Town of Twisp

Public Works

1220 Ewell Street • Box 278 • Twisp, WA 98856. 509-997-1311 publicworks@townoftwisp.com

Public Works Project Request for Bid

Glover Street Solar Illumination

1.0 Request for Bid:

The Town of Twisp is issuing this Request For Bid from qualified suppliers to provide approximately 26 solar powered LED decorative street lights in 2018 with an option to purchase up to 10 additional lights within 18 months of the order date at the submitted bid price. The Town of Twisp reserves the right to adjust the quantity of lights to be purchased in 2018 to fit within the budget. It is anticipated that the quantity purchased will be between 20-30 lights. The unit cost in the proposal must remain the same from the selected supplier as long as the quantity purchased is between 20-30 lights.

Suppliers may submit multiple proposals to provide optional styles, but they must be completely separate proposals with all required attachments.

2.0 Project Specifications:

The supplied product must meet the minimum specifications listed in the "Solar Powered Street Lighting Specifications", **Attachment 1.**

3.0 Project Schedule:

Supplier shall supply all fixtures and equipment on site at 1220 Ewell Street in Twisp, Washington within 12 weeks of order date of July, 2018.

4.0 Bid Proposal must include:

- Supplier's Name, Address, and Phone Number
- Lighting and fixture specifications addressing all items listed in the "Solar Powered Street Lighting Specifications".
- All submittals referenced in the "Solar Powered Street Lighting Specifications".
- Example cut sheets.
- Recommended solar panel size specific to the project site.
- Completed, Signed Proposal Form, **Attachment 3**
- Total Bid amount with tax and shipping to 1220 Ewell Street, Twisp, WA. 98856

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5.0 Bid Questions:

Submit all questions in writing via email to Andrew Denham at publicworks@townoftwisp.com

6.0 Project Attachments:

- **Attachment 1, Solar Powered Street Lighting Specifications**
- **Attachment 2, Example Cut Sheet**
- **Attachment 3, Proposal Form**
- **Attachment 4, Map of fixture placement on Glover Street**

7.0 Proposal Due Date and Time:

Proposals shall be addressed to Andrew Denham, Public Works Director, Town of Twisp and mailed to PO Box 278 Twisp, WA. 98856, or delivered to Twisp Town Hall at 118 Glover Street, Twisp, WA. 98856 by July, 18 2018 at 1:00 pm. No proposals will be accepted after the stated date and time. A sealed envelope enclosing the proposal must be sealed inside of the mailing envelope and contain:

- Project name
- Bidding Firm
- Bid due date

Sealed Proposals will be opened and read aloud at Twisp Town Hall on July 18, 2018 at 1:00 pm sharp.

8.0 Rejection of Proposals:

The Town reserves the right to reject any or all proposals, to waive any minor informalities or irregularities contained in any proposal, and to accept any proposal deemed to be in the best interest of the Town.

9.0 Acceptance of Proposals:

The Town shall be the final authority with regard to whether a bid is responsive to the Request for Bid and as to whether a bidder is a responsible bidder under the conditions of this bid.

The type, style, construction, material and design of the light fixture will be a factor in the selection of the Lowest Responsible Bidder. A committee from the Town will be assembled to select the best design fixture with the lowest bid.

Solar Powered Street Lighting Specifications

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solar Powered Outdoor Lighting

B. Related Sections:
   1. Section [260130 – Operating and Maintenance of Electrical Storing Devices]
   2. Section [260913 – Electrical Power Monitoring and Control]

1.2 REFERENCES

A. American National Standards Institute / Institute of Electrical and Electronic Engineers (ANSI/IEEE)
   1. ANSI/ESD S20.20-2007 Development of an Electrostatic Discharge Control Program

B. International Electrotechnical Commission
   1. (IEC) 801-2 Electrostatic Discharge Testing Standard

C. International Organization for Standardization (ISO)
   1. 9001-2008 – Quality Management Systems

D. Underwriters Laboratories
   1. UL 1598
   2. UL 60950-1:2007

F. National Electrical Manufacturers Association (NEMA)
NEMA 250-2003 – Enclosures for Electrical Equipment
ANSI/IEC 60529-2004 – Degrees of Protection Provided by Enclosures

1.3 SUBMITTALS

A. Specification Conformance Document:
   1. Meets specification exactly as stated.
   2. Meets specification via an alternate means and indicate the specific methodology used.

B. Product Data: Catalog cut sheets with performance specifications demonstrating compliance with specified requirements.

