

KENWOOD SIDEWALK

DESIGN BUILD

**STATEMENT OF WORK
CHEROKEE NATION
KENWOOD SIDEWALK – DESIGN BUILD**

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STATEMENT OF WORK
CHEROKEE NATION
KENWOOD SIDEWALK – DESIGN BUILD
Kenwood School to Woody Hair Ball Park
Lat. 36°18'52" N, Long. 94°59'13"

Project:

Kenwood School

Sidewalk, Lighting, and Traffic Lights

Location: Kenwood School to Woody Hair Ball Park in Kenwood, OK

Project Description:

Cherokee Nation is seeking proposals from contractors for the construction of an ADA compliant 6' wide concrete sidewalk, installing (6) six solar lights, (1) two push button traffic sign system, and (1) one walk through gate. Location is from the Kenwood School to the Woody Hair Ball Park in Kenwood, OK.

Scope:

- Adequately prepare approximately 522 feet of subgrade in preparation of a 6' wide sidewalk with 3" aggregate base and 4" Class A Concrete pavement for sidewalk. This includes any earthwork that is needed to provide a safe walking surface.
- Place 8' wide by 3" deep Aggregate Base as shown on typical section for the length of sidewalk.
- Place 6' wide by 4" deep Class A Concrete pavement as shown on typical section for the length of sidewalk.
- Install approximately 184 LF of 24" wide multipolymer traffic striping for Crosswalks. Traffic Striping shall conform to 2019 Oklahoma Department of Transportation Specification PM1-1-03 Pavement Marking (Crosswalks and Left Turn Bay).
- Install approximately 232 SY of Solid Slab Sodding. Fertilizing and watering to be included in cost.
- Install (6) six solar lights that meet the U.S. General Services Administration (GSA) criteria and will be approved by Cherokee Nation Department of Transportation before installation. The preference for this project is Green Frog Solar Lights.
- Install roadway warning signs for "Pedestrian Crossing Ahead" (W11-2 and W16-9p) on Highway 487 better known as School Road.
- Install roadway warning signs for "Pedestrian Crossing with arrows" (W11-2 and W16-7p) on side street crossing as shown on plan view.
- Install Solar Horizontal Rapid Flashing Beacon System Back-to-Back with Push Button Activation "Pedestrian Crossing" (or equal). System and signs shall be approved by the Cherokee Nation Department of Transportation before installation. See attached example. Read example carefully. All items to complete solar lighted pedestrian crossing signs including poles must be purchased by Contractor.
- Contractor shall ensure that solar lights and Solar Horizontal Rapid Flashing Beacon System are fully operational before completion of project.
- Backfilling concrete pavement shall be included in this proposal.
- Supply of concrete shall be included in this proposal.
- Supply of aggregate base rock shall be included in this proposal.

- Saw cutting existing pavement shall be included in this proposal.
- Install 12 LF of 18" Corrugate Polypropylene Pipe with 4:1 CETs (Oklahoma Department of Transportation Specification CET4S-4-2) under walkway at Woody Hair Ball Park.
- Removal and disposal of fencing needed to install walk gate.
- Install (1) one walk through gate at Woody Hair Ball Park.
- All construction of sidewalk and push button traffic lights shall meet ADA Compliance.
- There are utilities in the project area. It is the responsibility of the Contractor to call OKIE to locate underground utilities and provide relocation if needed before any excavation can commence.
- All materials excavated for the sidewalk will become the property of the contractor for disposal.
- All materials removed from Woody Hair Ball Park fencing for the new walk gate will become the property of the contractor.
- Construction signing shall be included in the proposal. Proper temporary traffic control devices for construction zone shall conform to the Manual on Uniform Traffic Control Devices.
- Contractor shall cleanup work area at the end of each work day and store material in a manner that is safe for all pedestrians.
- Contractor shall control cleaning to prevent dirt or dust from leaving the job site and infiltrating areas not involved in the project. Contractor is responsible for the protection of the existing structure and utilities. Any disturbance or damage to the adjoining areas resulting directly or indirectly from the contractor's operations shall be promptly restored, repaired, or replaced to the satisfaction of the owner and no additional cost. Contractor is to work with owner on phasing the project so as to minimize disruption and allow the owner to continue normal operations during the entire project. Contractor is to provide a proposed work schedule.
- Contract shall conform to all "TERO" regulations and work according to the TERO office personnel.
- Attached sheets shows plan layout and estimated items of work to be included in this proposal. Contractor will visit the site and make themselves aware of anything that may need addressed before bidding. This is a design build project. Plan layout is a suggestion only. Quantities are estimated on plan layout.

This is near a school, community building, and ball park where students, faculty, and the public will be in and out daily. Contractor is to follow all state and federal laws and laws related to a safe working environment.

Selected firm will work with Cherokee Nation and the Kenwood School occupants to coordinate schedules and work areas, issues, or concerns as necessary.

Fees:

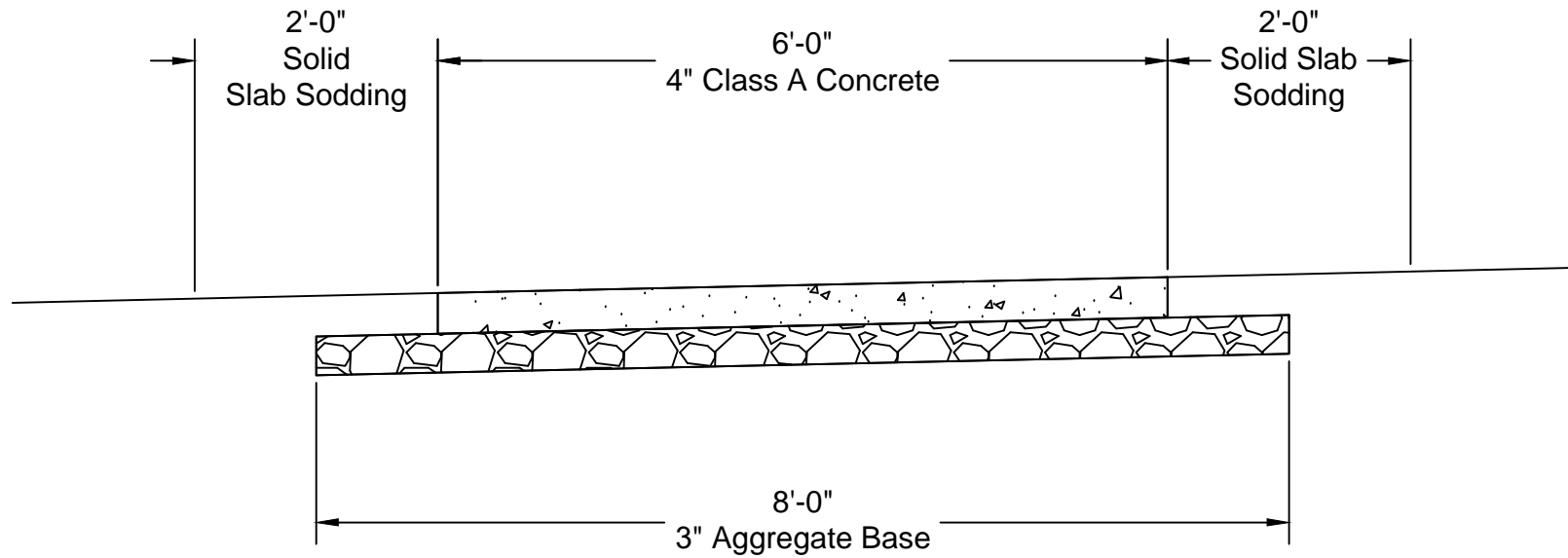
Lump sum fee for the above scope and is to include all labor and material necessary to complete the job.

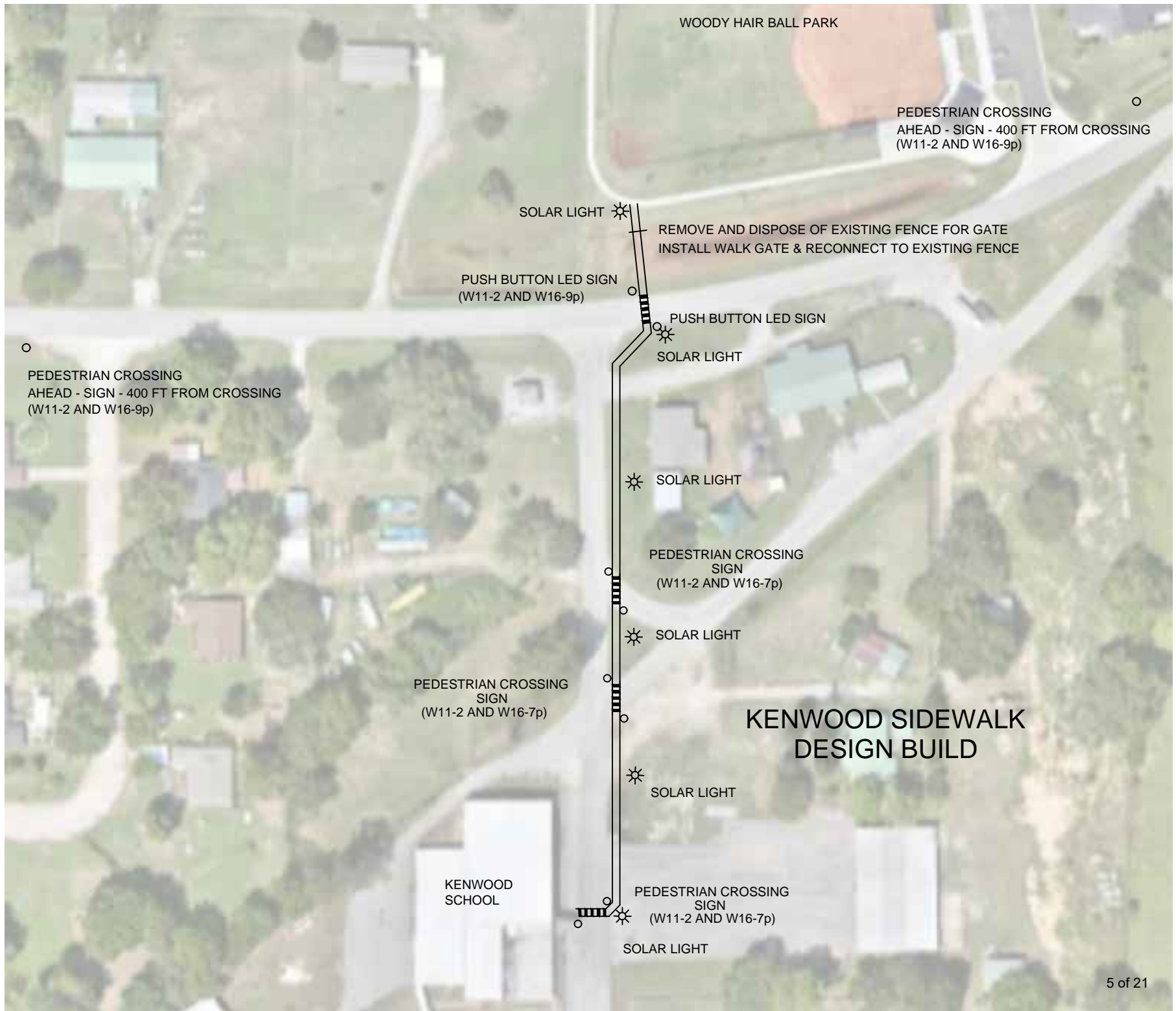
Changes or additional work is not to commence without prior approval.

