zones Overview (Figure for Illustrative Purposes Only)



Non-Residential Development Example Scenario

Residential Development Example Scenario

b. Conflicts.

1. Where landscape zone requirements overlap or conflict, the more stringent requirements shall apply, as determined by the Development Services Department.

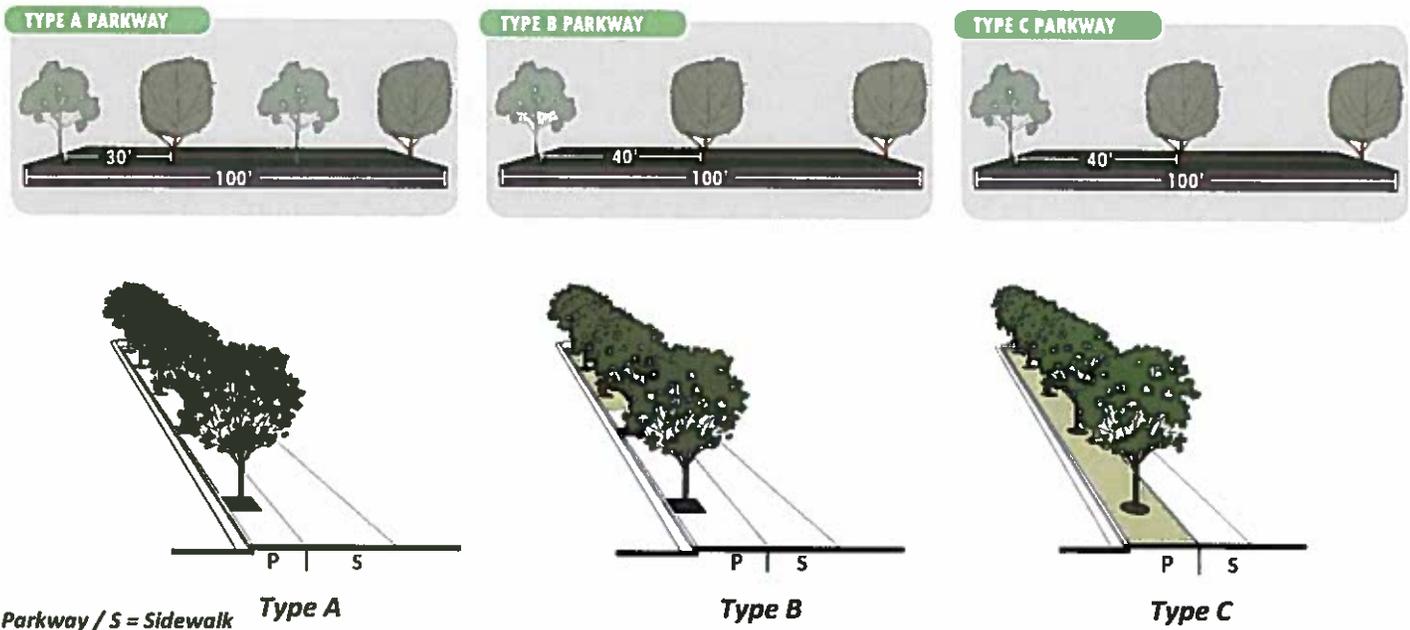
2. Landscape Parkway.

a. **General.** The Landscape Parkway is intended to provide a landscaped seam between the roadway and adjacent development to ensure a continuous green corridor along the public right-of-way. Movement between seams is facilitated and encouraged with pedestrian sidewalks, crosswalks and other amenities that give a positive sense of ambiance and create a desire to move from one side to the other.

1. A minimum number of parkway trees are required per lineal feet of frontage for all development. On a corner lot, the requirements of this section shall apply along both frontages.
2. Parkway requirements shall be based on the width of the parkway, as detailed in Table 6-305.D.2.b (A) Parkway Requirements. If more than one (1) Landscape Parkway type may be used, the Development Service Department shall make the final determination.

b. Requirements.

Figures 6-305.D.2.b (A and B) – Parkway Requirements (Figures for Illustrative Purposes Only)



P = Parkway / S = Sidewalk

Table 6-305.D.2.b (A) – Parkway Requirements

	Type A	Type B	Type C
Parkway Width (P)	4' or less	4' or more	7' or more
Sidewalk Width (S)	varies	varies	varies
Tree Location	Tree Grates*	Grass, Tree Grates*	Grass
Tree Spacing	30' on center	40' on center	40' on center
Permitted Encroachments	Driveways, Furniture	Driveways, Furniture	Driveways, Furniture

*or equivalent

c. Details.

1. The parkway shall be planted with grass or low ground cover, except where occupied by trees, tree grates or equivalent, driveway pavement, plant materials, site furnishings or decorative brick pavers.
2. Parkway trees shall consist of recommended shade tree species unless overhead utilities exist or if the street is known to be subject to widening in the future. Evergreen trees are not allowed in any parkway. Recommended tree species are provided in 6-305.G List of Recommended Plant Species.
3. Parkway trees shall be planted in the public parkway and not on the private property side of the sidewalk unless such placement does not meet the other criteria set forth in this Section. Any required tree that cannot be accommodated in the parkway shall be relocated to another landscape zone.
4. Trees shall be planted on the centerline of parkways or as close to five (5) feet from the sidewalk as possible and located so as not to interfere with overhead wires, traffic or pedestrian safety.
5. Other than trees, no landscaping in the parkway shall be taller than three (3) feet. No landscaping taller than two (2) feet shall be located within six (6) feet of fire hydrants or buffalo boxes.
6. The use of loose stone, rock, or gravel is prohibited in public parkways. Compacted cobbles, flagstone, or other rocks may be approved if these features are compacted firmly into the ground or mortared, reducing risk of being scattered in the street, as determined by the Development Services Department.
7. See Village of Orland Park Code of Ordinances Tree Management Program, Title 3, Chapter 6 for additional parkway tree regulations.

3. Landscape Corridors.

- a. **General.** Landscape Corridors shall provide a physical and visual connection between the parkway and a building's main façade and foundation planting area. Landscape Corridors act as an extension of the parkway into the site, the intent of which is to add a consistent quality and definition to areas adjacent to roadways and enhance the physical and visual access to important site features.
1. Landscape Corridor requirements shall be based upon the adjacent roadway classification, as detailed in Section 2-102 Definitions, or as required by other provisions of the Land Development Code. Refer to individual Zoning District requirements for additional information. The more stringent requirements shall apply. Refer to Table 6-305.D.3.b (A) – Corridor Types for planting requirements.
 2. Canopy, Ornamental and Evergreen trees are the only required plant materials within "Typical" and "Arterial" Landscape Corridors. "Auto-Row" Landscape Corridors require the use of canopy trees and a meandering, continuous row of low-growing perennials, hedge rows, ornamental grasses or other plant materials, as detailed in 6-305.D.3.b Requirements.
 3. While not required, the use of planting beds with shrubs, perennials, ornamental grasses and other plant materials may be included in the design of Landscape Corridors. These plant materials should be designed in a way to frame or accentuate important site features.
 4. New residential developments with rear and/or side yards abutting a public street are considered a special condition. See Section 6-305.D.3.c Special Conditions below for details.
- b. **Requirements.**

Figure 6-305.D.3.b (A) – Corridor Types (Figure for Illustrative Purposes Only)



Table 6-305.D.3.b (A) – Corridor Types

	Typical	Arterial	Auto-Row
Landscape Corridor Width	Varies	Varies	Varies
Shade Trees (per 100')	3	4	2
Ornamental or Evergreen Trees (per 100')	1	2	0
Shrubs (per 100')	0	0	Minimum of 20

1. **Typical Landscape Corridor:** Typical Landscape Corridors are intended to act as a physical and visual connection between the parkway and a building’s main facade. Requirements for Typical Landscape Corridors apply to all applicable parcels adjacent to any roadway not defined in Section 2-102 Definitions as “Street, Arterial, Major” and “Street, Arterial, Minor”, except for those defined in Section 6-305.D.3.b.3. Auto-Row Landscape Corridor.
2. **Arterial Landscape Corridor:** Arterial Landscape Corridors are intended to act as a physical and visual connection between the parkway and a building’s main facade. Requirements for Arterial Landscape Corridors apply to all applicable parcels adjacent to any roadway defined in Section 2-102 Definitions as “Street, Arterial, Major” and “Street, Arterial, Minor”, except for those defined in Section 6-305.D.3.b.3. Auto-Row Landscape Corridor.
3. **Auto-Row Landscape Corridor:** Auto-Row Landscape Corridors are intended to accommodate the unique needs of auto dealerships while creating a visual relationship between the parkway and a building’s main facade. Auto-Row Landscape Corridor requirements apply to any parcel occupied by a Village-licensed auto-dealership with frontage along any roadway. The use of shade trees and a meandering, continuous row of low-growing perennials, shrubs, ornamental grasses, and other plant materials shall be installed.

c. **Special Conditions.**

1. **New Residential Rear and Side Yard Corridors:** Where the rear or side yard of a new residential development borders public streets, the following requirements shall apply:
 - i. The plant material requirements detailed in “Typical Landscape Corridors” shall be installed along the entirety of the rear or side yard that adjoins a public street. Refer to Table 6-305.D.3.b (A) – Corridor Types for planting requirements.
 - ii. A uniform fence shall be installed along the entirety of the rear or side yard that adjoins a public street. Fencing shall comply with the requirements set forth in Section 6-310 Fences.

- iii. Small infill projects in established areas adjacent to public streets shall follow the existing pattern of rear yard screening, as determined by the Development Services Department.
- iv. The location of plant materials and fences shall be determined by the Development Services Department.

4. Landscape Bufferyards.

a. **General.** Landscape bufferyards shall act as physical and visual edges between the side and rear yards of adjacent parcels. Depending on the type of required bufferyard, their intent is to either unify or separate adjoining land uses. When the intent of a bufferyard is for the unification of adjacent parcels, pedestrian and vehicular cross-access between adjacent parcels is strongly encouraged, and may be required by the Village.