C. IES electronic files of lamp output or Photometric Plots on a surface from a defined lamp height compliant with IES LM-79.

D. Calculation of Effective Projected Area (EPA) and weight of the solar lighting system, and EPA rating of the pole (if provided).

E. Days of battery back-up must be based on an assumption of no sun and Battery cycle life taking into account temperature impact on cycle life.

F. Photometric simulation based on provided project location layout.

G. PV sizing based on worst-case average insolation data from an accredited source (e.g. NREL TMY2), with an additional safety factor to account for worst-case conditions. Consideration given for temperature, PV obstruction and other obstructions.

H. Line drawing or photograph of lighting system(s).

I. Wiring diagram(s).

J. Customer references of at least 10 installation sites.

K. Installation Instructions.

L. Photos of available styles of fixtures.

1.4 QUALITY ASSURANCE

A. Manufacturer: Minimum 5 years of experience in manufacture of solar powered lighting systems.

B. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards, including in-house engineering for product design activities.

1.5 SAFETY COMPLIANCE

A. Charge controller/LED driver, harnessing, (battery and PV if required) is NTRL listed per UL/CSA.

B. Luminaire approved by a Nationally Recognized Testing Laboratory to UL 1598.

C. Controller/LED driver listed by a Nationally Recognized Testing Laboratory -TÜV listed to UL 60950-1:2007 and CSA C22.2.60950-1:2007.

1.6 OTHER COMPLIANCES

A. Charge Controller complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

B. Battery shall be rated "non-spillable" by ICAO/IATA/DOT

1.7 PROJECT CONDITIONS

A. Ambient temperature: -20° to 45° C.

B. Relative humidity: 0 to 100%.

C. Pole (if provided) and all coupling components exceed maximum specified EPA ratings required for local wind loading conditions.

1.8 WARRANTY

A. Provide manufacturer's warranty covering 5 years on solar lighting system from date of purchase.

B. Solar Voltaic Panel covered for 20 years from date of purchase.

C. Mounting hardware, arms & brackets covered for a minimum of 10 years from date of purchase.

D. Pole and associated components covered for a minimum of 10 years from date of purchase.

E. LED light engine, lamps and fixtures covered for a minimum of 10 years from date of purchase.

F. Wire harnessing, connectors and terminals covered for a minimum of 10 years from date of purchase.

G. Electronics: LED driver, charge controller, communications covered for a minimum of 10 years from date of purchase.

H. Batteries have a full replacement warranty covered for a minimum of 5 years from date of purchase.

I. Option for full 10 year battery replacement warranty.

1.9 FACTORY CERTIFIED INSTALLATION SERVICES

A. Manufacturer offers and provides pre-installation site survey to certify the proposed system locations and/or provide design assistance for locating systems for photometrics and insolation.

B. Manufacturer offers and provides factory-certified field service engineer to a site visit to ensure proper installation and operation under following parameters:

1. Qualifications for factory-certified field service engineer:
   a. Minimum experience of 2 years training in the electrical/electronic field.
   b. Certified by the equipment manufacturer on the system installed.

2. Make a visit upon completion of installation to:
   a. Verify connection of system components
   b. Validate performance
   c. Train owner or owner's representative on system operation and support

1.10 BATTERY STORAGE AND SHIPPING

A. Battery(ies) approved for shipping via ground, air, or sea.
B. Battery(ies) retains 80% charge or higher from 2 months of shipment.
C. Battery(ies) ship sufficiently charged to operate the light 2 nights without any solar charging.
D. If storing batteries for future installation: must be stored inside above ground level or covered with tarp or other material to prevent weather damage.

1.11 MAINTENANCE

A. Make replacements available for minimum of 10 years from date of manufacture.
B. After-Sales factory direct technical support available to customer 7 days per week.
C. Provide on-site service support within five (5) days anywhere in continental United States.

PART 2-PRODUCTS

2.1 GENERAL – Solar Powered Light Systems: Greenshine Lumina 30 or equal

A. Solar Powered Light System consists of eight (8) components and assemblies: (1) Photovoltaic (PV) Module(s) and mounting structure, (2) Charge Controller/LED Driver, (3) LED Luminaire, (4) Battery(ies), (5) Battery Enclosure, (6) Quick Connect Wire Harnessing with Fuse, (7) Pole and (8) Arm.
B. All Solar Powered Light System components must meet the project conditions and specifications listed in Part 1.