ESTIMATED PAY ITEMS AND QUANTITIES *			
ITEM	DESCRIPTION	UNIT	QUANTITY
202(H)	EARTHWORK	LSUM	1
230(A)	SOLID SLAB SODDING	SY	232
613(E)	18" CORRUGATED POLYPROPELENE PIPE	LF	12
613(P)	18" GALV STEEL CULVERT END SECTION	EA	2
850(A)	SHEET ALUMINUM SIGNS	SF	60
851(C)	3"@7.68 GALVENIZED STEEL PIPE POST	LF	112
856(B)	TRAFFIC STRIPING (MULTI-POLY)(24" WIDE) FOR CROSSWALK	LF	184
880(J)	CONSTRUCTION TRAFFIC CONTROL	LSUM	1
SP	4" CONCRETE SIDEWALK (6' WIDE) W/ 3" AGG BASE	LF	522
SP	SOLAR HORIZONTAL RAPID FLASHING BEACON SYSTEM BACK TO BACK WITH PUSH BUTTON ACTIVATION (OR EQUIVALENT)	EA	1
SP	SOLAR STREET LIGHTS WITH POLES (6) – GREEN FROG SYSTEMS	LSUM	1
SP	REMOVE AND DISPOSE OF EXISTING FENCE FOR GATE	LSUM	1
SP	UTILITY RELOCATION	LSUM	1
SP	WALK GATE AND POST (INCLUDES INSTALLATION & RECONNECT TO EXISTING FENCE AND ALL MATERIALS TO COMPLETE WORK.)	LSUM	1

*The estimated pay items and quantities are based on the plan layout provided and is an estimate only. Contractor is responsible for ensuring that adequate quantities of materials are provided to complete the project. Project will be bid as lump sum.

KENWOOD SIDEWALK TYPICAL SECTION





WOODY HAIR BALL PARK

PEDESTRIAN CROSSING
AHEAD - SIGN - 400 FT FROM CROSSING
(W11-2 AND W16-9p)

SOLAR LIGHT

REMOVE AND DISPOSE OF EXISTING FENCE FOR GATE
INSTALL WALK GATE & RECONNECT TO EXISTING FENCE

PUSH BUTTON LED SIGN
(W11-2 AND W16-9p)

PUSH BUTTON LED SIGN

SOLAR LIGHT

PEDESTRIAN CROSSING
AHEAD - SIGN - 400 FT FROM CROSSING
(W11-2 AND W16-9p)

SOLAR LIGHT

PEDESTRIAN CROSSING
SIGN
(W11-2 AND W16-7p)

SOLAR LIGHT

PEDESTRIAN CROSSING
SIGN
(W11-2 AND W16-7p)

KENWOOD SIDEWALK DESIGN BUILD

SOLAR LIGHT

KENWOOD
SCHOOL

PEDESTRIAN CROSSING
SIGN
(W11-2 AND W16-7p)

SOLAR LIGHT

KENWOOD SIDEWALK



LED LIGHTING SOLUTIONS (<https://ledlighting-solutions.com/storefront.html>).



<https://ledlighting-solutions.com/storefront.html>
[contents](#)



[SIGN IN OR REGISTER \(HTTPS://LEDLIGHTING-SOLUTIONS.COM/CUSTOMER-LOGIN.HTML\)](https://ledlighting-solutions.com/customer-login.html)



[HOME \(HTTPS://LEDLIGHTING-SOLUTIONS.COM/STOREFRONT.HTML\)](https://ledlighting-solutions.com/storefront.html) / [TRAFFIC & SAFETY \(HTTPS://LEDLIGHTING-SOLUTIONS.COM/TRAFFIC-SAFETY.HTML\)](https://ledlighting-solutions.com/traffic-safety.html) / [PUSH BUTTON SYSTEMS \(HTTPS://LEDLIGHTING-SOLUTIONS.COM/PUSH-BUTTON-SYSTEMS.HTML\)](https://ledlighting-solutions.com/push-button-systems.html) / [SOLAR HORIZONTAL RAPID FLASHING BEACON SYSTEM BACK TO BACK WITH PUSH BUTTON ACTIVATION \(HTTPS://LEDLIGHTING-SOLUTIONS.COM/SOLAR-HORIZONTAL-RAPID-FLASHING-BEACON-SYSTEM-BACK-TO-BACK-WITH-PUSH-BUTTON-ACTIVATION.HTML\)](https://ledlighting-solutions.com/solar-horizontal-rapid-flashing-beacon-system-back-to-back-with-push-button-activation.html)



SKU: CCRS004-RFB-PB-BB

Solar Horizontal Rapid Flashing Beacon System Back to Back with Push Button Activation

OPERATION:

☒ Push Button Activated

BUTTON COATING - PER 2 BUTTONS:

☐ Silver Buttons

ADD SIGNS - QTY (4):

☐ No Signs

☐ 24" MUTCD Crosswalk Sign (EGP)

☐ 24" MUTCD Crosswalk Sign (FYG)

☒ 30" MUTCD Crosswalk Sign (EGP)

☐ 30" MUTCD Crosswalk Sign (FYG)

- ☐ 36" MUTCD Crosswalk Sign (EGP)
- ☐

- ☐ No Arrows
- ☐ 12"x24" Diagonal Arrow (EGR)
- ☐ 12"x24" Diagonal Arrow (FYG)
- ☒ 18"x30" Diagonal Arrow (EGR)
- ☐ 18"x30" Diagonal Arrow (FYG)

Qty

-	1	+
---	---	---

DESCRIPTION

+

This product is for two sides of the street, facing both ways of traffic.

This Solar LED Rapid Flashing Beacon System Back to Back with Push Button Activation is ideal for alerting traffic of upcoming pedestrian crosswalks. The beacon can be set to various flashing patterns depending on preference. Using Push Button Technology, this product will turn on when pushed and then will turn off after 60 seconds of inactivity. The beacon system has a rechargeable battery and mountable solar panel that makes this product energy efficient and easy to use in locations where there is sunlight.

Product Specifications:

TYPE: Horizontal Rapid Flashing Beacon System Back to Back with Push Button Activation
PRODUCT CODE: CCRS004-RFB-PB-BB
SOLAR CHARGING PANEL: 18W, 20V Monocrystalline silicone
BATTERY: Lithium battery 12V/8800AH
FLASH PATTERNS: Wig-wag Steady
WORKING TIME: Flashing lights Stop 60 seconds after button is pushed
WORKING MODE: Push Button Activation
Radio communication between signs
BATTERY LIFE: 3-5 Years
WORKING TIME: Up to 12 hours when fully charged
DIMENSIONS:

- Push Button: 4.5" W x 8.5" H x 2.25" L
- Solar Panel: 9.75" W x 14" H x 0.75" L
- RFB: 17.5" W x 2.5" H x 2.75" L

WARRANTY: 2 Year Full Warranty
STANDARD HARDWARE: FITS 3" to 4" DIAMETER POSTS

Product Includes:

- RAPID FLASHING BEACON (QTY 4)
- CONTROL BOXES (QTY 2)
- 8W SOLAR PANELS (QTY 2)
- PUSH BUTTONS (QTY 2)
- MOUNTING HARDWARE

NOTES:

- * DOES NOT INCLUDE POLE OR SIGN*
- * IF ARROW SIGNS ARE PURCHASED, IT WILL INCLUDE TWO LEFT ARROWS AND TWO RIGHT ARROWS FOR EACH SIDE OF THE STREET*
- * IF SIGNS ARE PURCHASED, IT DOES NOT INCLUDE SIGN HARDWARE*

DEFENDER-55 GEN2

ALL IN ONE SOLAR LIGHT



55W

10,285lm



DEFENDER

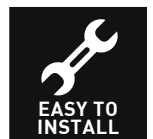
ALL IN ONE SOLAR SERIES

The game changing DEFENDER-55 all one solar light is the most advanced medium duty solar light available from Green Frog Systems. The unit features adjustable angle LED's, twin PIR motion detection and an advanced nano-particle battery with passive cell balancing technology plus a fully programmable solar controller.

Smart City Ready, the DEFENDER can be easily deployed as part of a remotely controlled lighting network independent of the mains power grid without having to compromise on performance.

APPLICATIONS

- Streets
- Pathways
- Car Parks
- Industrial
- Marinas
- Jetties
- Parks
- Recreation



DEFENDER-55 ALL IN ONE SOLAR LIGHT



SPECIFICATIONS

MODEL GFS-DEFENDER-55

OPERATING PROFILE

Standard operating mode is - **Configurable** - Unit has programmable parameters ranging from 374lm to 10,285lm **NOTE:** Various program and TIMER settings for ON / OFF / DIM are available upon request.

LED

Type	Cree XP-G3 / 12PCS
Watts (Light Output)	55W (Max)
Lumen	10,285lm
Rotatable LED Angle	-40° - +40°
Lens Type	LEDIL T3 (Default / T2 - T5 optional)
CCT (Colour Temperature)	4000K (Standard) / 3000K (Optional)
PIR Sensor Type	TWIN (2x) Panasonic PIR Sensors (L+R Mount)
PIR Detection Range	<15m / <49' detection zone - PIR Boost activates for 30 sec.
PIR Boost Power	Standard (Fixed) -19W (3553lm) / Optional 6W (1122lm)

BATTERY

Autonomy	102 hours (up to 8.5 nights)*
Battery Capacity	12.8v / 24Ah / 307.2Wh
Battery Type	LiFePo ₄ with passive cell balancing technology

SOLAR PANEL

Watts (p) / Type	32W Monocrystalline
Efficiency	21%
Solar Input Port (DC)	Expansion port for additional solar panel

CHARGING PORT (DC)

DC Charging Port (Input)	15VDC, 3A max
DC Power Output	11-15VDC, 3A max *Output voltage varies depending on Battery SOC

UNIT

Material	6063-T5 Aluminium Alloy (Black)
Pole Mount Spigot Adaptor	ID - 64mm / 2-3/8" Tennon
Mounting Angle	Adjustable -90° - +90°
Sail Area / EPA	0.33m ² / 3.55ft ²
Product Dimensions	711L x 386W x 67H mm / 27.99"L x 15.19"W x 2.63"H
Product Weight	14 kg / 30.86 lb
Package Dimensions	925 x 475 x 170 mm / 36.4"L x 18.70"W x 6.69"H
Package Weight	<17kg / 15.43 lb

ENVIRONMENTAL

Operating Temp. Range	-20°C-60°C / -4°F-140°F
IP Rating	IP-65

WARRANTY

Warranty Period	5 years warranty (complete)
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OPTIONS

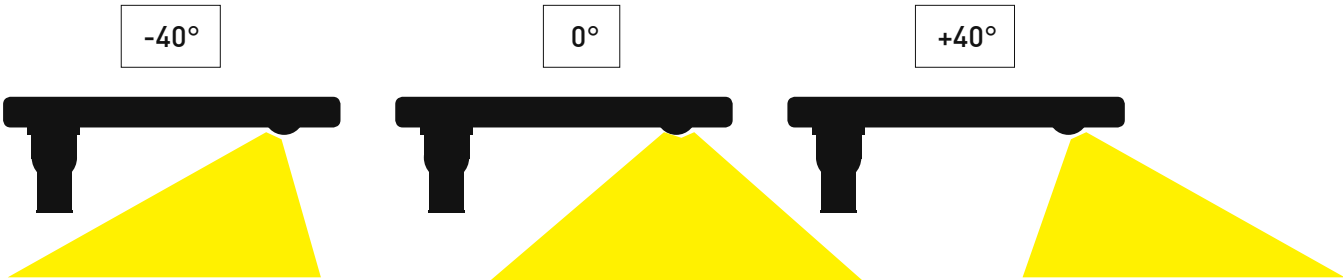
IOT SAM Enabling	Smart City Connection / Antenna Kit
Additional 32W solar panel	Connectible via DC Charging port
Direct Bury HD Galvanised Pole	6m / 20ft total height - 2 sections, powder coated black 60mm / 2-3/8" spigot
Hinge Pole	6m / 20ft total height - 2 sections, powder coated black 60mm / 2-3/8" spigot - Hinged at Base
Spigot adaptor	76mm / 3" OD
3000K CCT Conversion	Custom modification available - Please Enquire