- 1. Single-family residential developments adjacent to single-family residential developments are exempt from bufferyard requirements. Mixed-use developments which include single-family residential units are not exempt from bufferyard requirements.
- 2. Bufferyards may remain in the ownership of the owner of the lot, or they may be subjected to deed restrictions and subsequently conveyed to a homeowners' association, provided that any such conveyance adequately guarantees the protection and maintenance of the bufferyards for the purposes of this Section.

b. **Requirements.**

- 1. A required bufferyard is determined by cross-referencing the "proposed land use" with the appropriate "adjacent land use" as detailed in Table 6-305.D.4.b (A) – Bufferyard Land Use Types. There are only two (2) land use types: Residential and Non-Residential, as described below. Specific bufferyard requirements are detailed in Table 6-305.D.4.b (B) – Bufferyard Types. If an adjacent parcel is vacant or undeveloped, the appropriate bufferyard shall be based on the parcel's land use category as detailed in the Village's Comprehensive Plan. If more than one bufferyard option is available, a petitioner may decide which type of bufferyard to install.

Table 6-305.D.4.b (A) – Bufferyard Land Use Types

	ADJACENT LAND USE		
	R	NR	
PROPOSED LAND USE	R	Type 1	Type 2 or 3
	NR	Type 2 or 3	Type 1

Residential (R) – Parcel containing only single- or multi-family residential use(s).

Non-Residential (NR) – All other parcels, including mixed-use developments.

Figure 6-305.D.4.b (A) - Bufferyard Types (Figure for Illustrative Purposes Only)

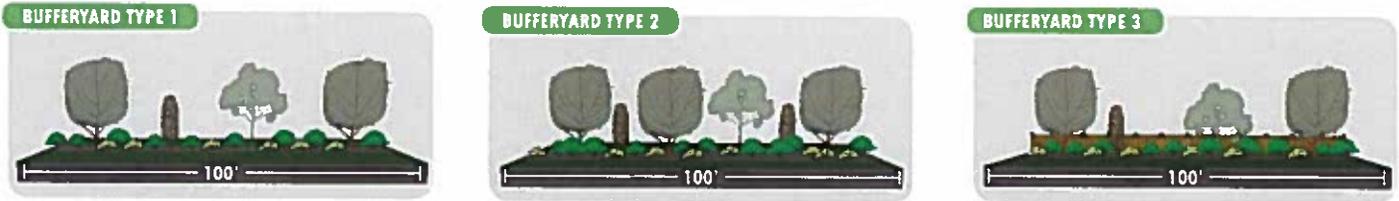


Table 6-305.D.4.b (B) - Bufferyard Types

	Type 1	Type 2	Type 3
Bufferyard Width (min.)	10'	15'	10'
Planting Bed Width (min)	7'	7'	7'
Shade Trees per 100'	3	4	4
Evergreen or Ornamental Trees per 100'	1	2	0
Shrubs per 100'	16	18	16
Fencing	Permitted	Permitted	6' required
Site Amenities	Permitted	Not permitted	Not permitted

2. Type 1 Landscape Bufferyard – (10')

A Type 1 Landscape Bufferyard is intended to act as a physical and visual seam between adjacent parcels by unifying similar land uses using landscaping. Movement between seams is facilitated and encouraged with cross streets, pedestrian sidewalks, crosswalks and other amenities that give a positive sense of ambiance and create a desire to move from one side to the other. Minimum width for a Type 1 Landscape Bufferyard is ten (10) feet. Site amenities and pedestrian and vehicular cross-access between adjacent parcels is strongly encouraged, and may be required, where appropriate.

- a. Site amenities can occupy any portion of the area within a Type 1 Landscape Bufferyard, subject to Development Services Department approval. Examples of site amenities include, but are not limited to:
 - i. Plazas, outdoor gardens, patios and outdoor seating areas;
 - ii. Water features, including bioswales or other stormwater management elements;
 - iii. Public art or outdoor architectural features;
 - iv. Pergolas and/or arbor structures;
 - v. Benches and complimentary site furniture.
- b. A reduction in plant material requirements and/or landscape-related development fees proportional to the proposed site amenity (amenities) may be applied, as determined by the Development Services Department.

3. Type 2 Landscape Bufferyard – (15')

A Type 2 Landscape Bufferyard is intended to act as a physical and visual filter between adjacent parcels by separating dissimilar land uses using landscaping. Minimum width for a Type 2 Landscape Bufferyard is fifteen (15) feet. Vehicular cross-access between adjacent parcels is encouraged where appropriate. Site amenities are not encouraged within Type 2 Landscape Bufferyard.

4. Type 3 Landscape Bufferyard – (10' + Fence)

A Type 3 Landscape Bufferyard is intended to act as a physical and visual filter between adjacent parcels by separating dissimilar land uses utilizing both an opaque, minimum six (6) foot tall fence and required landscaping. Minimum width for a Type 3 Landscape Bufferyard is ten (10) feet. Site amenities are not encouraged in Type 3 Landscape Bufferyard. Fences shall comply with the requirements set forth in Section 6-310 Fences.

c. Details.

1. If the area of a required bufferyard is increased or decreased through a modification to the required width, the required area coverage and planting requirements still apply based on the original minimum required width. If the area of the bufferyard will not accommodate the required number of plants, the same number of plants that cannot be accommodated shall be relocated to other areas within the site.
2. Landscape bufferyards shall be located within setbacks, except where landscape corridor requirements, easements, covenants, natural or engineered drainage, natural features, approved property entrances or exits, or required sight triangles require the bufferyard to be set back from the property line.
3. Landscape bufferyards shall not contain any development, impervious surfaces, or site features that do not function to meet the standards of this Section, unless approved by the Development Services Department. No grading, development, or land-disturbing activities shall occur within the corridor unless approved by the Plan Commission at the time of site plan approval.
4. A landscape bufferyard may be used for passive recreation or for utility or drainage easements, if the utility requirements and the bufferyard requirements are compatible, as determined by Development Services Department. If approved by the Development Services Department, stormwater Best Management Practices (BMPs) may also be located within the bufferyard. For details see Section 6-302.H Storm Water Best Management Practices.
5. Existing fences on adjacent properties may be counted as a credit if such fences are in good condition, are constructed of an opaque material, have a height of at least six (6) feet tall and meet all other fence requirements as detailed in Section 6-310 Fences.

d. Bufferyard Fences, Walls, Berms and Hedges. Fences, walls, berms and/or hedges may be required to supplement required Landscape Bufferyard requirements if the Development Services Department determines that additional screening is necessary to shield a proposed land use from adjacent uses. All fences shall meet the requirements of Section 6-310 Fences. If required, fences, walls, berms or hedges shall be constructed in accordance with the following specifications:

1. Bufferyard fences or walls shall not exceed six (6) feet in height in residential areas and shall not exceed eight (8) feet in height in non-residential areas along the perimeter of the property as outlined above.
2. Bufferyard fences and walls for residential developments over two (2) dwelling units and all non-residential development shall be made of natural materials such as wood, stone, vinyl or brick, with the design to be approved as a part of the landscape review. Hedges shall meet standards of this Section.
3. Earthen berms may be a part of the approved final grading plan to ensure adequate stormwater management, as determined by the Development Services Department. Berms shall have a maximum slope of 3:1 and shall be integral to the planting design, with groundcovers, native materials, grasses, perennials and/or lawn required to cover the berm. Berms proposed for landscaping that are not a part of the original grading design will require re-submittal review and approval of stormwater engineering.

5. Foundation and Interior Landscape.

a. Foundation Landscaping.

- 1. General.** Foundation landscape areas shall be provided to enhance architectural features, integrate a building(s) with the site and add visual interest to large expanses of building walls.
- 2. Requirements.**
 - i. A minimum ten (10) foot wide on average foundation landscape area shall be provided along one-hundred percent (100%) of all building facades fronting a public street, except where building access walkways / driveways or emergency service connections are necessary.
 - ii. A minimum seven (7) foot wide foundation landscape area shall be provided along fifty percent (50%) of all building facades not fronting a public street, except where building access walkways / driveways or emergency service connections are necessary.
 - iii. Foundation landscape areas shall consist of well-defined planting beds. A minimum of seventy-five percent (75%) of each foundation landscape area shall be occupied by planting beds, with the remaining area to be covered in a turf-grass or turf-grass alternative.
 - iv. Foundation planting beds shall consist of a combination of trees, shrubs, ornamental grasses, perennials and groundcovers. The majority of required foundation trees, shrubs and ornamental grasses shall provide year-round visual interest.
 - v. On average, a minimum of one (1) ornamental tree and sixteen (16) shrubs or ornamental grasses shall be provided for every one hundred (100) linear feet of building face.
 - vi. Foundation landscaping may be placed away from the building face in instances where the site layout allows such an alternative, but shall be no more than twenty-five (25) feet from the building face.
- 3. Exception.**
 - i. Attached dwellings that share a common wall with one (1) other dwelling unit (duplexes) are exempt from foundation landscaping requirement.

b. Interior Lot Landscaping.

1. A minimum of one (1) tree is required per dwelling unit for multi-family residential development, one (1) tree per 10,000 square feet of lot area for commercial/office development, and one (1) tree per 25,000 square feet of lot area for industrial development.

c. Residential Site Interior Landscaping.

1. For commonly owned land in single-family and multi-family developments with more than one (1) structure, the open space between buildings shall appropriately landscaped to provide: screening of adjacent dwelling units, screening and shading to improve energy efficiency, and a visually appealing living environment. Landscape features such as trees and shrubs, groundcovers, flowering annuals and perennials, permitted naturalized landscaping areas, BMPs and berming shall be used as appropriate to

enhance the overall appearance and function of the open space area.