1. Photovoltaic (PV) Module
   a. Construction: 1) Crystalline silicon solar cells 2) Framed in an all-aluminum structure 3) Sealed behind UV stabilized tempered glass 4) Covered by a 20 year power warranty 5) Meet or exceed IEC61215 (if required) 6) UL 1703 Listed (if required) 7) RoHS compliant 8) Harnessing and cabling is 12 AWG THHN stranded wire with over molded insulation with UV stabilized polymer rated for exterior usage 9) Photo Voltaic Panel rated to withstand hailstone impact described in ASTM E1038-93 and surface Cut Susceptibility tests (UL 1703-24) 10) Water-tight wire junction box on PV module
   b. Performance: 1) PV generates adequate power to fully recharge system batteries within three (3) days at the installation location given that minimum insolation is available on those days as defined by NREL (National Renewable Energy Laboratories). 2) PV electrical junction box and connectors (MC4 type) are sealed per IP 65. 3).

2. Charge Controller/LED Driver
   a. Construction: 1) Enclosed within the light system with touch-proof covers to prevent damage 2) Fully resin potted design and suitable for wet locations. 3) The device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference. 4) Approved by a Nationally Recognized Testing Laboratory -TÜV listed to UL 60950 1:2007 and CSA C22.2.60950-1:2007. 5) Charge controller/ LED driver is designed without electrolytic capacitors. 6) All other capacitor devices are de-rated by at least 20° C below the capacitor's maximum

temperature rating under fully-loaded conditions and ambient temperature of 30° C. 7) LED driver must be integrated with the solar charge controller as one unit. 8) Charge controller/ LED driver must be capable of controlling and dimming one or two outdoor LED light systems.
9) Complies with FCC part 15 noise threshold requirements 10) Ten day/night memory averaging to ensure accurate turn on and turn off lights to prevent false response due to weather variations. 11) Over Voltage Protection. 12) LED Short Circuit Protection. 13) Internal PV Disconnect (no external Diodes required). 14) Test button and diagnostic LEDs. 15) Self Test mode. 16) Reverse battery polarity protection. 17) Self calibrating load, timing, and charging circuitry. 18) Minimum 10 year operational life when operating at minimum or maximum rated system environmental specifications (10° C to 50° C at 0 – 100% relative humidity, non-condensing). 19) Designed and tested to withstand electrostatic discharges up to 15,000 V without impairmentper IEC 801-2. 20) Connects to all system components via a quick-connect – latching connector.

b. Performance

1) Operates in the following mode: Dusk to Dawn, adjustable.
2) Perform Power Management to increase a system's run-time even with inclement weather conditions.
3) Charge Controller operates with temperature compensated limits ensuring battery charging algorithm protects battery (ies) from over and under voltage stress a) Charge controller adapts maximum (charged) voltage based on temperature (14V maximum at 21° C).
4) Charge controller prevents discharge below temperature compensated battery Low Voltage Disconnect (LVD) limit (11.5V at 21° C)
5) Operate the light for a minimum of at least five [5] nights without adequate insolation during the day to charge the batteries.
6) Charge controller never discharges more than 20% depth of discharge per night.
7) Charge Controller differentiates between actual sunlight and solar panel illumination from the system's own LED light.

3. LED Luminaire

a. Construction: 1) UV stabilized powder coated. 3) clear lens finish. 4) IP 65 sealed and rain-proof LED chamber. 5) Wet location listed. 6) Dark Sky Full Cutoff. 7) Tilt from 0 to 15 degrees above horizontal for better light dispersion.

b. Performance: 1) LED source designed for 65,000 hour performance with over 70% initial lumen maintenance. 2) LED chamber of the luminaire provides IP65 protection. 3) Use of reflectors or lenses to produce high efficacy lighting patterns. 4) Available in Type III, and Type V photometric distribution. 5) Luminaire shall operate at range of 30 to 45VDC (varies with driver). 6) LED junction temperature does not exceed 100 °C in worst-case site temperature conditions 7) Bright white 35 watt LEDs with a color temperature 4000k. 8) Manufacturer provides relevant .IES files to indicate light dispersion and intensity of LED source. 9) IES file is measured using the IESNA LM-79 testing method for LED luminaires by a laboratory approved by the US DOE's CALiPER program. Scaled photometric testing files are not acceptable. 10) Option to adjust lighting between peak and off peak levels for defined periods of time. 11) Integrated luminaire shield mounting bosses and matching powder coated shields included.