*Based on real world field test data

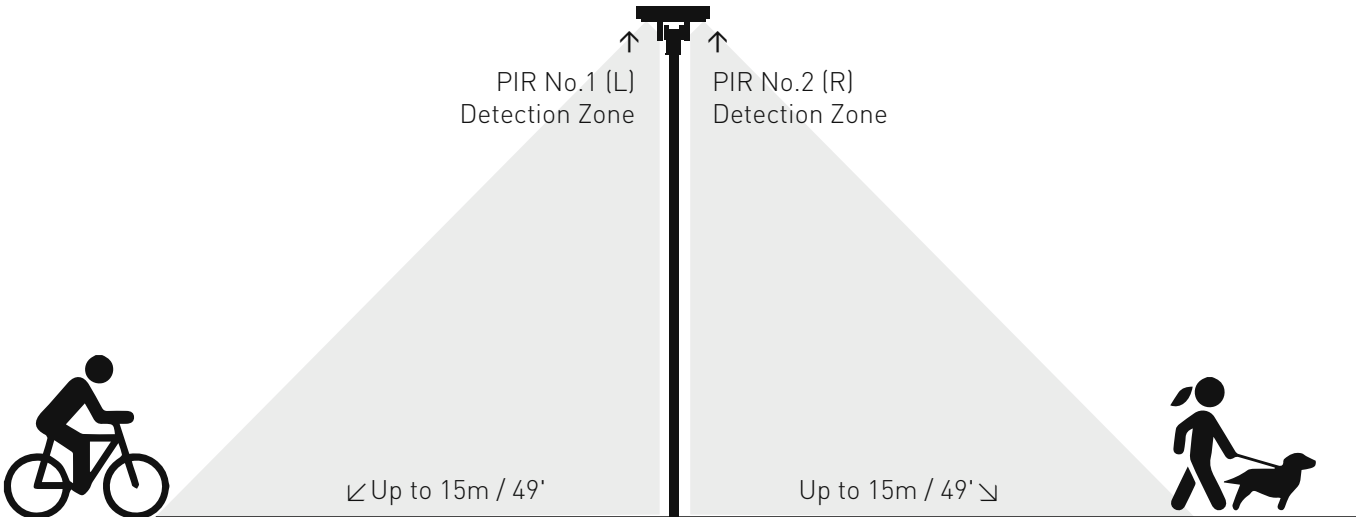
DEFENDER-55 ALL IN ONE SOLAR LIGHT



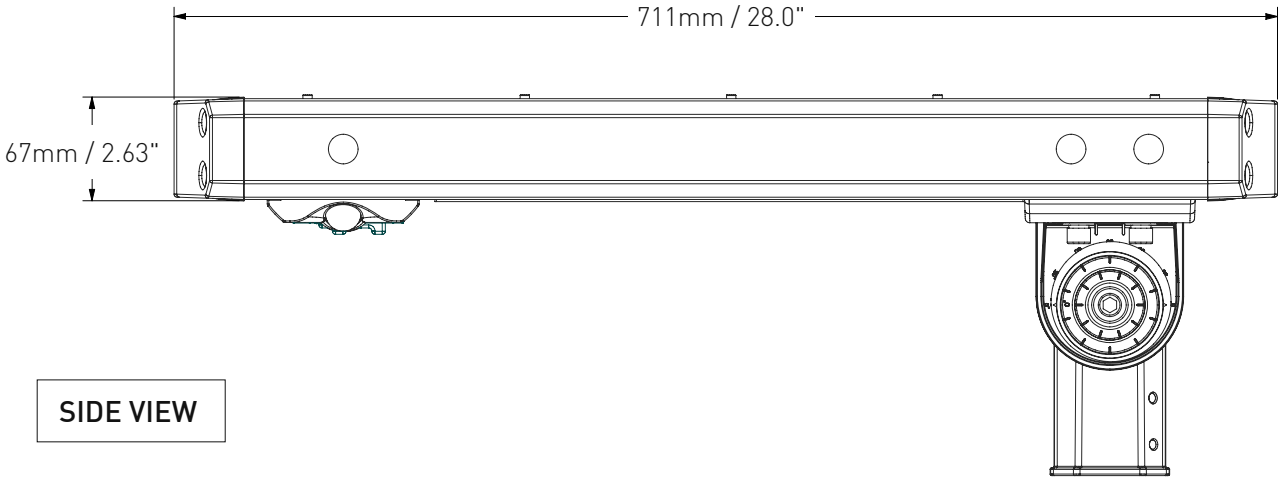
ADJUSTABLE LED - ROTATION ANGLES



PIR FUNCTION - TWIN DETECTION ZONE



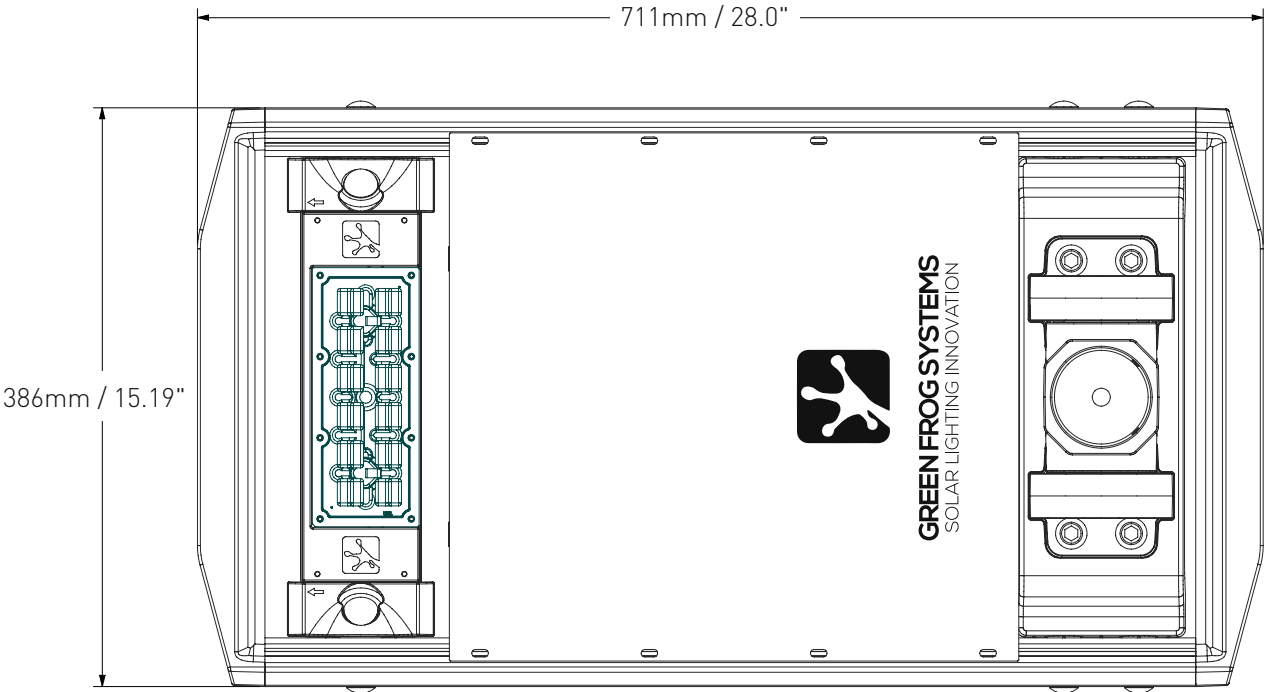
PRODUCT DIMENSIONS



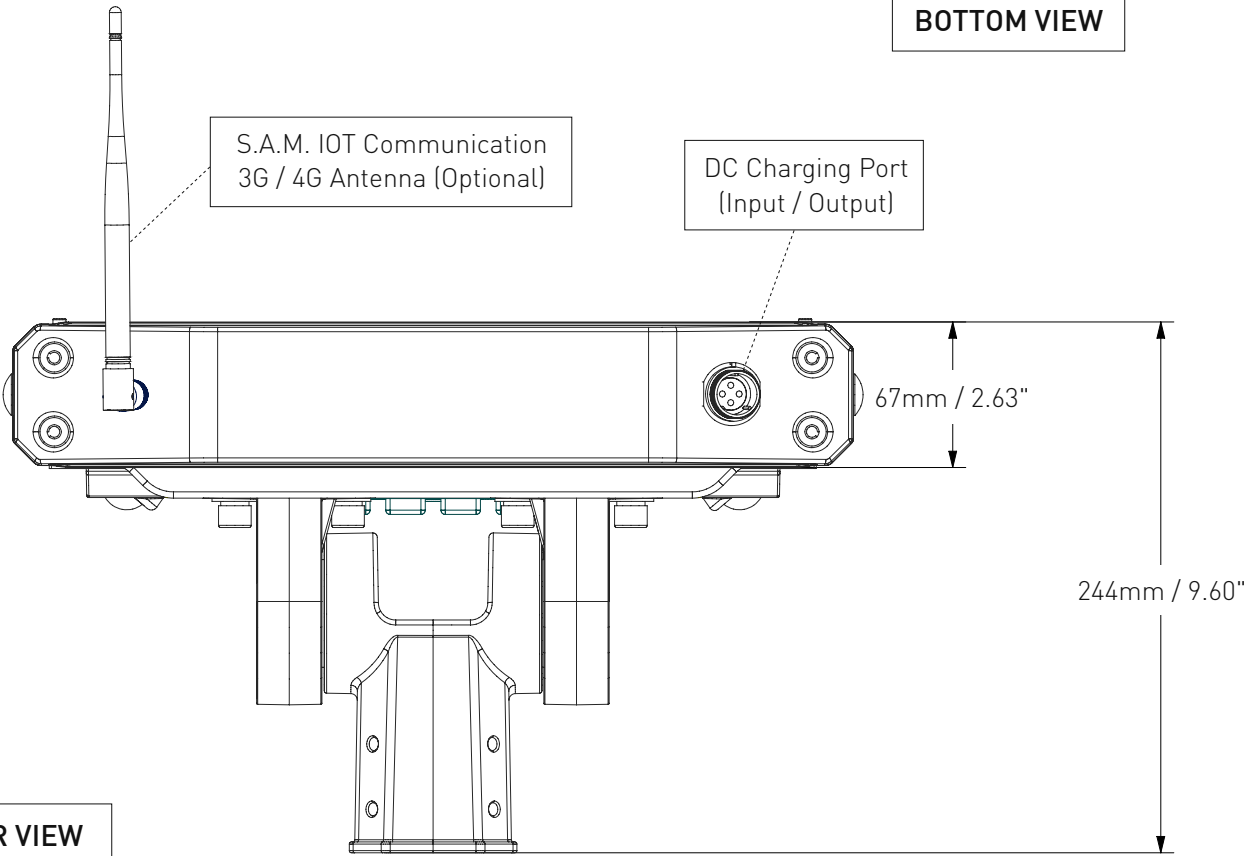
DEFENDER-55 ALL IN ONE SOLAR LIGHT



PRODUCT DIMENSIONS (CONT.)