6. Parking Lot Area Landscape.

a. **General.** The following standards shall apply to the perimeter screening and interior landscaping of parking lot areas:

1. **Perimeter Screening.** The design of the landscape screening around a parking lot area shall meet the following standards:
 - i. All parking lot areas greater than seven (7) parking spaces shall be significantly screened from view from adjacent properties and streets. A minimum ten (10) foot wide planting bed shall surround the perimeter of all required parking lots. Within three (3) years of initial installation, all plant materials shall have attained a minimum height of three (3) feet and a minimum of seventy-five percent (75%) of the area of the planting bed shall be covered with plant materials.
 - ii. The size and placement of plant material at maturity shall allow for a three (3) foot bumper overhang from the face of the curb.
2. **Parking Lot Island Landscaping.** Landscaped parking lot islands are required in order to provide aesthetic relief and shade to large expanses of paved surface. The design of parking lot islands, the selection of plant materials and the vehicular use area shall meet the following standards:
 - i. One (1) detached parking lot island is required for every ten (10) parking spaces provided. Required parking islands may be consolidated to allow for better soil volume and drainage. Parking lot islands at the corners of a parking lot do not count towards the parking lot island requirements.
 - ii. The area of a single parking lot island shall match the size of a single adjacent parking lot space. Minimum landscape island soil depth shall be thirty-six (36) inches, as measured from top of curb. If parking lot islands are consolidated, the area of a consolidated island shall be equal to or greater than the combined area of the required parking lot islands being consolidated.
 - iii. At minimum, parking lot islands shall be located at the end of each row of parking stalls.
 - iv. Shade trees shall be the primary plant materials used in parking lot islands and landscape areas. Each parking lot island shall have a minimum of one (1) shade tree. If parking lot islands are consolidated, one (1) shade tree is required for every 162 square feet of parking lot area.
 - v. Additional plant materials other than turf grass, such as shrubs, ornamental grasses, perennials and ground covers, shall be planted such that sixty percent (60%) or more of the parking lot island area includes live plant material. Other than trees, items planted in an island shall not exceed the mature height of thirty (30) inches above the top of curb.
 - vi. Evergreen and ornamental trees shall not be allowed in interior parking lot islands.
 - vii. Curbs shall be provided between vehicular use areas and landscaped areas.
 - viii. Parking lot islands shall contain at least six (6) inches of stone base and thirty-six (36) inches of topsoil per island. Islands should not be constructed on a compacted base; if severe compaction

exists as determined by the Development Services Department, a drainage strategy shall be implemented.

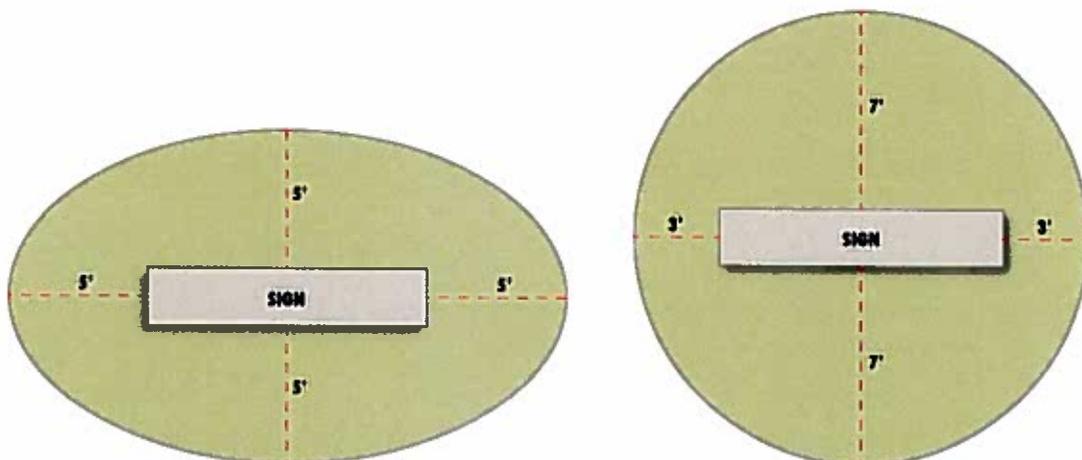
- ix. Parking lots shall be graded so that landscape islands do not impound water, unless surface impoundment is required as a method of on-site retention of stormwater. Landscape islands may contain bioswales and vegetated swales to reduce stormwater runoff and facilitate ground infiltration if the parking lot is designed to accommodate such a strategy.
- x. Best Management Practices (BMPs) should be used where appropriate within parking lot designs. See Section 6-302.H Storm Water Best Management Practices for further information.

7. Signage Landscape.

a. Required Landscaping.

1. A minimum five (5) foot wide on average landscape planting bed shall be installed around the entire base of all new permanent ground signs, or existing ground signs where the external structure is modified, as determined by the Development Services Department.
2. A minimum of fifty percent (50%) of the area of the landscape bed around a ground sign shall be occupied by vegetation. Vegetation should have year-round interest and should include shrubs, ornamental grasses and perennials; turf grass is not permitted. Plantings should be large enough to cover or soften the base of the sign without blocking the sign copy. All planting beds shall be mulched with 3" of organic mulch.
3. A landscape plan for ground signs, which will be reviewed administratively, shall be submitted with the associated sign permit. Such plans shall only be required to comply with landscape plan requirements listed in Section 6-305.E.2.a through Section 6-305.E.2.f, or as determined by the Development Services Department.
4. All landscaping shall conform to requirements listed in Section 6-104.E Clear Sight Triangles at Street Intersections and Section 6-307 Signs.

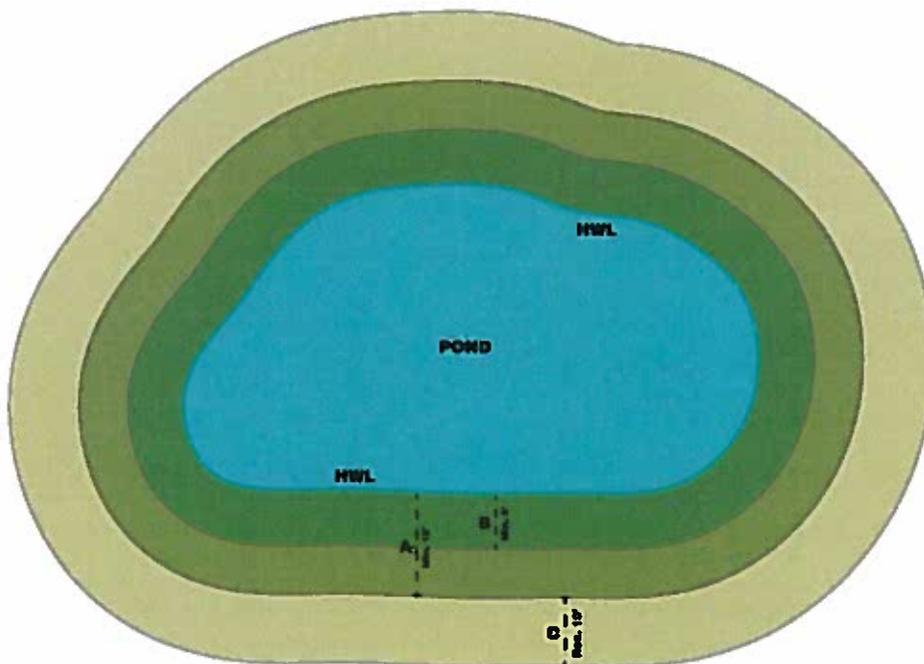
Figure 6-305.D.7.a (A) – Minimum Signage Landscape Area Examples
(Figures for Illustrative Purposes Only)



8. Stormwater Management Area Landscape.

- a. **General.** This Section details landscape requirements for stormwater management areas, namely retention and detention basins. See Section 6-409 Storm Sewers and Storm Water Detention for additional storm water management area requirements. See Section 6-412 Local Stream and Waterbody Protection, Section 6-413 Wetlands Protection and 6-414 Conservation Areas for requirements for these areas.
- b. **Requirements.**
1. A Monitoring and Management Plan shall be submitted along with a landscape plan for all projects where naturalized landscaping is included. This plan shall coincide with the project Watershed Management Ordinance (WMO) Permit, if applicable. For further details see Section 6-305.F.2 Naturalized Landscaping Area Management Standards.
 2. A hydro-period analysis, submitted in a diagrammatical “stage versus time” graph shall be submitted for the 2-, 5-, 10-, and 100-year storm events so that it can be confirmed that proposed plantings within the basin will be able to withstand the frequency and duration of these storm events. This information shall coincide with the project Watershed Management Ordinance (WMO) Permit, if applicable.
 3. A minimum fifteen (15) foot wide naturalized landscape area with a grade of less than five percent (5%) is required above all retention and detention pond high water lines in order to slow runoff, filter pollutants, recharge aquifers and enhance water quality. Eight (8) feet of that width shall remain open and accessible for maintenance purposes, planted with native low-growing plant materials or as a recreational/maintenance trail. The balance of the naturalized landscape area shall include naturalized landscaping, as detailed below in Section 6-305.D.8.b.4. See also Section 2-102 Definitions “Naturalized Landscaping”.

Figure 6-305.D.8.b (A) – Naturalized Landscape Area Requirements (*Figure for Illustrative Purposes Only*)



A = 15' Naturalized Landscape Area - <3% Grade + 100% Naturalized Landscaping
B = 8' Maintenance Area / Trail - May be located anywhere within Naturalized Landscape Area
C = 10' Naturalized Landscaping Recommended - Turf Grass Not Recommended
HWL = High Water Line

4. The entirety of the naturalized landscape area shall be planted with 100% context-appropriate naturalized landscaping, which shall provide complete coverage of the perimeter of the basins. At minimum, native canopy trees shall be planted at a ratio not less than one (1) tree for every one hundred (100) linear feet of retention or detention basin perimeter as measured at the high water line; native understory trees shall be planted at a ratio not less than one (1) tree for every two hundred (200) linear feet; and native shrubs at a ratio not less than three (3) shrubs for every fifty (50) linear feet.
5. Only those plants that are adapted to temporary flooding shall be planted below the high water line. Required trees and shrubs shall be informally clustered, rather than evenly spaced, to create a natural appearance, and shall be installed without compromising the viability and required management of native plantings.
6. Lawn grasses are not recommended within ten (10) feet of the required naturalized landscape area.
7. Where a stormwater basin is proposed to be located within or border on a required buffer, the intensity of landscaping around the basin shall be increased to comply with the applicable standard for the buffer. In these circumstances, the fifteen (15) foot naturalized landscape area is still required.