4. Batteries

a. Construction: 1) Sealed valve regulated Gel cell type. 2) Maintenance free. 3) Air shippable. 4) Battery shall be rated "non-spillable" by ICAO/IATA/DOT.

b. Performance 1) Capable of over 2000 cycles. 2) Deep cycle technology.

3) Maintains over 80% of charge after 2 months if left disconnected.
4) Batteries should provide no less than 5 days of back up in no-sun conditions.
5) Warranted for a minimum of five (5) years full replacement, and an option for ten (10) years.

5. Battery Enclosure
   a. Construction: 1) All steel vented enclosure. 2) Steel doors and body powder coated to match the system color. 3) Installed below the solar panels on the panel support structure with a minimum 4" of air-barrier to prevent overheating. 4) Holds up to 4 large-size (100 Ah) batteries to a maximum enclosure weight of 200 lbs. 5) All battery wire terminals and harnessing connect via quick-connect type with keyed connections to prevent miswiring.
   b. Performance: 1) Wire harness is 12AWG THHN wire and finished to prevent accidental shorts. 2) Terminal covers, ring washers, terminals, etc. are non-corrosive non-rusting.
6. Wire Harnessing & Fuse
   a. Wire Harnesses Construction 1) All UV stabilized jacketed wiring and connectors. 2) Quick disconnect connector plugs have latch to ensure secure connection. 3) Provided with in-line fuse and holder in water tight enclosures. 4) Provided in variable lengths to eliminate all field wiring.
7. Solar Lighting Pole, PV Structure
   a. Pole Construction: 1) All aluminum or structural steel extruded decorative 20ft round pole with shepherd hook arm and bell shaped fixture design. Other acceptable designs will be considered. 2) Stainless steel or zinc plated steel hardware for rust-proof and corrosion resistant mounting equipment. 3) Factory supplied hot dipped galvanized and powder coating to match luminaire and battery enclosure precisely if steel construction.
   b. Pole Performance 140 mph wind zone): 1) Independently verified pole strength and base details by licensed Professional Engineer and Test Lab.
   c. PV Support Structure Construction 1) Extruded high strength Aluminum alloy or hot dipped galvanized steel body. 2) Powder coated to match the battery box and luminaire color.
   d. PV Support Structure Performance: 1) Supports up to 3 PV modules for up to 140mph wind zone. 2) Top of Pole mount provides selectable tilt options of 5, 15, 30, and 45 degrees. 3) Side of Pole mount provides selectable tilt options of 15 and 45 degrees.

2.2 SOURCE QUALITY CONTROL

A. Perform full-function testing on 100% of all lighting systems at the factory.
B. Manufactured by an ISO 9001:2008 listed manufacturer