BOTTOM VIEW



REAR VIEW



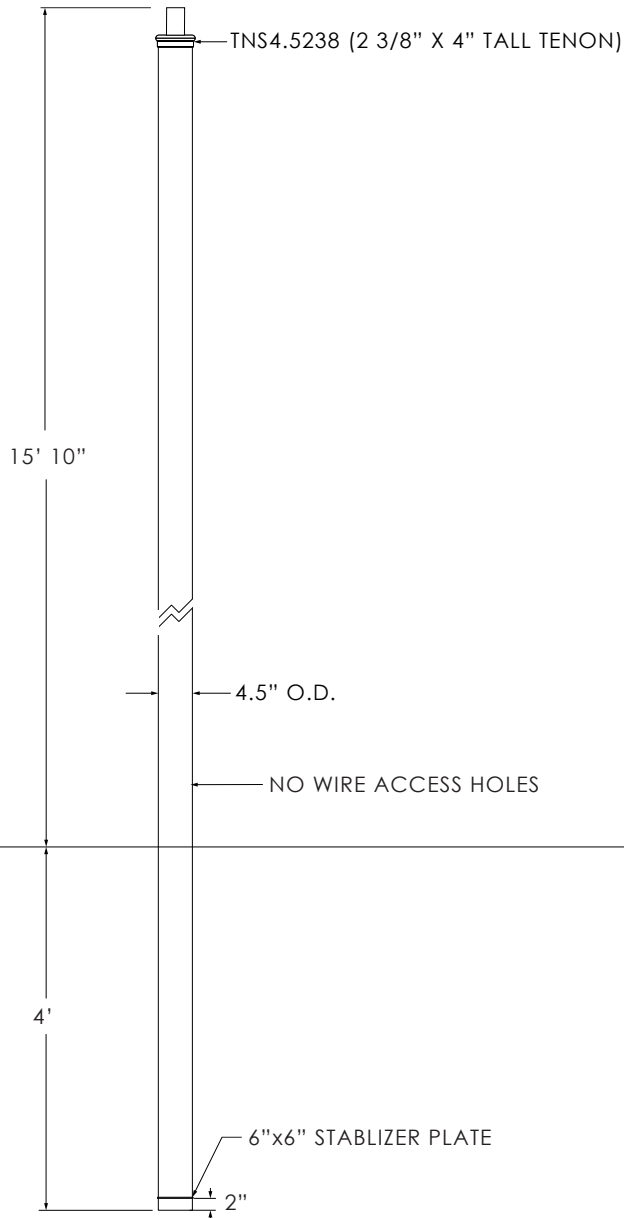
GLOBAL LIGHTING PERSPECTIVES

1605 N Main St. Bldg. B, Pearland TX 77581 | www.glpilc.co



Quote #: 7875	Date: 04/18/24	SO #:
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Part String: GPS4.5-19FT 10IN/TNS4.5238X4/BT PLUS ZINC (DIRECT BURY 15FT 10IN AG / 4FT BG)



Rep Name:
GREEN FROG SYSTEMS Approved: 4.22.24

Job Name:
DAVE MUCKEY *Dave Muckey*

Light Module Distribution:
☐ Type II Distribution
☐ Type III Distribution
☐ Type IV Distribution
☐ Type V Distribution
☐ Standard Symmetrical
☐ Specify: =====

Finish:
☐ BK Black
☐ BT Textured Black
☐ GN Green
☐ GV Green Vein
☐ WH White
☐ CV Copper Vein
☐ SB Statuary Bronze
☐ SV Silver
☒ Custom: BT PLUS ZINC

Voltage:
☐ 120 ☐ 277
☐ 208 ☐ 480
☐ 240 ☐ Multitap
☐ Auto (120V-277V) [LED]
☐ Specify: =====

Light Source:
☐ 50W MH ☐ 50 HPS
☐ 70W MH ☐ 70 HPS
☐ 100W MH ☐ 100 HPS
☐ 150W MH ☐ 150 HPS
☐ 175W MH-PS ☐ 250 HPS
☐ 250W MH-PS ☐ Incandescent
☐ PL13 ☐ CFL
☐ 26W LED ☐ 40W LED
☐ 65W LED ☐ 80W LED
☐ 115W LED ☐ SPEC

Specify: =====

Note:
LED - Light Emitting Diode
MH - Metal Halide
HPS - High Pressure Sodium
PL & CF - Compact Fluorescents

Additional (If Any):

Drawn By: MC Revision: 005

Hardware:
Stainless Steel Hardware
Included.

Electrical:
Pole Details:
Extruded Steel Shaft

Notes:
Drawing for reference only,
subject to change.
Attach drawing with order.
Do Not Scale.

Filter Details:

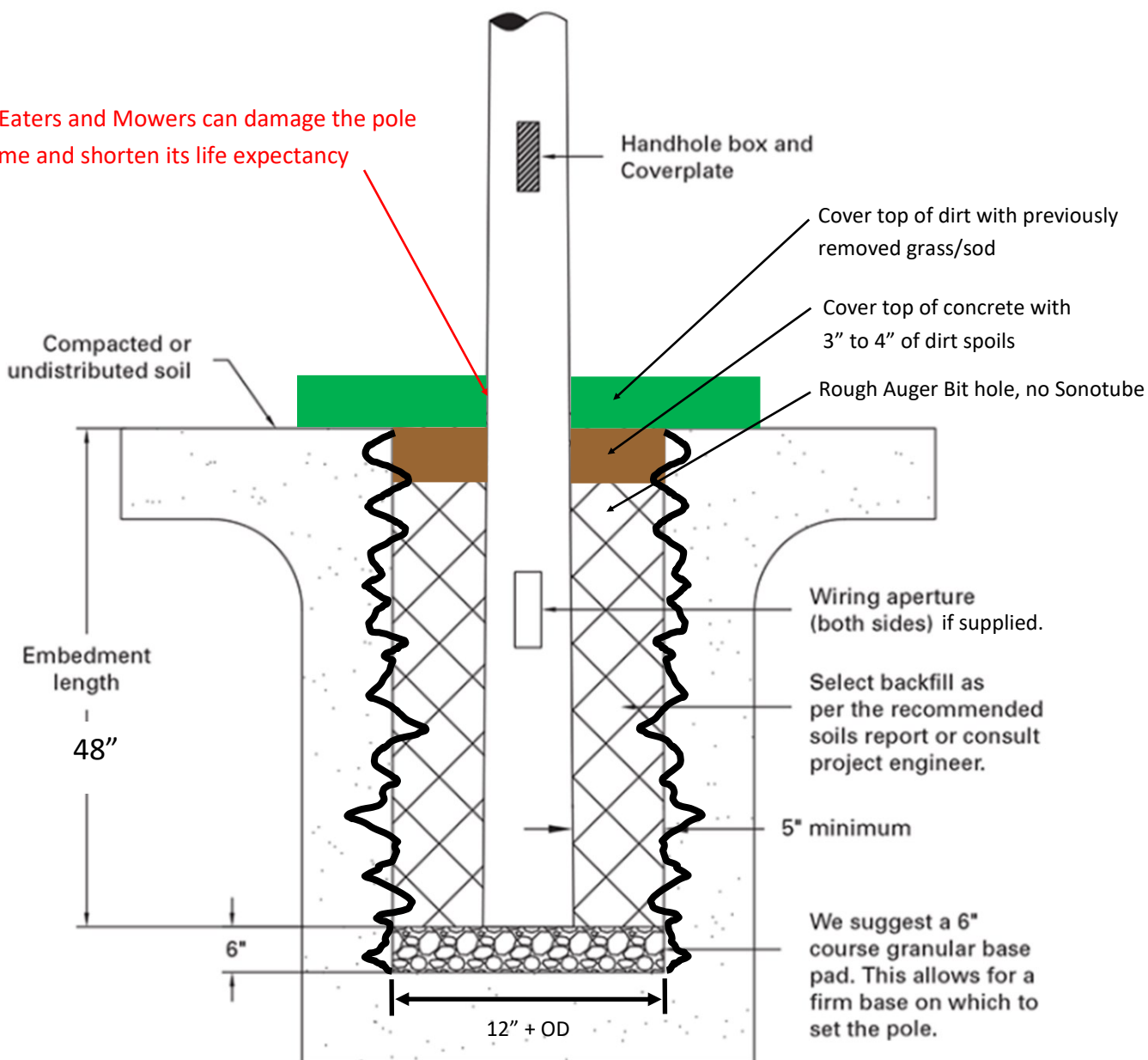
EPA:

POLE EPA	BRACKET EPA	WIND VELOCITY (MPH)	MAX ALLOWABLE BRACKET EPA
5.813	1.351	100	17.5
		110	14
		120	11.3
		130	9
		140	7.5
		150	12 of 21
		160	5
		170	4

KENWOOD SIDEWALK

Typical Burial Details

Weed Eaters and Mowers can damage the pole over time and shorten its life expectancy



Embedment Length:

The embedment length is generally 10% of pole plus two feet. Poles in poor or questionable soils or poles with highly imbalanced loads require special design considerations. Consult your project engineer.

NOTE: If you want to use a Sonotube, they come in 12", 16", 18", 24" Dia.



**GREEN FROG
SYSTEMS**
SOLAR LIGHTING INNOVATION

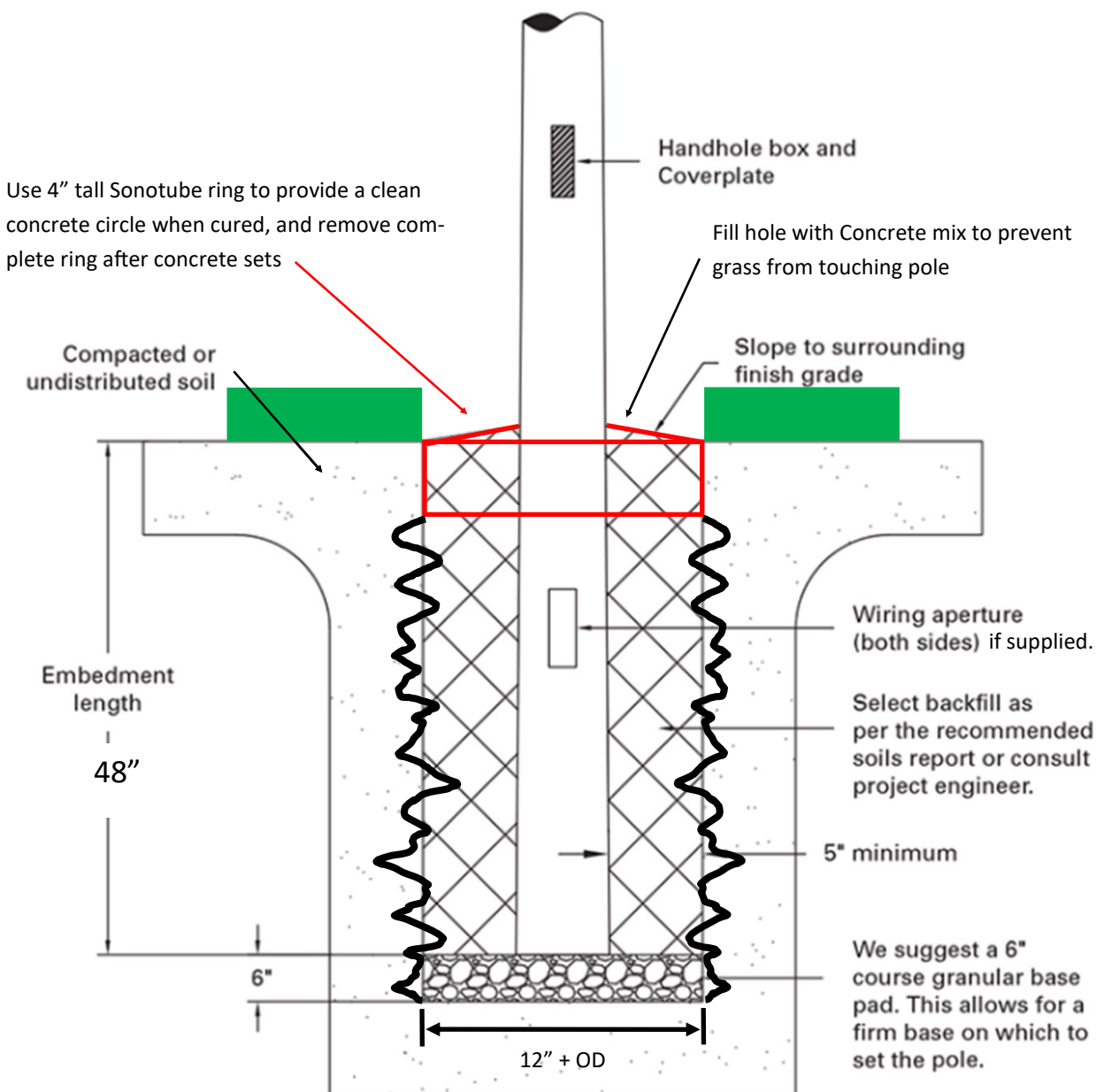
Drawn By: DJMuckey

Date: 10.23.2020 Rev:

Description: Direct Embedded Pole Details

Part Number:

Typical Burial Details



Embedment Length:

The embedment length is generally 10% of pole plus two feet. Poles in poor or questionable soils or poles with highly imbalanced loads require special design considerations. Consult your project engineer.