E. Landscape Plan.

1. **General.** An applicant for development required to install landscaping per this Section shall comply with development regulations stated in the development petition. The applicant shall submit a landscape plan along with the application for development approval to the Development Services Department.
 - a. The final grading plan approved by the Village shall be used as a base map for the landscape plan. It is imperative that the landscape design professional and project engineer coordinate their work to provide grading required for landscape compliance.
 - b. All new developments and redevelopments shall adhere to the Watershed Management Ordinance (WMO), as amended, as written by the Metropolitan Water Reclamation District of Greater Chicago and regulated by the Village of Orland Park.
2. **Landscape Plan Requirements.** The landscape plan shall be prepared by a landscape architect licensed in the State of Illinois or a qualified landscape designer. The landscape plan shall include all of the following:
 - a. Landscape Architect / Designer's name, address, and telephone number;
 - b. Petitioner's name and name of development;
 - c. Scale, north arrow, date of preparation and revision dates;
 - d. Location, quantity, size, and type of existing on-site naturalized landscaping to be retained, including a tree survey, if applicable;
 - e. A proposed plant material list that includes botanical name, common name, caliper/height and pot size;
 - f. Location, quantity, size and type of all proposed plant materials and species, including quantities for all seed mixes, including tree mitigation plantings, and showing the relationship of plant materials to other site features such as utilities and easements. Plants depicted on the plan should be represented at two-third (2/3) mature plant width;

- g. A landscape data box which includes the required and proposed calculations for the following: total area in square feet of the lot to be developed, the total square feet and percentage of landscape area, the total number of and square footage of landscape islands as compared to parking stalls, and a list of the required bufferyard and corridor types;
- h. Landscape construction and planting details;
- i. Elevations and details of all fences, retaining walls or other site amenities or decorative features proposed for location on-site. The details shall include, but are not limited to, materials, colors, styles and sizes;
- j. Lot numbers on all subdivision parcels;
- k. Planting time restrictions and/or limitations;
- l. Final engineering approved grading plan showing existing and proposed contours, including berms;
- m. All proposed building footprints and hardscape areas (i.e. parking areas, driveways, sidewalks, patios);
- n. Topography, grading plan and overland flow routes;
- o. Proposed and existing utilities and easements;
- p. Site utilities including transformers/power sources for buildings and location of mechanical equipment exhaust and air intakes;
- q. An attached WMO Permit for all qualifying developments with a maintenance plan included; and
- r. Any other information that may be needed to show compliance with this Section.

3. Additional Requirements

- a. Two copies of required landscape plans must be submitted to the Development Services Department within thirty (30) days of final engineering approval of any project. The Development Services Department may require landscape plans to be submitted earlier if deemed critical to the review of the overall proposal.
- b. A tree survey and tree mitigation plan shall be reviewed with either a site plan review, variance review, and/or special use review. See Section 6-305.F.3 for tree mitigation plan details. The following actions require a tree survey and tree mitigation plan:
 - 1. The development or redevelopment of any property for any use other than a single family home.
 - 2. Tree removal on any vacant or undeveloped property, with the exception of an individual single family home lot.
- c. A Monitoring and Management Plan shall be submitted with the landscape plan for all projects where naturalized landscaping is included. See Section 6-305.F.2.b Monitoring and Management Plan for details.
- d. A WMO Permit shall be obtained for all qualifying developments. All WMO permitted projects require a Monitoring and Maintenance Plan. Qualifying developments shall reference the WMO Maintenance Plan when preparing the Monitoring and Maintenance Plan in conjunction with a Landscape Plan. See Section 6-305.F.2.b Monitoring and Management Plan for details.

- e. **Letter of Credit.** A letter of credit covering the estimated cost of required landscaping, including naturalized landscape installation, monitoring and establishment management shall be posted as part of the final landscape plan approval process. The letter of credit shall be provided to the Village by the owner or developer prior to the issuance of a building permit in accordance with the provisions of Section 5-112 Development and Subdivision Requirements. The letter of credit shall cover costs associated with earthwork, planting, inspections, maintenance or any other cost necessary to achieve Village acceptance standards. The amount of the letter of credit associated with naturalized landscape areas shall be held for the duration of period outlined in the Village approved Monitoring and Management Plan or until the naturalized landscape meets acceptance criteria, whichever is later, as determined by the Development Services Department.

4. Review and Approval of Landscape Plan.

- a. The Development Services Department shall review proposed landscape plans and other required documents and work with the petitioner until the plans satisfy the criteria set forth in this Section and/or any conditions of approval.
- b. The Development Services Department shall issue a recommendation to the Village Board of Trustees regarding whether the proposed plan satisfies the Village's landscape criteria.
- c. The Board of Trustees shall review the landscape plan and the recommendation of the Development Services Department and shall then approve or deny the landscape plan.
- d. The Village Board of Trustees may also impose conditions on the issuance of the landscape plan approval. These conditions shall pertain to the external appearance of the development, and may include additional landscaping, buffering, fencing or other exterior treatment.
- e. No site plan or special use approval shall be granted until a landscaping plan is approved.

5. Criteria for Approval of Landscape Plans.

- a. **Design Guidelines.** The following design guidelines shall be used to evaluate proposed landscaping plans:
 - 1. Landscape improvements shall serve to integrate the project to the site and surrounding context, with particular sensitivity to the natural topography, watercourses, and existing vegetation. Preservation of the existing landscape material and land forms should be taken into account, particularly where mature trees are a part of the site. Depending on the context, landscaping should either offer a visual and physical connection or separation between land uses;
 - 2. Landscaping shall be designed to have a natural aesthetic while having proportion, balance, unity, variety of species, and variety of color throughout the seasons, and shall be comprised of associations of plants which have similar climate, water, soil, sun exposure and maintenance needs;
 - 3. The best professional practices of the American Society of Landscape Architects, American Nursery & Landscape Association, and Illinois Green Industry Association shall be followed. In addition, guidelines proposed and referenced through the Sustainable Sites Initiative shall be utilized;
 - 4. Landscaping shall provide drifts and massing of plants with varying texture, color and forms to offset the mass of a building and to provide a visual relief to the straight lines of building architecture, parking lots and other man-made features;

5. Landscaping shall reduce the intrusion of headlights and other glare and shall provide a safety barrier between vehicles and pedestrians. Landscape plantings shall be designed to accommodate snow removal by providing appropriate setbacks and storage space;
6. Landscaping should screen the view of utilities or mechanical equipment. Existing site features within a required landscape zone which do not function to meet the standards of the required landscape zone shall be screened from the view of other properties or removed, as determined during review of a site plan or landscape plan;
7. If landscaping is used to screen service yards, utility meters and hardware, overhead doors, mechanical equipment, dumpster enclosures, and/or other potentially unattractive places from public view, landscape materials shall be planted in a natural type configuration, be equally effective in all seasons, and comply with Section 6-308.J Screening;
8. Landscaping should shade seating, walking, and outdoor activity areas, shield buildings from winter wind and summer sun so as to conserve energy, and should not interfere with clear access to the sun where solar energy collection is anticipated;
9. Landscaping should provide a natural habitat for birds and other animal life, and should preserve existing natural vegetation and other natural features (unless prohibited by building use and other agency restrictions);
10. Landscapes should be designed to encourage the minimum use of water, inorganic fertilizers, herbicides, and pesticides in the development and long term maintenance of landscapes;
11. Irrigation systems may be required for certain landscaped areas, as determined by a landscape architect. The need for sprinkler irrigation systems shall be determined by the type of plant material and the condition/growing medium that they are installed in. All irrigation systems shall be designed to minimize the use of water.
12. All earth berm locations shall be reviewed by the Village Engineer to determine how the berms shall relate to drainage and public utilities. Berms shall not exceed a maximum slope of 3:1.
13. An appropriate sight triangle shall be maintained at all intersections and entryways to negate the impact of visual obstructions and shall comply with Section 6-104.E Clear Sight Triangles at Street Intersections; and
14. Nothing shall be planted or installed within an underground or overhead utility easement or any other easement without the consent of the Village and/or the appropriate utility.

5. Landscape Material Requirements.

- a. **Plant Sizes.** Minimum sizes for plant materials for all projects at time of installation shall be as follows:
 1. Evergreen or deciduous shrubs: minimum eighteen (18) to twenty-four (24) inches in height, varieties normally measured by spread shall be a minimum of twenty-four (24) inches in spread;
 2. Deciduous shade trees: minimum two and one-half (2.5) inches caliper, balled and burlapped (B&B), measured six (6) inches above the ground, all shade trees shall have a central leader;
 3. Ornamental trees: clump form shall be a minimum six (6) feet in height or have a minimum trunk size of

two inches (2) caliper;

4. Evergreen trees: minimum six (6) feet in height and (B&B) when installed; and
5. Ornamental grasses, perennials and climbing vines shall be specified as a minimum container size of one (1) gallon unless otherwise approved by the Development Services Department.

Table 6-305.E.5.a (A) – Plant Size Requirements

Table 6-305.E.5.a(A) - Plant Size Requirements		
Plant Type	Minimum Plant Size	Minimum Plant Width
Deciduous Shade Tree	2.5" Caliper	n/a
Ornamental Tree	6' OR 2" Caliper	n/a
Evergreen Tree	6'	n/a
Evergreen / Deciduous Shrub	18" to 24"	24"
Ornamental Grass, Perennials, Vines	1 Gallon	n/a

- b. **Plant Diversity.** Diversity among required plant material is required for both visual interest and to reduce the chance of losing a large population of plants due to disease.
 1. **Table 6-305.E.5.b (A) – Plant Diversity Requirements** details the necessary maximum and minimum percentage of plant species diversity based on the total quantity of plant species per plant type. Plant types include, but are not limited to, shade trees, evergreen trees, ornamental trees, shrubs, perennials and ornamental grasses.
 - i. For example, if a development requires fifty (50) shade trees (i.e. plant type), no more than forty (40) percent [i.e. twenty (20) trees] nor less than ten (10) percent [i.e. five (5) trees] can be of any one (1) species, and there must be a minimum of five (5) different tree species within the fifty (50) trees selected.
 2. **Native landscaping materials** shall comprise thirty percent (30%) of the total plant count for all projects, except for trees and shrubs in naturalized landscapes, which should be one hundred percent (100%) native plant material specific to the proposed area’s soil, hydrology, and ecosystem.
 3. The overall number of trees and shrubs required for a site shall be comprised of not less than thirty percent (30%) evergreen, and seventy percent (70%) deciduous, plus or minus five percent (5%).

Table 6-305.E.5.b (A) – Plant Diversity Requirements

Table 6-305.E.5.b(A) - Plant Diversity Requirements				
Total Number of Plants per Plant Type *	Maximum % of Any Species *	Minimum % of Any Species	% of Native Species per Plant Type ^	Minimum Number of Species
1-4	100%	n/a	30%	1
5-10	60%	40%	30%	2
11-15	45%	20%	30%	3
16-75	40%	10%	30%	5
76-500	30%	5%	30%	8

500-1000	25%	5%	30%	10
1000+	15%	5%	30%	15
* Plant Types = Shade Tree, Evergreen Tree, Ornamental Tree, Shrub, Perennial, Ornamental Grass				
# The overall number of trees and shrubs required for a site shall be comprised of not less than 30% evergreen, and 70% deciduous, plus or minus 5%.				
^ Unless otherwise noted.				

- c. All other specifications shall conform to the American Nursery & Landscape Association, and “American Standard for Nursery Stock (ANSIZ60.1–2014)”, as amended, published by the American Association of Nurserymen at the time of installation.
 - d. The Development Services Department shall be notified in writing if a plant substitution is needed due to the lack of availability during construction. The plant substitution shall have the same essential characteristics of the board approved plan species. See Section 6-305.C.3 Changes to Approved Landscape Plan.
 - e. Existing trees and vegetation within a required landscape zone which are deemed healthy based on a tree survey completed by a certified arborist may be counted toward the total plant material requirements. If existing trees and shrubs do not fully meet the standards for the type of landscape zone required, additional vegetation shall be planted.
 - f. Areas within landscape bufferyard or corridors not planted with trees or shrubs must be maintained as live landscaping. The clustering of trees and shrubs is encouraged in these areas. Only small trees, small shrubs and flowers may be planted in raised containers.
 - g. The minimum depth of topsoil applied to new residential subdivisions, commercial areas and parks shall be (6) inches. All plant material shall be planted with a minimum of six (6) inches of organic soil.
 - h. Organic mulch shall be installed under trees, shrubs, and throughout planting beds to a recommended depth of three (3) inches. Mulch should be pulled away at least four (4) inches away from the bases of trees and shrubs. Mulch should not be piled up against the trunk of a tree (i.e. “volcano mulching”) and should extend to the drip line of the tree’s branches.
 - i. All sod shall be clean and reasonably free of weeds, pests or diseases. Grass seed shall be in conformance with U.S. Department of Agriculture rules and regulations and applicable Illinois state seed laws. All dormant seeding will require the use of an erosion control blanket (North American Green S150 or equal).
 - j. All plant material shall be installed free of disease and in a manner than ensures the availability of sufficient soil and water to sustain healthy growth, and shall be planted in a manner which is not intrusive to utilities or pavement.
- 6. Time for Installation of Required Plantings.**
- a. All landscaping, including mulching and seeding shall be completed in accordance with the approved landscape plan and site plan prior to issuance of an occupancy permit and prior to release of any letter of credit for the site. This shall apply to all types of developments.
 - b. The Village may issue a temporary occupancy permit until June 1 of the following year if landscaping is delayed due to unusual conditions, such as drought, ice, over-saturated soil (deep mud), or inappropriate planting season for the planned species, unavailability of plant species, or other circumstances beyond the petitioner’s control. If the developer has not posted a letter of credit that includes landscaping costs for the

property, the petitioner must provide the Village with a letter of credit to ensure the installation of the remaining landscape material.

- c. All parkway trees are required to be planted by June 1 of the year following issuance of the occupancy permit for any single family home. Single-family detached dwellings shall complete all landscaping, including grass, within one year of the date of issuance of a temporary occupancy permit for that dwelling.
- d. All bufferyard and common area landscaping for residential developments shall be completed in accordance with the approved site plan at the time that eighty percent (80%) of the development is completed or within the next planting season following occupancy, whichever comes first. If the development is built in phases, then the landscaping shall be completed as eighty percent (80%) of each phase is completed or within the next planting season following occupancy, whichever comes first.
- e. The developer or property owner shall contact the Development Services Department for a final landscape inspection upon completion of landscape installation. The Development Services Department shall notify the developer or property owner of any deficiencies.

F. Maintenance and Preservation.

1. General Maintenance Standards.

- a. The plantings in any landscaped area must be properly maintained in order for the landscaped area to fulfill the purposes for which it was established.
- b. The obligation for continuous maintenance is binding on the petitioner for landscape plan approval, to any subsequent property owners or any other parties having a controlling interest in the property.
- c. Continuous maintenance includes, but is not limited to, the removal of weeds; mowing; trimming; edging; cultivation; reseeding; plant replacement; appropriate fertilization; spraying; control of pests, insects and rodents by nontoxic methods whenever possible; watering/irrigation and other operations necessary to assure normal plant growth. The maintenance, repair, and replacement of all landscaping materials and barriers, including refuse disposal areas, walls, fences and other amenities upon their acceptance is also included.
- d. Continuous maintenance also includes all requirements set forth in the Village of Orland Park Code of Ordinances, Title 5, Chapter 7 "Property Maintenance Code".
- e. The replacement of any dead or dying plant materials or plant materials supporting less than fifty percent (50%) healthy leaf growth shall be replaced annually in compliance with the approved landscape plan.
- f. Areas of a parcel not covered by structures or pavement shall be planted with live landscaping.
- g. In the event that any vegetation or physical element functioning to meet the standards of this Section is severely damaged due to an unusual weather occurrence or natural catastrophe, the owner shall have one (1) year or one (1) growing season, whichever is sooner, to replace or replant.
- h. Property owners are responsible to repair or replace any and all areas damaged by seasonal snow removal to a condition compliant with the approved landscape plan on file with the Village within (1) year or one (1) growing season of the damage, whichever is sooner.
- i. All landscape materials shall be protected from damage by vehicles or pedestrians that could reduce the

viability of the plant materials. This includes maintaining landscape materials in a natural manner that precludes shaping or over-pruning of plant materials.

- j. A parkway shall be maintained by the adjacent property owner unless an agreement for maintenance has been reached with the Village. See Village of Orland Park Code of Ordinances Tree Management Program, Title 3, Chapter 6 for additional parkway tree maintenance requirements.
 - k. At the time a developer turns over a subdivision to a homeowners association, the developer shall be responsible for replacing all dead plant material which was planted within the prior two (2) years. If a homeowner association has been responsible for maintenance during that period for over one year, the developer shall not be responsible for replacing poorly maintained plants. Examples of poor maintenance include over pruning, excessive weeds, improper trimming, diseases from lack of attention, cracking, leaning, or other problems associated with damage from snow plowing and mowing.
2. **Naturalized Landscaping Area Monitoring and Management Standards.** Naturalized landscaping areas need management on a regular basis after installation. Naturalized landscaping areas are most often planted as the landscape perimeter for a stormwater detention area, although not limited to just these areas. Site specific conditions influence the type and frequency of management needed. See Section 6-305.E.3.e for Letter of Credit requirements for naturalized landscape areas.
- a. **Landscape Plan.** A landscape plan shall be submitted for all projects where naturalized landscaping is included. See Section 6-305.E Landscape Plan for landscape plan requirements.
 - b. **Monitoring and Management Plan.** A near and long-term Monitoring and Management Plan (M&M Plan) is an integral component to ensuring proper long-term management of naturalized landscapes. When required, a Monitoring and Management Plan shall be submitted with a corresponding landscape plan for Village review and approval and shall coincide with the Maintenance Plan approved with a WMO Permit.
 - 1. The Village document, commonly referred to as "Monitoring and Management Plan for Naturalized Vegetation Areas and Detention Basins", as amended, shall be used as a template for the completion of a Monitoring and Management Plan. Minor edits to this template may be made by the petitioner; however, the final text of the Monitoring and Management Plan shall be approved by the Development Services Department. The following are minimum components of a Monitoring and Management Plan:
 - i. The names, addresses, contacts, and telephone numbers of the owner(s).
 - ii. The names, addresses, contacts, and telephone numbers of the party or parties legally responsible for operations and maintenance.
 - iii. If long-term management will be provided by a public agency, the Monitoring and Management Plan is to include written documentation by the public agency that they will accept such responsibility, including associated capital expenses.
 - iv. If long-term management will be provided by a property owner, business or an association, the Monitoring and Management Plan is to include a copy of the terms to demonstrate that the agreement is recorded for all lots.
 - v. A description and/or plan drawing indicating the location of permanent access (public and private), overland flow paths, control structures, etc.