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**GREEN FROG
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SOLAR LIGHTING INNOVATION

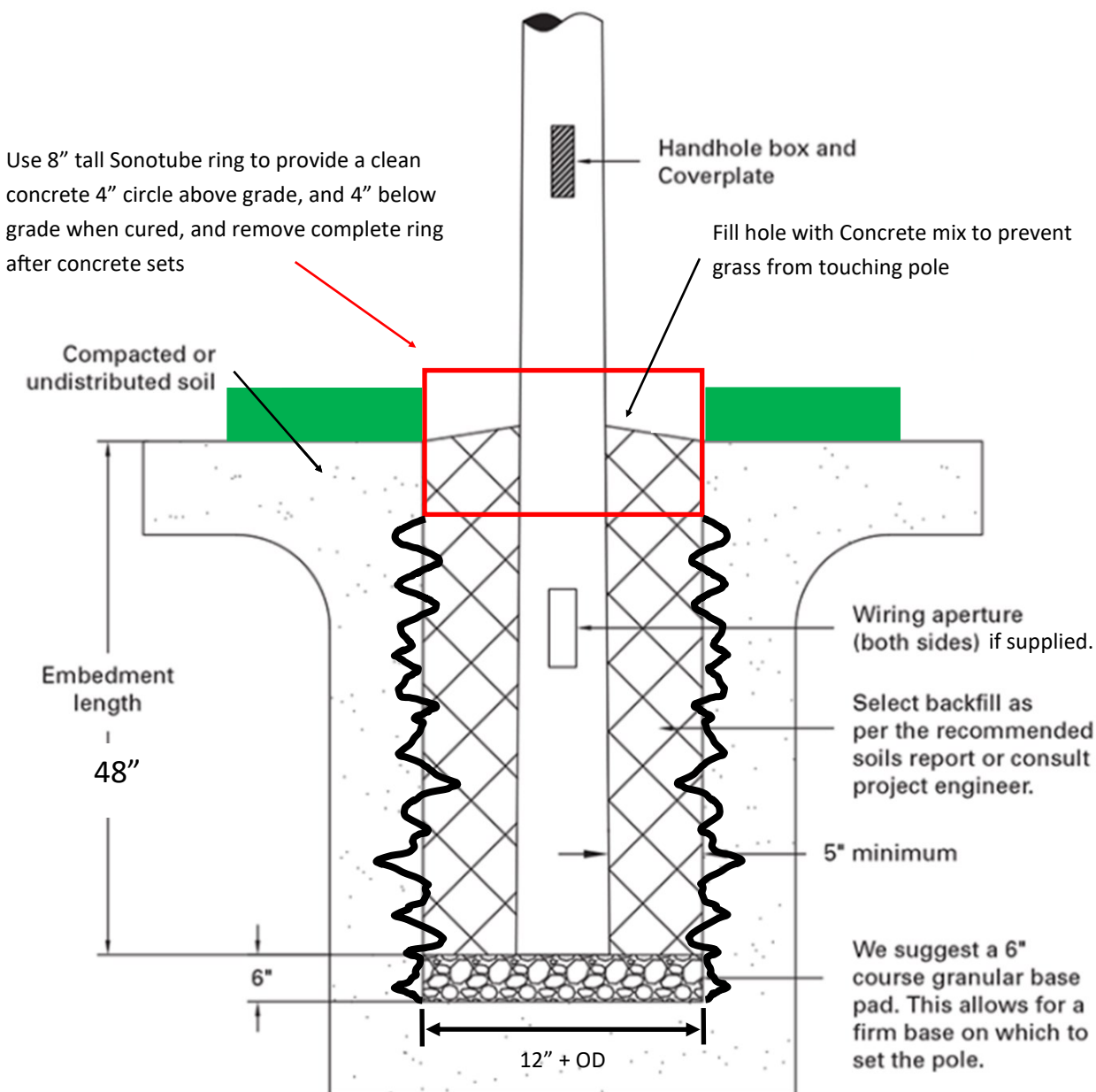
Drawn By: DJMuckey

Date: 10.23.2020 Rev:

Description: Direct Embedded Pole Details

Part Number:

Typical Burial Details



Embedment Length:

The embedment length is generally 10% of pole plus two feet. Poles in poor or questionable soils or poles with highly imbalanced loads require special design considerations. Consult your project engineer.

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.



**GREEN FROG
SYSTEMS**
SOLAR LIGHTING INNOVATION

Drawn By: DJMuckey

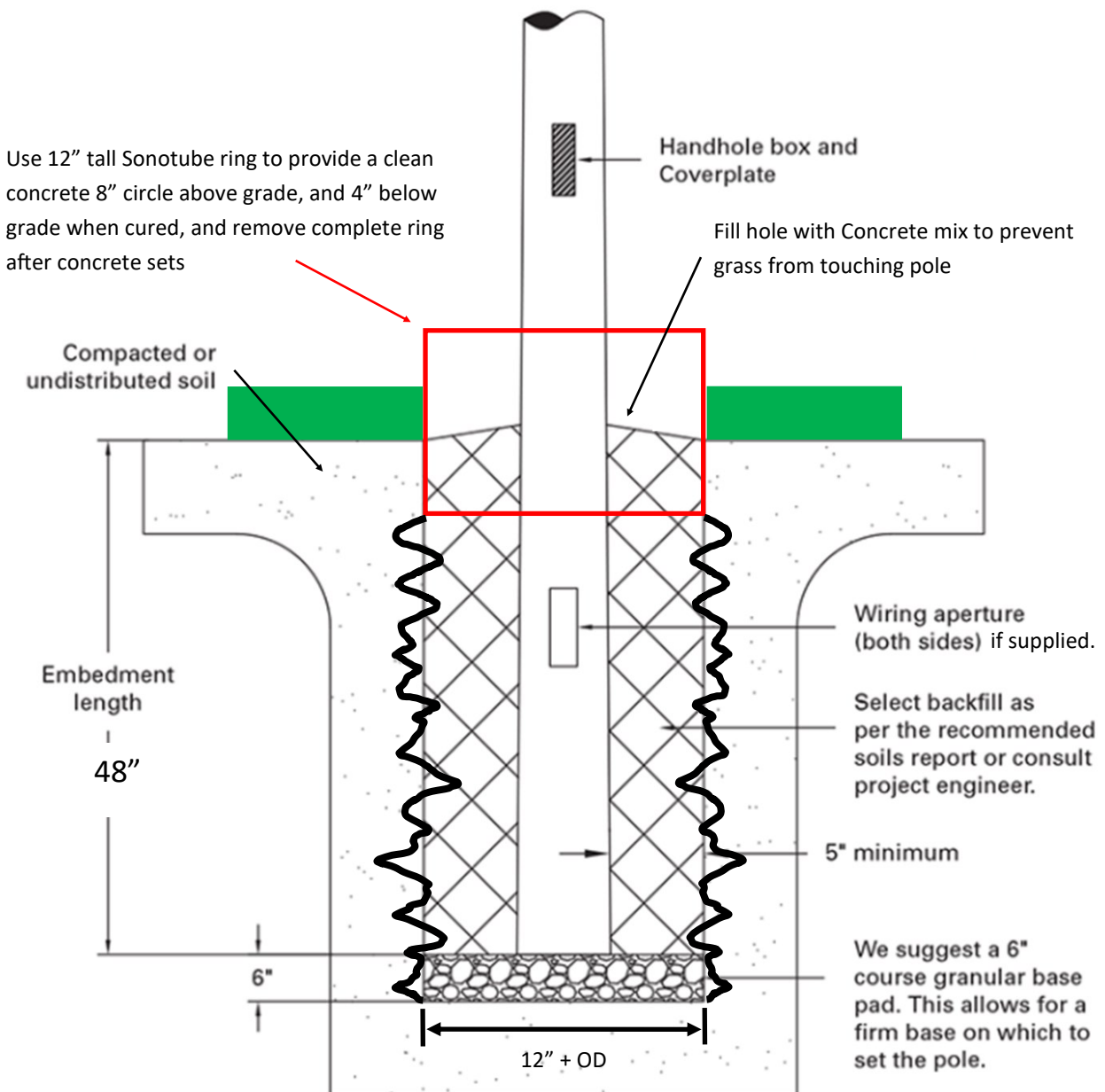
Date: 10.23.2020 Rev:

Description: Direct Embedded Pole Details

Part Number:

15 of 21

Typical Burial Details



Embedment Length:

The embedment length is generally 10% of pole plus two feet. Poles in poor or questionable soils or poles with highly imbalanced loads require special design considerations. Consult your project engineer.

NOTE: If you want to use a Sonotube, they come in 12", 16", 18", 24" Dia.