- vi. A list and schedule indicating how and when inspections and maintenance are to be performed, including both routine and infrequent maintenance tasks.
 - vii. A list of general tasks or activities that are prohibited within the basin (e.g., dumping of yard waste or debris; replacement of approved vegetation with non-approved materials; construction or placement of structures; pesticide application, fertilizer application, mowing other than for meeting specific management goals; etc.).
 - viii. Documentation of the estimated routine and non-routine expenses and dedicated source(s) of funding for continued inspection, operation, and maintenance.
 - ix. A Homeowners Association (HOA) / Business Owners Association (BOA) shall include language in the governing documents authorizing for collection of fees for the naturalized landscape maintenance and outlining the process by which corrective actions will be taken and enforced.
 - x. Written acknowledgment that any amendment to the covenants and restrictions that alters the site beyond the original condition must have prior Village approval.
- c. **Single-Family Residential Naturalized Landscaping.** Single-family residential properties that include naturalized landscaping areas that exceed twelve inches (12") in height are exempt from the letter of credit requirements detailed in 6-305.E.3.e Letter of Credit, although a Landscape Plan and an abridged Monitoring and Management Plan (M&M Plan) are still required. The following conditions apply to naturalized landscaping on single-family residential properties:
1. A property owner shall apply to the Development Services Department and receive a written approval of the landscape plan prior to the installation of the naturalized landscaping.
 - i. The application shall include a plat of survey and a site plan of the single-family lot drawn to scale on a sheet not less than eight and one-half inches by eleven inches (8½" × 11"), which contains: the location of property lines; location of structures, fences, existing drainage patterns, and paved areas; location of each natural landscaping area; a list by scientific and common name of species intended to be planted and maintained within each area; and the setback distance of each naturalized landscape area that will be located near any property line. Any proposed soil amendments and levels of shade and sunlight should also be included on the plan.
 2. An M&M Plan for the near- and long-term maintenance of the naturalized landscape area shall be submitted for review and approval.
 - i. The Village document, commonly referred to as "Monitoring and Management Plan for Naturalized Vegetation Areas on Single Family Residential Properties", as amended, shall be used as a template for the completion of a single-family residential naturalized landscape Monitoring and Management Plan. Minor edits to this template may be made by the petitioner; however, the final text of the M&M Plan shall be approved by the Development Services Department.
 3. It shall be permitted to grow native plants that exceed twelve inches (12") in height within a natural landscaping area, including ferns, grasses, sedges, rushes, forbs, shrubs and trees, in lieu of turf grass lawn in designed and managed natural landscape areas.
 4. Natural landscaping shall be permitted in rear or side yards only, and setback at a minimum of three (3)

feet of any property line. No setback shall be required where the natural landscaping is separated from adjacent lots by fencing or continuous shrub of three (3) feet or more in height, or where the natural landscape area abuts permitted naturalized landscaping on an adjacent lot.

5. Naturalized landscaping may occupy a maximum of thirty percent (30%) of the total existing open space within the side or rear yards of a single-family residential property.
6. It is not the intent of this section to allow vegetated areas to be unmanaged, overgrown, a health hazard or a breeding ground for fauna known to create a safety or health hazard. Plant species that are defined as noxious and/or invasive by the Illinois Department of Natural Resources, Midwest Invasive Plant Network, or Illinois Invasive Species Council do not come within the protection of this section.
7. If the naturalized landscape installation would affect natural drainage or involve earthwork or affect capacity of neighboring retention or detention facilities, then a land development review application shall be submitted as per the provisions of Title 5 of the Village's Land Development Code.
8. Upon installation of a naturalized landscape area, the site shall be inspected by a Village inspector or designee to verify compliance with the approved landscape plan and proper maintenance of the natural landscape area. After a successful inspection, the property owner will be provided with a letter from the Village certifying that the naturalized landscape has been inspected and meets the criteria of this Section. Subsequent inspections shall be performed annually by the Village or designee, or as determined by the Development Services Department.
9. Permission for single-family residential natural landscaping may be revoked with cause, such as failure of the owners to manage the areas or to respond to notices of creation of a nuisance or violation of the weed control ordinance.

3. Tree Preservation Standards

- a. **Purpose.** The purpose of this Section is to establish high preservation standards for all public and private properties within the Village, protect the Villages natural qualities and heritage, continue its reputation as an extension of the Forest Preserves, benefit the public at large as an asset to the neighborhoods, and become a source of identity and pride to the community. In addition to these high standards, this preservation ordinance specifically strives to accomplish the following:
 1. Prevent soil erosion and sedimentation;
 2. Reduce storm water runoff, replenish aquifers, and eliminate the costs associated with correcting the above;
 3. Assist in the absorption of excess carbon dioxide in the atmosphere;
 4. Create a sound buffer to noise pollution;
 5. Provide protection against natural elements such as the sun, wind and rain;
 6. Provide habitat for birds, which in turn, assists in the control of insects;
 7. Protect and increase property values; and

8. Conserve and enhance the Village's environment, especially its natural setting, and to protect the habitat of its existing wildlife.
- b. **Responsibility for Compliance.** The following actions require tree removal permits. No Village official, unless the tree is a safety hazard, shall issue a permit provided herein in violation of the requirements of this Section.
1. The removal of any heritage tree, defined as any healthy tree that is twenty-four (24) inches in diameter, or greater, measured four (4) feet from the ground, from any lot, developed or undeveloped;
 2. The removal of any tree from a parkway;
 3. The removal of any tree, in good or poor condition, from a conservation or tree preservation easement. Easements are legal recorded agreements tied to property most often shown on a plat of survey and/or plat of subdivision;
 4. The removal of any tree from utility owned property or non-residential utility easement;
 5. The removal of any tree from any property, commercial, institutional, office, industrial or multifamily residential, with a Board approved landscape plan on file.
- c. **Fines.**
1. Failure to obtain a tree removal permit prior to removing trees will result in a fine of \$200.00 per inch of tree caliper that shall be levied against that entity primarily responsible for said tree removal. Each subsequent act of unauthorized tree removal by the same entity shall result in a fifty percent (50%) increase over the previous fine levy. This is in addition to the required tree mitigation. Trees removed without a tree removal permit must also be replaced per the replacement standards set forth in Section 6-305.F.3.f Tree Replacement Standards.
 2. Permits for the removal, relocation or replacement of trees covered herein shall be obtained by submitting an application, on a form prescribed by the Development Services Department, pursuant to the standards set forth in this Section.
- d. **Tree Pruning.**
1. Tree pruning, done in order to remove dead branches or to 'limb up' the tree is permitted without a permit. If limbed up, a tree should be pruned gradually so that an unbranched trunk of a tree is never more than one-third (1/3) the total height of the tree.
 2. Tree topping, or the removal of the tree central leader, is not permitted on any parkway tree, heritage tree, or conservation easement tree.
 3. No more than twenty-five percent (25%) of a single tree's canopy shall be removed in any one (1) year.
 4. All trees must be installed and trimmed to ensure that branches shall not obstruct the view of any street intersection and so that there shall be a clear space of eight (8) feet above the surface of the street or sidewalk.
- e. **Tree Protection.**

1. During the development of a property, or the relocation/removal of permitted trees, the owner of the property shall be responsible for the erection of any and all barriers or protective guards necessary to protect any existing or installed vegetation from damage both during and after construction.
2. Trees to be preserved during the development of the property shall be protected during construction by a fence around the drip line of each tree to prevent compaction of soil and other damage to the tree by equipment or materials. No excess topsoil, construction materials, debris, or chemicals are allowed within the protected drip line of each tree. In addition, no parking of vehicles, on-site offices, or machinery is allowed inside the protected dripline. All refueling, maintenance, lunch, break and burning areas are to be located away from all protected trees.
3. Wherever a change of ground grading is planned, the trees to be preserved shall be protected by a retaining wall, placed at the drip-line so as to preserve the existing grade for the roots.
4. Wherever a change of grading is planned, the topsoil shall be preserved for the new landscaping to be installed.
5. When trenching alongside existing trees is unavoidable, the trench must be one (1) foot for every one (1) inch tree caliper, as measured four (4) feet above grade, away from the base of the existing tree to be preserved.
6. Construction pruning and root pruning of trees directly impacted by construction may be required for preservation of existing trees. These measures must be indicated on the tree preservation plan or the submitted application for permit.

f. Tree Replacement Standards.

1. Size.

All trees that are four (4) inches in diameter, measured four (4') feet from the ground shall be replaced as detailed in Table 6-305.F.3.f.1 (A) – Tree Replacement Standards, pursuant to Village approval.

Table 6-305.F.3.f.1 (A) - Tree Replacement Standards

Table 6-305.F.3.f.1 (A): Tree Replacement Standards	
CANOPY TREES	
Diameter of Removed Trees	Number of Replacement Trees Required
4" to 12"	2 trees at 2.5" or 1 tree at 4"
13" to 23"	4 trees at 2.5" or 2 trees at 4"
24" or greater	6 trees at 2.5" or 3 trees at 4"
EVERGREEN TREES	
Height of Removed Trees	Number of Replacement Trees Required
6' to 10'	2 trees at 2.5" or 1 trees at 4"
10' to 14'	4 trees at 2.5" or 2 trees at 4"
14' or taller	6 trees at 2.5" or 3 trees at 4"

2. Tree of Heaven (*Alianthus* spp.), Buckthorn, Willow, Box Elder, Silver Maple, Osage Orange, all species of Ash (*Fraxinus* spp.) and Cottonwood (*Populus deltoides*) are exempt from mitigation requirements.

3. Trees rated as 'Poor' or 'Dead' on a tree survey completed by a certified arborist are exempt from mitigation requirements.
4. The owner of a site with landscaping that is unhealthful (i.e. spaced too closely) may be permitted to plant replacement trees in the parkway or elsewhere in the Village, if approved by Development Services Department.
5. If the required mitigation trees cannot be provided on the site, the petitioner shall pay cash, in the amount of \$400 for each two and one-half (2.5) inch caliper tree, in lieu of tree replacement to the Village's Tree Mitigation Bank. This account shall be used only for the intended purpose of planting trees in public places throughout the Village. Such a fee in lieu of mitigation must be approved by the Development Services Department and can only be used when replacement on site is not possible.

g. Heritage Tree and Parkway Tree Removal.

1. All heritage trees and parkway trees shall be replaced per the replacement standards set forth in Section 6-305.F.3.f Tree Preservation Standards. The number of replacement trees may be limited by what can be reasonably accommodated within the available lot area, but any reduction in mitigation requirements must be approved by the Development Services Department.
2. A heritage tree that is dead or diseased may be removed without replacement if the tree is certified as dead or diseased by a certified arborist, to be retained by the homeowner, and with issuance of a tree removal permit.
3. A parkway tree that is dead or dying may be removed without replacement if the tree is confirmed as dead or diseased by the Development Services Department or Public Works Department and with issuance of a tree removal permit.

h. Procedures to Obtain a Tree Removal Permit For New Development.

1. **Tree Mitigation Plan.** Developers of any site for any use other than a single family home seeking a site plan or landscape plan approval shall submit a tree mitigation plan with the petition for development. A tree mitigation plan shall include:
 - i. A tree survey showing the location, edge of dripline, species, trunk diameter and condition of every tree four (4) inches or larger, measured from four (4) feet from the ground, on the property. The survey shall distinguish existing trees which are proposed to be destroyed, relocated, replaced, preserved at their present location, or introduced into the development from an off-site source and identified on either the map or an accompanying sheet by code. The Development Services Department may provide that the tree survey exclude those portions of the site which it determines will not be affected by the development activity.
 - ii. A tree mitigation report that highlights number of trees to be removed and the number and size of the required replacement trees pursuant to the replacement standards set forth in Section 6-305.F.3.f Tree Replacement Standards.
2. The tree survey and mitigation report will be reviewed and approved by the Village Board of Trustees through the site plan review process or landscape plan review process. Approval of a tree survey and mitigation report shall be granted only if the Development Services Department finds that all reasonable efforts have been undertaken in the architectural layout and design of the proposed development to preserve existing trees and to otherwise enhance the aesthetic appearance of the development by the

incorporation of trees in the design process. Relocation or replacement of trees may be required as a condition of approval in accordance with the criteria set forth in this Section. No tree removal shall take place until the tree survey and mitigation report have been approved by the Village Board.

i. Procedures to Obtain a Tree Removal Permit For Single Family Homes and Existing Development.

1. All others requesting a tree removal permit shall fill out a tree removal permit application prescribed by the Development Services Department prior to its removal or relocation. The applicant shall provide the following information:
 - i. Information on the type of tree and the size of the tree under consideration;
 - ii. Reason(s) for the tree(s) removal/relocation;
 - iii. Photograph(s) of the condition and location of the tree in question;
 - iv. At least one full scale photo of the tree(s) showing its surrounding environment. Any photographs supporting the reason(s) for relocation/removal should be included;
 - v. A copy of the plat of survey for the property showing the location of the existing building(s) and outlining the location of the existing tree(s) in question. If the tree location/removal involves existing or proposed utilities, driveways, structures, easements or other pertinent site features, these should also be drawn in to scale. Plans may be drawn by property owners; and
 - vi. A description of the tree(s) to be planted to replace any removed trees.
2. Approval of a tree removal permit shall be granted only if the Development Services Department finds that all reasonable efforts have been undertaken in the architectural layout and design of the proposed development to preserve existing trees and to otherwise enhance the aesthetic appearance of the development by the incorporation of trees in the design process. Relocation or replacement of trees may be required as a condition of approval in accordance with the criteria set forth in this Section. No tree removal shall take place until the issuance of a tree removal permit.
3. If the Development Services Department determines that the scope of the tree removal exceeds the provisions of this Section, the applicant must supply the information listed in Section 6-305.F.3.h Procedures to Obtain a Tree Removal Permit for New Development.

j. Final Inspection.

1. No certificate of occupancy or letter of credit release shall be issued until the relocation or replacement of trees, as required by the Board approved mitigation plan or tree removal permit, has been completed and the final landscape inspection approval has been given by the Development Services Department. Trees relocated from one portion of the site to another which do not survive transplanting shall be replaced with a suitable replacement tree as specified by the Development Services Department. Should the Department determine that, due to the time of the year that the certificate of compliance and occupancy is requested, the relocation or replacement of trees should be deferred until a more suitable time, a certificate of compliance and occupancy may be issued provided that:
 - i. The letter of credit is renewed in an amount to cover the remaining landscaping to be installed.

- ii. If a project does not have a letter of credit with the Village, the applicant(s) provides the Development Services Department with a cash deposit or bond in the amount equal to the cost of the relocation or replacement of trees;
 - iii. The applicant completes all required tree relocation or replacement within the time frame specified by the Development Services Department. The cash deposit or bond will be returned to the applicant provided that all work is completed within the established time frame.
2. Should the applicant fail to comply with the above item, the Development Services Department may elect to use the cash bond or letter of credit to hire a landscaper to complete the required tree relocation or replacement. Excess cash deposit, letter of credit or bond funds, if any, will then be returned to the applicant.
- k. **Exceptions.**
- 1. In the event that any tree shall pose a threat to one's health, safety or property and require immediate removal without formal Village approval (e.g. a tree which has been blown over or struck by lightning), verbal authorization may be given by the Development Services Department and the tree removed without obtaining a written permit as herein required. Such verbal authorization shall later be confirmed in writing by the Department.
 - 2. All state approved and governmental plant or tree nurseries and botanical gardens shall be exempt from the terms and provisions of this Section, but only in relation to those trees which are planted and grown for the sale or intended sale to the general public in the ordinary course of business or for some public purpose.
 - 3. A tree removal authorization may be issued when a tree, due to natural circumstances, is dead or irreversibly declining, is in danger of falling, is too close to existing structures so as to endanger such structures, interferes with utility services, creates unsafe vision clearance, or constitutes a health hazard. Such trees may be removed only after the Development Services Department or Public Works Department has verified that such a condition exists.
 - 4. A tree removal authorization may be issued when a tree removal is necessary to observe good forestry practice such as the number of healthy trees a given parcel of land will support or when such removal is in accordance with a documented landscape management plan.
- l. **Civil Remedies.** In addition to any other remedies provided by this Section the Village shall have the following judicial remedies available for violations of this Section or any permit condition promulgated under this Section.
- 1. The Village may institute a civil action in a court of competent jurisdiction to establish liability and to recover damages for any injury caused by the removal of trees in contravention of the terms of this Section.
 - 2. The Village may institute a civil action in a court of competent jurisdiction to seek injunctive relief to enforce compliance with this Section to enjoin any violation hereof; and to seek injunctive relief to prevent irreparable injury to the trees and/or properties encompassed by the terms of this Section.

G. List of Recommended Plant Species

LIST OF RECOMMENDED PLANT SPECIES

Common Name	Botanical	Cultivar(s)
CANOPY (SHADE) TREES		
Bald cypress	<i>Taxodium distichum</i>	
Beech, American	<i>Fagus grandifolia</i>	
Beech, European	<i>Fagus sylvatica</i>	
Buckeye, Ohio	<i>Aesculus glabra</i>	
Cherry, black	<i>Prunus serotina</i>	
Coffeetree, Kentucky	<i>Gymnocladus dioica</i>	
Elm	<i>Ulmus</i> spp.	
Filbert, Turkish <i>Corylus colurna</i>		
Ginkgo (male only)	<i>Ginkgo biloba</i>	Autumn gold
		Fairmount
		Lakeview
		Princeton sentry
Hackberry, common	<i>Celtis occidentalis</i>	
Hickory, bitternut	<i>Carya cordiformis</i>	
Hickory, shagbark	<i>Carya ovata</i>	
Honey locust (thornless)	<i>Gleditsia triacanthos</i> var. <i>inermis</i>	Green glory
		Imperial
		Majestic
		Shademaster
		Skyline
Hornbeam, European	<i>Carpinus betulus</i>	
Horse chestnut, common	<i>Aesculus hippocastanum</i>	
Larch, common	<i>Larix decidua</i>	
Linden, littleleaf	<i>Tilia cordata</i>	Chancellor
		Glenleven
		Greenspire
		Olympic
Linden, Redmond	<i>Tilia euchlora</i>	Redmond
Linden, silver	<i>Tilia tomentosa</i>	
Maple, black	<i>Acer nigrum</i>	Greencolumn
Maple, Freeman	<i>Acer x freemanii</i>	Autumn blaze
		Morgan
Maple, red	<i>Acer rubrum</i>	Armstrong
		Autumn flame
		Columnare
		Red sunset
		October glory
Maple, sugar	<i>Acer saccharum</i>	Green mountain
		Wright Brothers
Oak, bur	<i>Quercus macrocarpa</i>	
Oak, English	<i>Quercus robur</i>	
Oak, pin	<i>Quercus palustris</i>	

Oak, red	<i>Quercus rubra</i>	
Oak, swamp white	<i>Quercus bicolor</i>	
Oak, white	<i>Quercus alba</i>	
Pear, flowering	<i>Pyres calleryana</i>	Chanticleer
		Redspire
		Whitehouse
Tulip tree	<i>Liriodendron tulipifera</i>	
Zelkova, Japanese	<i>Zelkova serrata</i>	
EVERGREEN TREES		
Douglas fir	<i>Pseudotsuga menziensis</i>	
Pine, eastern white	<i>Pinus strobes</i>	
Pine, Limber	<i>Pinus flexilis</i>	
Pine, Japanese white	<i>Pinus parviflora</i>	
Pine, Scotch	<i>Pinus sylvestris</i>	
Spruce, Colorado	<i>Picea pungens</i>	
Spruce, Norway	<i>Picea abies</i>	
Spruce, Serbian	<i>Picea omorika</i>	
Spruce, Black Hills	<i>Picea glauca</i>	
ORNAMENTAL/SMALL TREES		
Alder, European black	<i>Alnus glutinosa</i>	
Birch, river	<i>Betula nigra</i>	
Birch, white	<i>Betula platyphylla</i>	Whitespire
Buckeye, red	<i>Aesculus pavia</i>	
Chokecherry, common	<i>Prunus virginiana</i>	
Crabapple, flowering	<i>Malus spp.</i>	
Dogwood, Kousa	<i>Cornus kousa</i>	
Fringetree, white	<i>Chionanthus virginicus</i>	
Hawthorn, cockspur	<i>Crataegus crusgalli var. inermis</i>	
Hawthorn, Washington	<i>Crataegus phaenopyrum</i>	
Hophornbeam, American	<i>Ostrya virginiana</i>	
Hornbeam, American	<i>Carpinus caroliniana</i>	
Magnolia, saucer	<i>Magnolia x soulangiana</i>	
Magnolia, star	<i>Magnolia stellata</i>	
Maple, hedge	<i>Acer campestre</i>	Marmo
Maple, miyabi	<i>Acer miyabe</i>	
Maple, tartarian	<i>Acer tataricum</i>	
Pagoda tree, Japanese	<i>Sophora japonica</i>	Regent
Plum, wild	<i>Prunus americana</i>	
Redbud, eastern	<i>Cercis canadensis</i>	
Serviceberry, Allegheny	<i>Amelanchier laevis</i>	
Serviceberry, apple	<i>Amelanchier x grandiflora</i>	
Serviceberry, downy	<i>Amelanchier arborea</i>	