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**GREEN FROG
SYSTEMS**
SOLAR LIGHTING INNOVATION

Drawn By: DJMuckey

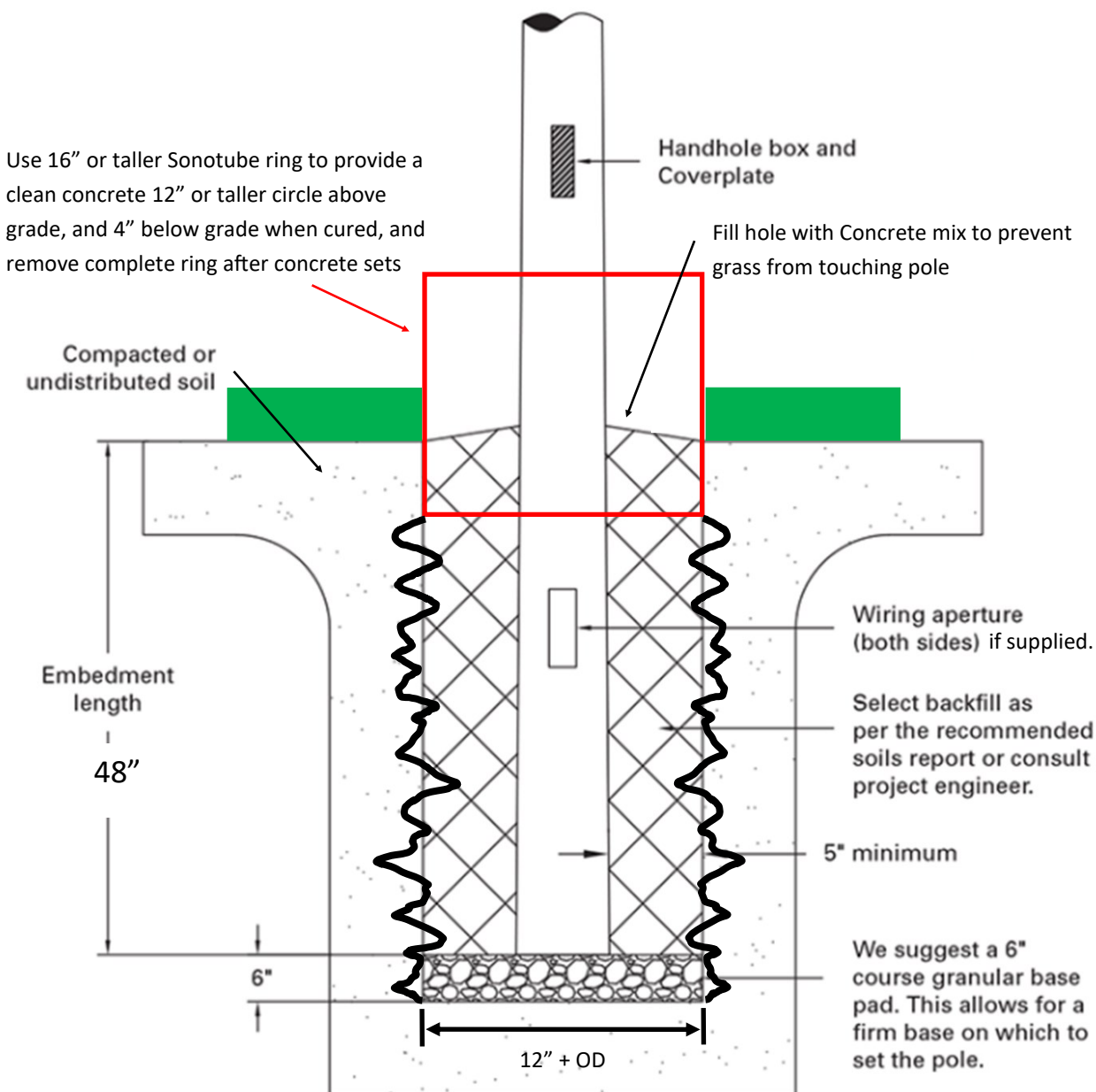
Date: 10.23.2020 Rev:

Description: Direct Embedded Pole Details

Part Number:

16 of 21

Typical Burial Details



Embedment Length:

The embedment length is generally 10% of pole plus two feet. Poles in poor or questionable soils or poles with highly imbalanced loads require special design considerations. Consult your project engineer.

NOTE: If you want to use a Sonotube, they come in 12", 16", 18", 24" Dia.



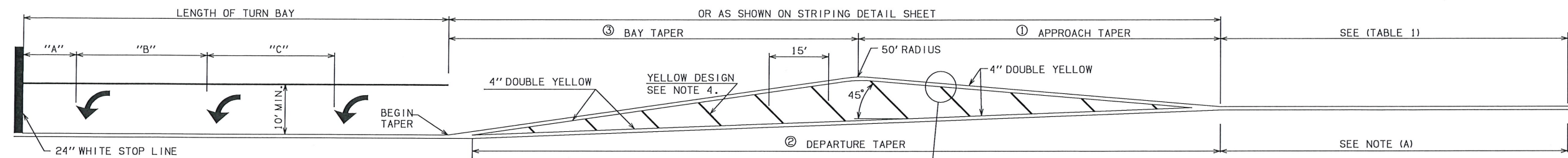
**GREEN FROG
SYSTEMS**
SOLAR LIGHTING INNOVATION

Drawn By: DJMuckey

Date: 10.23.2020 Rev:

Description: Direct Embedded Pole Details

Part Number:



DESCRIPTION	REVISIONS	DATE
ADDED GENERAL NOTE 4.		7/08/2011
UPDATED SYMBOLS		4/2/2013
CHANGE DASHED LINE DIMENSION		7/25/2019

LEFT TURN BAY AND STRIPED MEDIAN DETAIL
SEE PLANS FOR LENGTH OF LEFT TURN BAYS AND TAPERS ON STRIPED MEDIANS

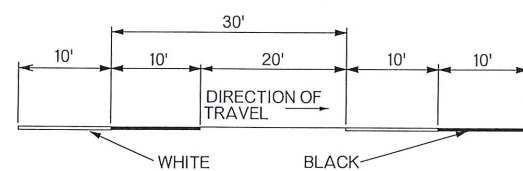
- THE PREFERRED APPROACH TAPER RATE IS V:1, WHERE V IS THE DESIGN SPEED. FOR V≤40 MPH, IT IS ACCEPTABLE FOR THE APPROACH TAPER TO BE (V²/60):1.
- THE PREFERRED DEPARTURE TAPER RATE IS V:1, WHERE V IS THE DESIGN SPEED. FOR V≤40 MPH, IT IS ACCEPTABLE FOR THE DEPARTURE TAPER TO BE (V²/60):1.
- SEE RECOMMENDED BAY TAPER RATES TABLE.

RECOMMENDED BAY TAPER RATES	
DESIGN SPEED (MPH)	TAPER RATE
V < 30	8:1
30 ≤ V ≤ 50	10:1
50 > V	15:1

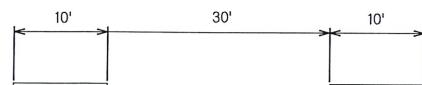
THE FOLLOWING MINIMUM VALUES MAY APPLY IN RESTRICTED LOCATIONS:
1. RIGHT-TURN LANES. A 4:1 BAY TAPER MAY BE USED WHERE PAINTED CHANNELIZATION IS USED.
2. LEFT-TURN LANES. IN SEVERELY RESTRICTED LOCATIONS, A 4:1 BAY TAPER MAY BE USED WHERE PAINTED CHANNELIZATION IS USED.

(A) NO PASS LINE ON APPROACH SIDE WITH SKIP CENTER LINE ON DEPARTURE SIDE UNLESS DOUBLE YELLOW CENTER LINE IS REQUIRED.

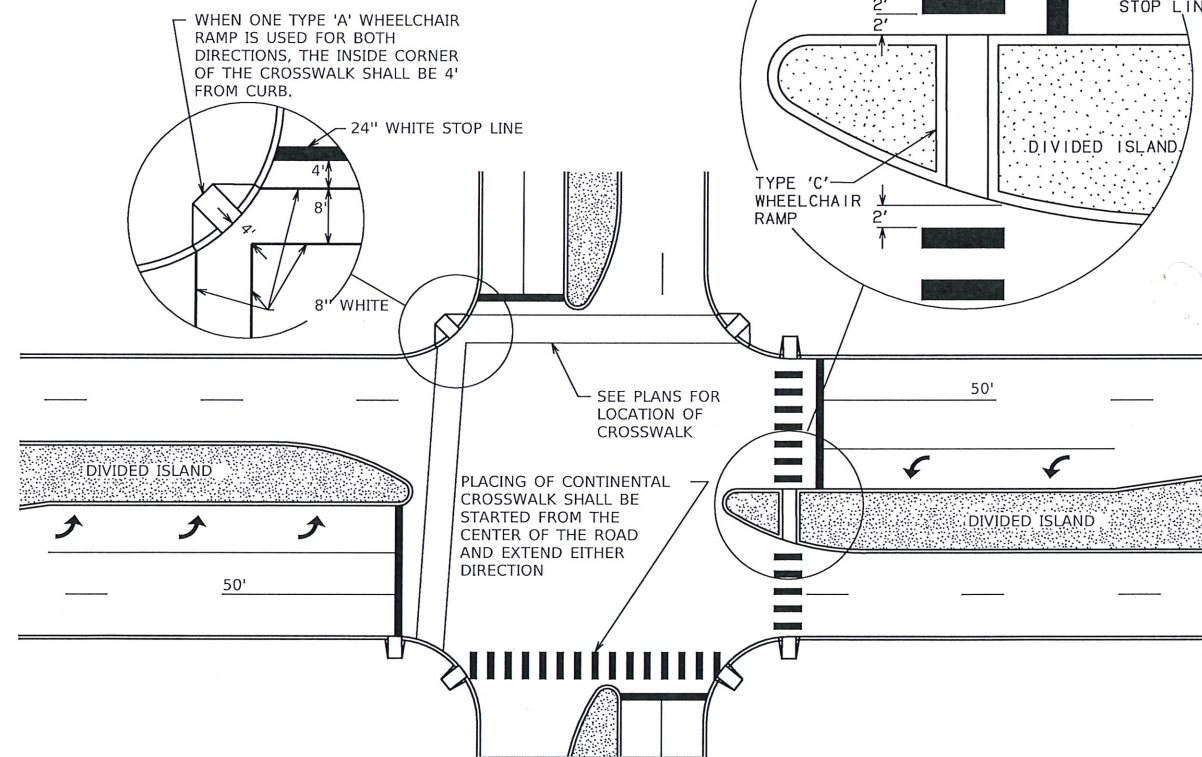
TURN BAY TABLE			
LENGTH OF BAY	"A"	"B"	"C"
FT.	FT.	FT.	FT.
75 TO 99	20	35	--
100 TO 149	20	35	35
150 TO 200	30	55	55



DASHED WHITE LANE LINE
TYPICAL CONCRETE PAVEMENT
MARKING DETAILS



DASHED WHITE LANE LINE
TYPICAL ASPHALT PAVEMENT
MARKING DETAILS



CROSSWALK INSTALLATIONS

FOR SPACING OF ARROWS
SEE "TURN BAY TABLE"

TABLE 1	
POSTED SPEED	NO PASS LENGTH (MINIMUM)
60 MPH	790'
55 MPH	725'
50 MPH	660'
45 MPH	590'
40 MPH	360'
35 MPH	260'
30 MPH	200'
25 MPH	150'

MATERIAL SPECIFICATIONS

- UNLESS OTHERWISE SPECIFIED, RETROREFLECTIVE PAVEMENT MARKING SHALL BE APPLIED BY THE EXTRUSION METHOD.
- THE THICKNESS OF THE PLASTIC PAVEMENT MARKING SHALL BE MEASURED FROM THE PLANE OF THE PAVEMENT SURFACE WITH A DEVICE SUPPLIED BY CONTRACTOR AND SUITABLE TO THE ENGINEER. THICKNESSES ARE AS FOLLOWS:

LANE LINES, STOP LINES, WORDS,
ARROWS AND SYMBOLS.....0.120" MIN. & 0.188" MAX.
EDGE, GORE AND DIAGONAL LINES.... 0.090" MIN. & 0.188" MAX.

- THE THICKNESS OF THE MULTI-POLYMER PAVEMENT MARKING SHALL BE MEASURED FROM THE PLANE OF THE PAVEMENT SURFACE WITH A DEVICE SUPPLIED BY CONTRACTOR AND SUITABLE TO THE ENGINEER. THICKNESSES ARE AS FOLLOWS:

LANE LINES, STOP LINES, WORDS,
ARROWS, SYMBOLS,
EDGE, GORE AND DIAGONAL LINES.... 0.020" MIN. & 0.025" MAX.