Serviceberry, Saskatoon	Amelanchier alnifolia	
Tree lilac, Japanese	Syringa reticulata	Morton
		Zhang Zhiming
		Ivory Silk
LARGE DECIDUOUS SHRUBS		
Amorpha, indigobush	Amorpha fruticosa	
Burning bush	Euonymous alatus	Compactus
Buttonbush, common	Cephalanthus occidentalis	
Clethra, summersweet	Clethra alnifolia	
Cotoneaster, hedge	Cotoneaster	
Cotoneaster, Peking	Cotoneaster acutifolius	
Cotoneaster, spreading	Cotoneaster divaricatus	
Dogwood, cornelian cherry	Cornus mas	
Dogwood, gray	Cornus racemosa	
Dogwood, pagoda	Cornus alternifolia	
Dogwood, Redosier	Cornus sericea	Baileyi
		Isanti
Dogwood, tatarian	Cornus alba	
Elderberry	Sambucus canadensis	
Filbert, American	Corylus americana	
Filbert, Turkish	Corylus colurna	
Forsythia, border	Forsythia x intermedia	
Forsythia, greenstem	Forsythia viridissima	Meadowlark
		Northern sun
		Sunrise
Hydrangea	Hydrangea spp.	
Lilac	Syringa spp.	
Ninebark, common	Physocarpus opulifolius	
Sumac, smooth	Rhus glabra	
Sumac, staghorn	Rhus typhina	
Viburnum, American cranberry	Viburnum trilobum	
Viburnum, arrowwood	Viburnum dentatum	Autumn jazz
		Chicago lustre
Viburnum, blackhaw	Viburnum prunifolium	
Viburnum, burkwood	Viburnum x burkwoodii	
Viburnum, European cranberry	Viburnum opulus	
Viburnum, lantanaphyllum	Viburnum x rhytidophylloides	
Viburnum, nannyberry	Viburnum lentago	
Viburnum, wayfaringtree	Viburnum lantana	
Weigela, old fashioned	Weigela florida	
Winterberry, common	Ilex verticillata	
Witchhazel, common	Hamamelis virginiana	
Witchhazel, vernal	Hamamelis vernalis	

SMALL EVERGREEN TREES		
Arborvitae	<i>Thuja occidentalis</i>	Techny
Hemlock, Canadian	<i>Tsuga canadensis</i>	
Juniper, upright	<i>Juniperus</i> spp.	
SMALL DECIDUOUS SHRUBS		
Alpine currant	<i>Ribes alpinum</i>	Green mound
False Indigo	<i>Baptisia x bicolor</i>	
Barberry, Japanese	<i>Berberis thunbergii</i>	
Barberry, mentor	<i>Berberis x mentorensis</i>	
Bayberry	<i>Myrica pennsylvanica</i>	
Chokeberry, black	<i>Aronia melonocarpa</i>	
Chokeberry, red	<i>Aronia arbutifolia</i>	Brilliantissima
Cotoneaster, cranberry	<i>Cotoneaster apiculata</i>	
Cotoneaster, creeping	<i>Cotoneaster adpressus</i>	
Cotoneaster, rockspray	<i>Cotoneaster horizontalis</i>	
Forsythia, greenstem	<i>Forsythia viridissima</i>	Bronxensis
Kerria, Japanese	<i>Kerria japonica</i>	
New Jersey tea	<i>Ceanothus americanus</i>	
Rose	<i>Rosa</i> spp.	
Spiraea spp.	<i>Spiraea</i> spp.	
St. Johnswort	<i>Hypericum kalmianum</i>	
St. Johnswort, shrubby	<i>Hypericum prolificum</i>	
Stephanandra, cutleaf	<i>Stephanandra incisa</i>	Crispa
Sumac, gro low	<i>Rhus aromatica</i>	Gro low
Viburnum, dwarf cranberry	<i>Viburnum trilobum</i>	Compactum
Viburnum, dwarf Korean	<i>Viburnum carlesii</i>	Compactum
Viburnum, judd	<i>Viburnum x juddii</i>	
Viburnum, sargent	<i>Viburnum sargentii</i>	
SMALL EVERGREEN SHRUBS		
Boxwood	<i>Buxus koreana x sempervirens</i>	Glencoe
		Green gem
		Green mountain
		Green mound
		Green velvet
		Winter gem
Boxwood, common	<i>Buxus sempervirens</i>	
Boxwood, littleleaf	<i>Buxus microphylla</i>	
Juniper, Chinese	<i>Juniperus chinensis</i>	Kallays compacta
		var. sargentii
		Glauca
		var. sargentii

		Viridis
		Sea green
Juniper, creeping	Juniperus horizontalis	Bar Harbor
		Blue chip
		Blue rug
		Hughes
		P.C. Youngstown
Pine, mugo	Pinus mugo var. mugo	
Rhododendron	Rhododendron spp.	Northern lights
		P.J.M.
Yew, dense	Taxus x media	Densiformis
		Tauntonii
		Hicksii
GROUNDCOVERS AND VINES		
Ajuga	Ajuga reptans	
Barren strawberry	Waldsteinia ternata	
Boston ivy	Parthenocissus tricuspidata	
Clematis	Clematis spp.	
Common periwinkle	Vinca minor	
Fleeceflower	Polygonum Reynoutria	
Ginger, wild	Asarum canadense	
Hydrangea, climbing	Hydrangea anomala ssp. petiolaris	
Pachysandra, Japanese	Pachysandra terminalis	
Purpleleaf wintercreeper	Euonymus fortunei	Coloratus
Sedum	Sedum spp.	
Virginia creeper	Parthenocissus quinquefolia	
UNACCEPTABLE TREES		
All Ash (green, white, blue and all their varieties)	Fraxinus spp.	
Austrian pine	Pinus nigra	
Black locust	Robinia spp.	
Boxelder	Acer negundo	
Buckthorn	Rhamnus frangula	
Cottonwood, Eastern	Populus deltoides	
Maple, Silver	Acer saccharinum	
Mulberry	Morus spp.	
Osage orange	Maclura pomifera	
Persimmon	Diospyros spp.	
Poplar	Populus spp.	
Russian olive	Elaeagnus angustifolia	
Siberian Elm	Ulmis pumila	
Silver maple	Acer saccharinum	
Tree of Heaven	Ailanthus altissima	

Walnut	Juglans spp.	
Willow	Salix spp.	

EXHIBIT C

**LED Lighting Requirements for Typical Residential Public Roadways
Performance Criteria**

LUMINAIRE REQUIREMENTS	
Maintenance	Tool-less, Entry Gasketed and Sealed and UL Listed for Wet Locations
Light Source & Drivers	RoHS and DLC Compliant
Operating Temperatures	-20°C to +40°C
Internal Connections & Components	Preassembled and Prewired Using Modular Electrical Connections
Minimum Life Expectancy	50,000 Hours
Voltage Fluctuations	+ or – 10%
Housing Finish Color	Gray, ASTM Rating of Six per D1654 after 1000 Hours
Tenon Nominal Pipe Size (Inches)	2"
Maximum Luminaire Weight (lb)	75 lb.
Nominal Luminaire EPA (ft ²)	40 ft ²
Nominal Input Voltage (V)	120V or 240V
ANSI Vibration Test Level	Level 1 (Normal)
Identification	External Labeling per ANSI C136.15 & 22
Optics	Type 3, Flat Glass
Mounting Method	Swivel-Tenon/Mast Arm
Driver	Control Signal Interface
Nominal BUG Ratings	B3-U0-G3
Make/Model of LED Light Source(s)	Cree, Philips, Lumiled, Nichia
Make/Model of LED Driver(s)	Advance, Philips or Equal
Dim-ability	<input checked="" type="checkbox"/> Dimmable 7 pin photo cell receptacle <input type="checkbox"/> Not dimmable
Electrical Immunity System Failure	No Possible Disconnect
Thermal Management	No Moving Parts
Warranty Period (yr)	10 Year
Buy America Compliance	NEMA listed company (provide copy of compliance document)
Design Lights Consortium Compliance	Yes (Provide documentation verifying product listing or DLC's website)
PARAMETERS	

Lamp Lumen Depreciation	0.70
Initial Input Power (W)	170W
Maintained Input Power (W)	170W
Initial LED Drive Current (mA)	530 min.
Maintained LED Drive Current (mA)	530 min.
CCT (K)	4000
S/P ratio	0.9

EXHIBIT D

LED Lighting Requirements for Commercial and Collector Public Roadways Performance Criteria

LUMINAIRE REQUIREMENTS	
Maintenance	Tool-less, Entry Gasketed, Sealed and UL Listed for Wet Locations
Light Source & Drivers	RoHS and DLC Compliant
Operating Temperatures	-20°C to +40°C
Internal Connections & Components	Preassembled and Prewired Using Modular Electrical Connections
Voltage Fluctuations	+ or – 10%
Housing Finish Color	Gray, ASTM Rating of Six per D1654 after 1000 Hours
Tenon Nominal Pipe Size (Inches)	2"
Maximum Luminaire Weight (lb)	75 lb.
Nominal Luminaire EPA (ft ²)	40 ft ²
Nominal Input Voltage (V)	120V or 240V
ANSI Vibration Test Level	Level 1 (Normal)
Identification	External Labeling per ANSI C136.15 & 22
Optics	Type 3, Flat Glass
Mounting Method	Swivel-tenon/Mast Arm
Driver	Control Signal Interface
Nominal BUG Ratings	B3-U0-G3
Make/Model of LED Light Source(s)	Cree, Philips, Lumiled, Nichia
Make/Model of LED Driver(s)	Advance, Philips or Equal

Dim-ability	<input checked="" type="checkbox"/> Dimmable 7 pin photo cell receptacle	<input type="checkbox"/> Not dimmable
Electrical Immunity System Failure	No Possible Disconnect	
Thermal Management	No Moving Parts	
Warranty Period (yr)	10 Year	
Buy America Compliance	NEMA listed company (provide copy of compliance document)	
Design Lights Consortium Compliance	Yes (Provide documentation verifying product listing or DLC's website)	
PARAMETERS		
Lamp Lumen Depreciation	0.63	
Initial Input Power (W)	200W max.	
Maintained Input Power (W)	200W max.	
Initial LED Drive Current (mA)	530	
Maintained LED Drive Current (mA)	530	
CCT (K)	4000	
S/P ratio	0.9	