GENERAL NOTES

- LANE WIDTH IS THE DISTANCE BETWEEN PAVEMENT MARKINGS, OR PAVEMENT MARKING AND EDGE OF PAVEMENT. LANE WIDTH IS MEASURED FROM CENTER OF STRIPE TO CENTER OF STRIPE.
- LANE LINES SHALL BE PLACED LEFT OF THE LONGITUDINAL PAVEMENT JOINTS.
- ALL PAVEMENT MARKING SHALL OVERLAP WHERE IT MEETS OTHER PAVEMENT MARKING.
- WIDTH OF DIAGONALS ARE AS FOLLOWS:
≥ 45 MPH - 12" WIDE
< 45 MPH - 8" WIDE

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
854(A)	TRAFFIC STRIPE (PAINT) (4" WIDE)	LF
854(B)	TRAFFIC STRIPE (PAINT) (ARROW, WORDS, OR SYMBOLS)	EA
855(A)	TRAFFIC STRIPE (PLASTIC) (4" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (6" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (8" WIDE)	LF
855(A)	TRAFFIC STRIPE (PLASTIC) (24" WIDE)	LF
855(B)	TRAFFIC STRIPE (PLASTIC) (ARROW)	EA
855(B)	TRAFFIC STRIPE (PLASTIC) (WORDS)	EA
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (4" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (6" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (8" WIDE)	LF
856(A)	TRAFFIC STRIPE (MULTI-POLYMER) (24" WIDE)	LF
856(B)	TRAFFIC STRIPE (MULTI-POLYMER) (SYMBOLS, WORDS, ETC)	EA



APPROVED BY
TRAFFIC ENGINEER:






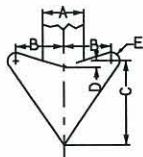



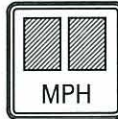
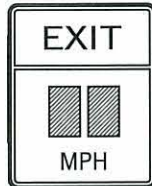
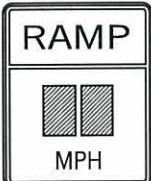



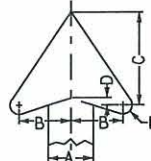

DATE: 7/11/19

TRAFFIC STANDARD
PAVEMENT MARKING
(CROSSWALKS AND LEFT
TURN BAY)

2009 SPECIFICATIONS

PM 18 of 21 02 of 03

T-101

<div></div> <div>TWO-WAY TRAFFIC</div> <table><tr><td>W6-3</td><td>36 x 36</td><td>9.00 SF</td></tr><tr><td>W6-3E</td><td>48 x 48</td><td>16.00 SF</td></tr></table> <div>COLOR: BORDER AND ARROW: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W6-3	36 x 36	9.00 SF	W6-3E	48 x 48	16.00 SF	<div></div> <div>SLIPPERY WHEN WET</div> <table><tr><td>W8-5</td><td>30 x 30</td><td>6.25 SF</td></tr><tr><td>W8-5E</td><td>36 x 36</td><td>9.00 SF</td></tr><tr><td>W8-5F</td><td>48 x 48</td><td>16.00 SF</td></tr></table> <div>COLOR: BORDER AND SYMBOL: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W8-5	30 x 30	6.25 SF	W8-5E	36 x 36	9.00 SF	W8-5F	48 x 48	16.00 SF	<div></div> <div>TRUCK CROSSING</div> <table><tr><td>W8-6</td><td>36 x 36</td><td>9.00 SF</td></tr><tr><td>W8-6F</td><td>48 x 48</td><td>16.00 SF</td></tr></table> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W8-6	36 x 36	9.00 SF	W8-6F	48 x 48	16.00 SF	<div></div> <div>BRIDGE ICES BEFORE ROAD</div> <table><tr><td>W8-13</td><td>30 X 30</td><td>6.25 SF</td></tr><tr><td>W8-13E</td><td>36 X 36</td><td>9.00 SF</td></tr><tr><td>W8-13F</td><td>48 X 48</td><td>16.00 SF</td></tr></table> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W8-13	30 X 30	6.25 SF	W8-13E	36 X 36	9.00 SF	W8-13F	48 X 48	16.00 SF	<div></div> <div>RAILROAD ADVANCE WARNING</div> <table><tr><td>W10-1</td><td>36 DIA</td><td>7.07 SF</td></tr><tr><td>W10-1E</td><td>48 DIA</td><td>12.57 SF</td></tr></table> <div>COLOR: BORDER, LEGEND AND SYMBOL: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W10-1	36 DIA	7.07 SF	W10-1E	48 DIA	12.57 SF	<div><div>DESCRIPTION</div><div>REVISIONS</div><div>DATE</div></div> <div></div> <table><tr><th colspan="5">ARROW DIMENSIONS</th></tr><tr><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr><tr><td>6"</td><td>5-3/16"</td><td>9-1/8"</td><td>11/16"</td><td>7/8"</td></tr></table> <div>ARROW DETAILS FOR W13-6 & W13-7</div>	ARROW DIMENSIONS					A	B	C	D	E	6"	5-3/16"	9-1/8"	11/16"	7/8"																		
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<div></div> <div>PEDESTRAIN CROSSING</div> <table><tr><td>W11-2</td><td>30 x 30</td><td>6.25 SF</td></tr><tr><td>W11-2E</td><td>36 x 36</td><td>9.00 SF</td></tr></table> <div>COLOR: BORDER AND SYMBOL: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W11-2	30 x 30	6.25 SF	W11-2E	36 x 36	9.00 SF	<div></div> <div>TRUCK CROSSING</div> <table><tr><td>W11-10</td><td>30 x 30</td><td>6.25 SF</td></tr><tr><td>W11-10E</td><td>36 x 36</td><td>9.00 SF</td></tr><tr><td>W11-10F</td><td>48 x 48</td><td>16.00 SF</td></tr></table> <div>COLOR: BORDER AND SYMBOL: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W11-10	30 x 30	6.25 SF	W11-10E	36 x 36	9.00 SF	W11-10F	48 x 48	16.00 SF	<div></div> <div>DOUBLE ARROW</div> <table><tr><td>W12-1</td><td>30 x 30</td><td>6.25 SF</td></tr><tr><td>W12-1E</td><td>36 x 36</td><td>9.00 SF</td></tr></table> <div>COLOR: BORDER AND ARROW: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W12-1	30 x 30	6.25 SF	W12-1E	36 x 36	9.00 SF	<div></div> <div>ADVISORY SPEED</div> <table><tr><td>W13-1P</td><td>18 x 18</td><td>2.25 SF</td></tr><tr><td>W13-1PE</td><td>24 x 24</td><td>4.00 SF</td></tr><tr><td>W13-1PF</td><td>30 x 30</td><td>6.25 SF</td></tr></table> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W13-1P	18 x 18	2.25 SF	W13-1PE	24 x 24	4.00 SF	W13-1PF	30 x 30	6.25 SF	<div></div> <div>ADVISORY EXIT SPEED</div> <table><tr><td>W13-2</td><td>24 x 30</td><td>5.00 SF</td></tr><tr><td>W13-2E</td><td>36 x 48</td><td>12.00 SF</td></tr><tr><td>W13-2F</td><td>48 x 60</td><td>20.00 SF</td></tr></table> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W13-2	24 x 30	5.00 SF	W13-2E	36 x 48	12.00 SF	W13-2F	48 x 60	20.00 SF	<div></div> <div>ADVISORY RAMP SPEED</div> <table><tr><td>W13-3</td><td>24 x 30</td><td>5.00 SF</td></tr><tr><td>W13-3E</td><td>36 x 48</td><td>12.00 SF</td></tr><tr><td>W13-3F</td><td>48 x 60</td><td>20.00 SF</td></tr></table> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW (REFLECTORIZED)</div>	W13-3	24 x 30	5.00 SF	W13-3E	36 x 48	12.00 SF	W13-3F	48 x 60	20.00 SF																					
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2009 SPECIFICATIONS

WSD3-1

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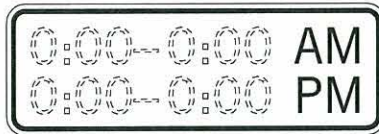





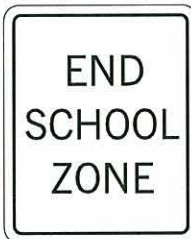



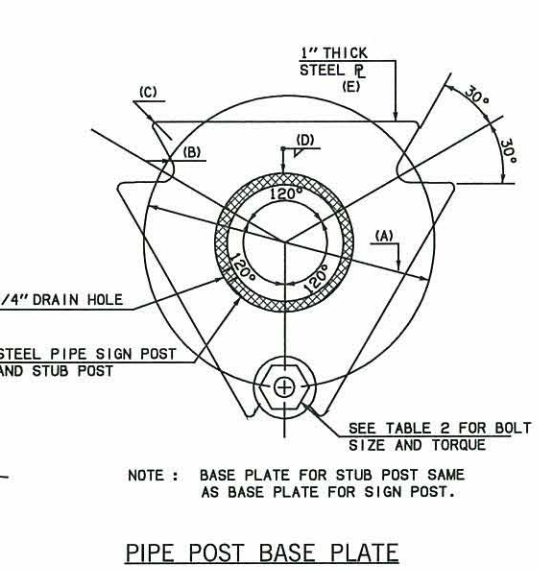
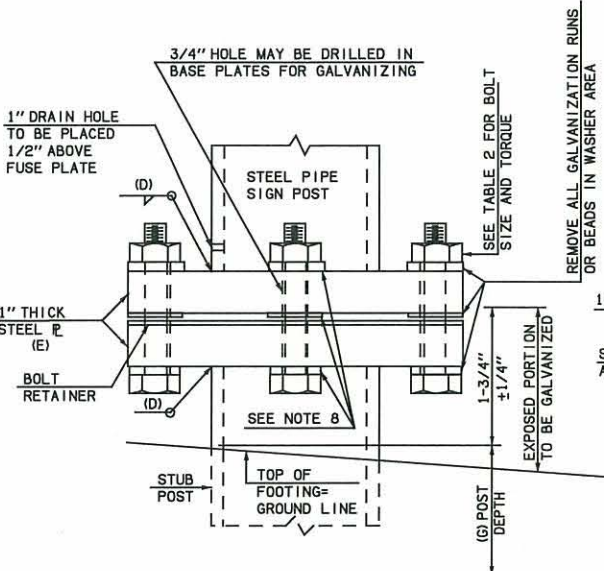
<div></div> <div>SCHOOL CROSSING</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW-GREEN (REFLECTORIZED)</div> <div><div>S1-136 x 366.75 SF</div><div>S1-1E48 x 4812.00 SF</div></div>	<div></div> <div>SCHOOL BUS STOP AHEAD</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW-GREEN (REFLECTORIZED) * RED (REFLECTORIZED)</div> <div><div>S3-130 x 306.25 SF</div><div>S3-1E36 x 369.00 SF</div></div>	<div></div> <div>SCHOOL ZONE TIME</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: WHITE (REFLECTORIZED)</div> <div><div>S4-1P24 x 101.67 SF</div><div>S4-1PE36 x 184.50 SF</div></div>	<div></div> <div>WHEN CHILDREN ARE PRESENT</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: WHITE (REFLECTORIZED)</div> <div><div>S4-2P24 x 101.67 SF</div><div>S4-2PE36 x 184.50 SF</div></div>	<div><table><tr><th>DESCRIPTION</th><th>REVISIONS</th><th>DATE</th></tr></table><div></div><div>SCHOOL</div><div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW-GREEN (REFLECTORIZED)</div><div><div>S4-3P24 x 81.33 SF</div><div>S4-3PE36 x 123.00 SF</div></div></div>	DESCRIPTION	REVISIONS	DATE						
DESCRIPTION	REVISIONS	DATE											
<div></div> <div>WHEN FLASHING</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: WHITE (REFLECTORIZED)</div> <div><div>S4-4P24 x 101.67 SF</div><div>S4-4PE36 x 184.50 SF</div></div>	<div></div> <div>REDUCE SPEED SCHOOL ZONE AHEAD</div> <div>COLOR: BORDER AND ARROW: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW-GREEN (REFLECTORIZED) SYMBOL: BLACK BORDER AND TEXT ON WHITE BACKGROUND (REFLECTORIZED)</div> <div><div>S4-536 x 369.00 SF</div><div>S4-5E48 x 4816.00 SF</div></div>	<div>COLOR: TOP PANEL BACKGROUND - FLOURESCENT YELLOW GREEN (REFLECTORIZED) LEGEND - BLACK (NON-REFLECTORIZED) BOTTOM PANEL BACKGROUND - WHITE (REFLECTORIZED) LEGEND - BLACK (NON-REFLECTORIZED)</div> <div></div> <div>SCHOOL SPEED LIMIT</div> <div><div>S5-124 x 488.00 SF</div><div>S5-1E36 x 7218.00 SF</div></div>	<div></div> <div>END SCHOOL ZONE</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: WHITE (REFLECTORIZED)</div> <div><div>S5-224 x 305.00 SF</div><div>S5-2E36 x 4812.00 SF</div></div>										
<div></div> <div>DIAGONAL ARROW</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW-GREEN (REFLECTORIZED)</div> <div><div>W16-7P24 x 122.00 SF</div><div>W16-7PE30 x 183.75 SF</div></div>	<div></div> <div>AHEAD</div> <div>COLOR: BORDER AND LEGEND: BLACK (NON-REFLECTORIZED) BACKGROUND: FLOURESCENT YELLOW-GREEN (REFLECTORIZED)</div> <div><div>W16-9P24 x 122.00 SF</div><div>W16-9PE30 x 183.75 SF</div></div>	<div><table><tr><th colspan="3">BASIS OF PAYMENT</th></tr><tr><th>ITEM NO.</th><th>ITEM</th><th>UNIT</th></tr><tr><td>850(A)</td><td>SHEET ALUMINUM SIGNS</td><td>SF</td></tr></table><div><div>APPROVED BY TRAFFIC ENGINEER: <i>Harold Smith</i> DATE: <i>8/8/10</i></div><div>TRAFFIC STANDARD SCHOOL AREA TRAFFIC CONTROL SIGNS</div></div><div><div>2009 SPECIFICATIONS</div><div><div>SZSD1-100</div><div>20 of 21T-119</div></div></div></div>			BASIS OF PAYMENT			ITEM NO.	ITEM	UNIT	850(A)	SHEET ALUMINUM SIGNS	SF
BASIS OF PAYMENT													
ITEM NO.	ITEM	UNIT											
850(A)	SHEET ALUMINUM SIGNS	SF											

TABLE 1														
FTG. DES. NO.	POST SIZE REQUIRED	BASE PLATE DIMENSIONS						FOOTING DIMENSIONS					QUANTITIES	
		TRIANGLE SIZE	A	B	C	D	E	SIZE DIA.	LENGTH	POST (G) DEPTH	VERTICAL BARS	HORIZONTAL BARS	CLASS "A" CONCRETE	REINFORCING STEEL
											NO./SIZE	NO./SIZE		
A-1	1-1/2" @ 2.72 pif	NO BASE PLATE REQUIRED						12"	2'-0"	24"	NONE	NONE	.06 CY	NONE
A-2	2" @ 3.65 pif	NO BASE PLATE REQUIRED						12"	2'-0"	24"	NONE	NONE	.06 CY	NONE
A-3	2-1/2" @ 5.79 pif	9" x 9" x 9"	6-1/4"	9/16"	1/4"	1/4"	18"	3'-0"	24"	4 / #5	4 #4	.20 CY	24 lbs	
A-4	3" @ 7.58 pif	9" x 9" x 9"	6-1/4"	9/16"	1/4"	1/4"	18"	3'-6"	24"	6 / #5	4 #4	.23 CY	32 lbs	
A-5	3-1/2" @ 9.11 pif	10" x 10" x 10"	7-1/16"	1/16"	1/4"	5/16"	18"	4'-0"	30"	6 / #5	5 #4	.26 CY	38 lbs	
A-6	4" @ 10.79 pif	10" x 10" x 10"	7-1/16"	1/16"	1/4"	5/16"	18"	4'-6"	30"	6 / #5	5 #4	.30 CY	42 lbs	



STEEL PIPE POST BASE CONNECTION

- PROCEDURE FOR ASSEMBLY OF BASE CONNECTION
1. ASSEMBLE POST TO STUB WITH BOLTS AND WASHERS. USE ONE FLAT WASHER PER BOLT AND BOLT RETAINER BETWEEN BASE PLATES.
 2. SHIM AS REQUIRED TO PLUMB AND ALIGN POST(S) BEFORE OR IMMEDIATELY AFTER POURING CONCRETE FOOTING.
 3. TIGHTEN ALL BOLTS, IN A SYSTEMATIC ORDER, TO THE PRESCRIBED TORQUE TO BED WASHERS AND SHIMS AND CLEAN BOLT THREADS.
 4. LOOSEN AND RETIGHTEN TO PRESCRIBED TORQUE IN THE SAME ORDER AS INITIAL TIGHTENING. DO NOT OVER TIGHTEN.

NO. REQ'D. 9" X 9" X 9"	NO. REQ'D. 10" X 10" X 10"
(3) 1/2" x 3-1/4" H. S. BOLT	(3) 5/8" x 3-3/4" H. S. BOLT
(3) HEX. NUTS	(3) HEX. NUTS
(9) FLAT WASHERS (SEE NOTE 8)	(9) FLAT WASHERS (SEE NOTE 8)

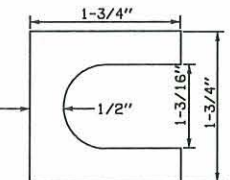
TABLE 2 BASE PLATE CONNECTION DATA TABLE		
BOLT TORQUE FOR BASE PLATES		
BOLT SIZE	MINIMUM	MAXIMUM
1/2" x 3-1/4"	16.6 FT LBS	25.0 FT LBS
5/8" x 3-1/4"	37.5 FT LBS	56.6 FT LBS
3/4" x 3"	67.5 FT LBS	88.3 FT LBS

BOLT TORQUE LIMITS
THE HIGH STRENGTH BOLTS AT THE BASE CONNECTION SHOULD BE TORQUED WITHIN THE LIMITS SPECIFIED IN THE ABOVE TABLE. HOWEVER THE LOWER LIMIT SHOWN IN THE "BASE PLATE CONNECTION DATA TABLE" IS MORE DESIRABLE.



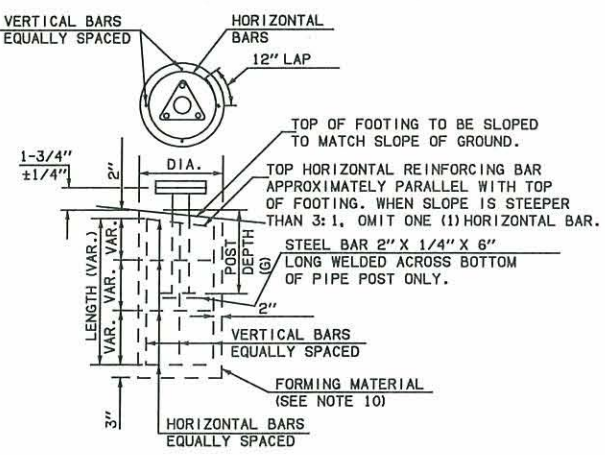
CUT FROM 30 GAUGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATES. SIZE---VARIES TO FIT BASE PLATES.

SHEET METAL BOLT RETAINER



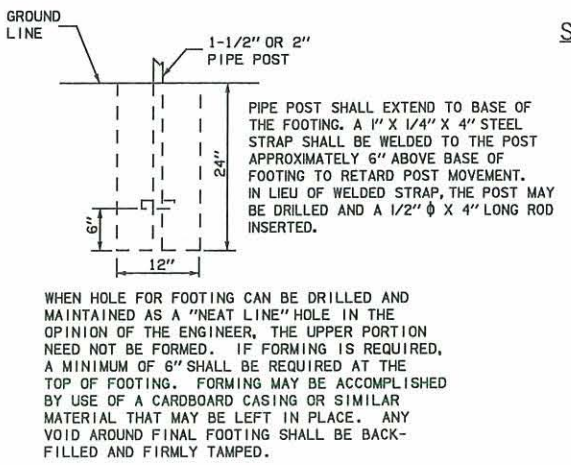
FURNISH 2 x 0.012 THICK AND 2 x 0.32 THICK SHIMS FOR POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM-B36.

SHIM DETAIL



NOTE : PIPE STUB POST MAY BE INSTALLED TO THE BASE OF THE FOOTING IF DESIRED, BUT ONLY THE PIPE POST SPECIFIED IN THE FOOTING DESIGN WILL BE PAID FOR. PIPE POST EXTENDING TO THE BASE OF THE FOOTING SHALL HAVE THE STEEL BAR WELDED TO THE POST A MINIMUM OF 6" ABOVE THE BASE OF THE FOOTING.

TYPICAL "A" FOOTING DETAIL



TYPICAL "A-1" & "A-2" FOOTING DETAIL

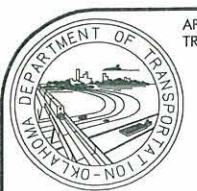
WHEN HOLE FOR FOOTING CAN BE DRILLED AND MAINTAINED AS A "NEAT LINE" HOLE IN THE OPINION OF THE ENGINEER, THE UPPER PORTION NEED NOT BE FORMED. IF FORMING IS REQUIRED, A MINIMUM OF 6" SHALL BE REQUIRED AT THE TOP OF FOOTING. FORMING MAY BE ACCOMPLISHED BY USE OF A CARDBOARD CASING OR SIMILAR MATERIAL THAT MAY BE LEFT IN PLACE. ANY VOID AROUND FINAL FOOTING SHALL BE BACK-FILLED AND FIRMLY TAMPED.

CONSTRUCTION NOTES

1. ALL PIPE AND WIDE FLANGE BEAM POST SHALL CONFORM TO THE 2009 STANDARD SPECIFICATIONS.
2. ALL BOLTS, NUTS AND WASHERS SHALL NOT BE GALVANIZED OR PLATED, BUT SHALL BE PAINTED, AFTER INSTALLATION, WITH A ZINC RICH PAINT.
3. STRUCTURAL STEEL TO BE GALVANIZED AFTER FABRICATION, EXCEPT AS NOTED, IN ACCORDANCE WITH THE 2009 STANDARD SPECIFICATIONS.
4. POST LENGTHS AS SHOWN ON THE PLANS INCLUDE BOTH SIGN POST AND STUB POST WHICH IS SET IN THE CONCRETE FOOTING.
5. ALL WELDING MATERIALS AND METHODS, INCLUDING QUALIFICATIONS OF WELDERS, SHALL CONFORM WITH THE REQUIREMENTS OF THE 2009 STANDARD SPECIFICATIONS.
6. STRUCTURAL EXCAVATION TO BE PAID FOR IN OTHER ITEMS OF WORK.
7. TOP AND BOTTOM WASHERS ON BASE PLATE SHALL BE 1/4" THICK. WASHERS MAY BE ROUND OR SQUARE. USE STANDARD ROUND WASHERS BETWEEN BASE PLATES. REMOVE ALL GALVANIZING RUNS OR BEADS IN WASHER AREA.

BASIS OF PAYMENT

ITEM NO.	ITEM	UNIT
804(A)	STRUCTURAL CONCRETE	CY
804(B)	REINFORCING STEEL	LB
851(B)	GALVANIZED STEEL PIPE POST	LF



APPROVED BY
TRAFFIC ENGINEER: *Chad Gma* DATE: 8/5/10

TRAFFIC STANDARD
STANDARD FOOTINGS FOR
GROUND MOUNTED SIGNS
(GALVANIZED PIPE)

2009 SPECIFICATIONS