END OF SECTION

Proposal Form

Attachment 3

Supplier: _____

Street Address: _____

City, State and Zip Code: _____

Phone: _____

Email: _____

Contact Name: _____

Federal Tax ID: _____

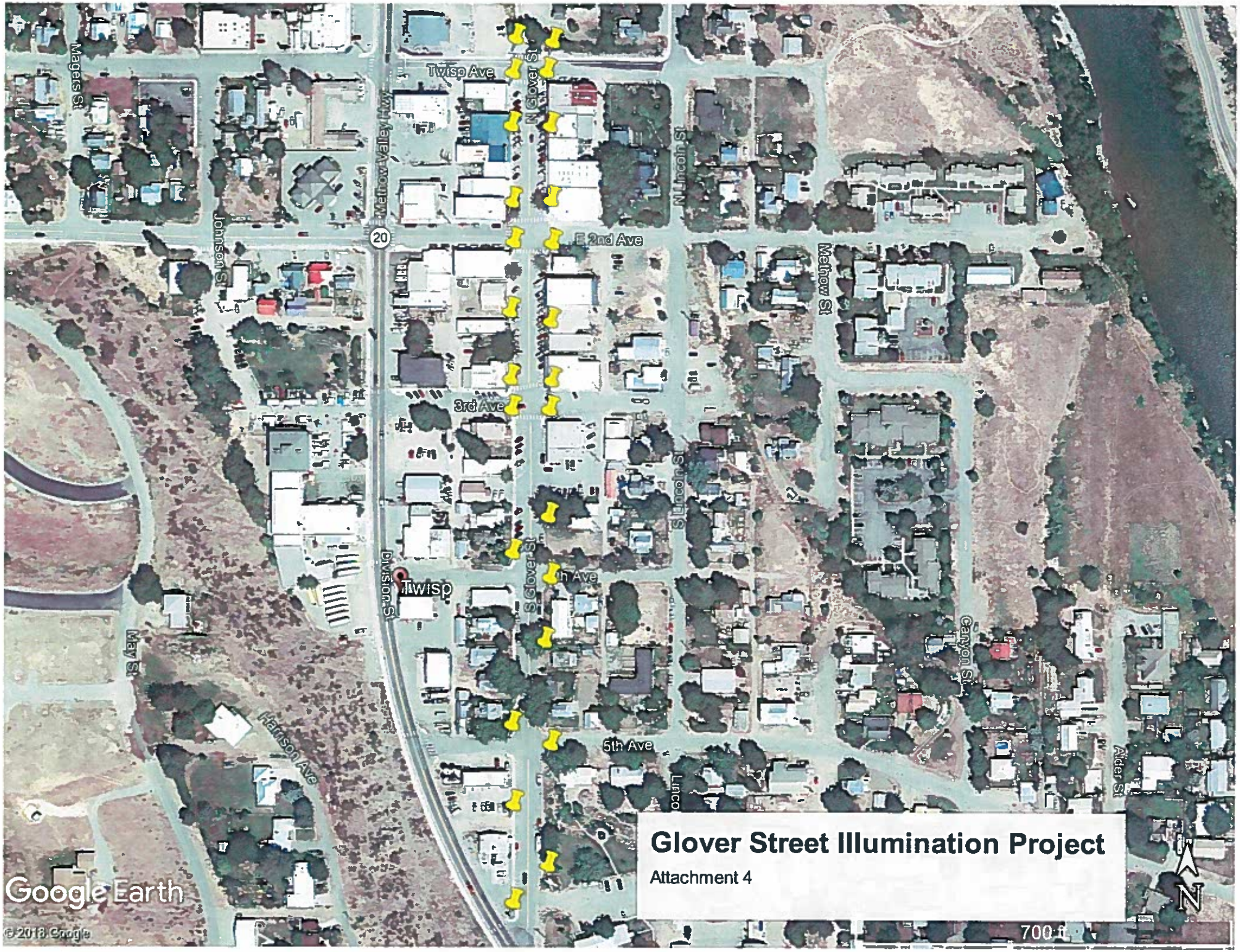
UBI: _____

Attention: Andrew Denham
To: Town of Twisp Public Works
Address: PO box 278 Twisp, Wa. 98856
Project: Glover Street Solar Illumination

Pursuant to and in compliance with your Requests for Bid and the instructions to bidders and other documents relating to. The undersigned has carefully examined the attachments and specifications, as well as the premises and conditions, and hereby proposes to furnish all items and material listed within the documents and specifications of the Requests for Bid for the amount shown.

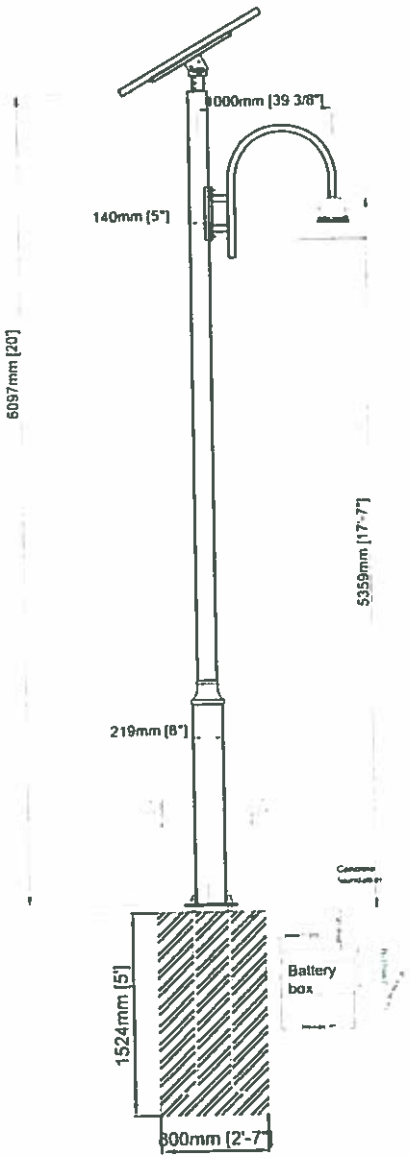
Total Bid Amount including sales tax and shipping		**$**	
Bid Item	**Quantity**	**Unit Cost**	**Total**
Complete solar street light with all appurtenances	**26**	**$**	**$**
		Local Sales Tax (8.5%)	**$**
		Shipping	**$**

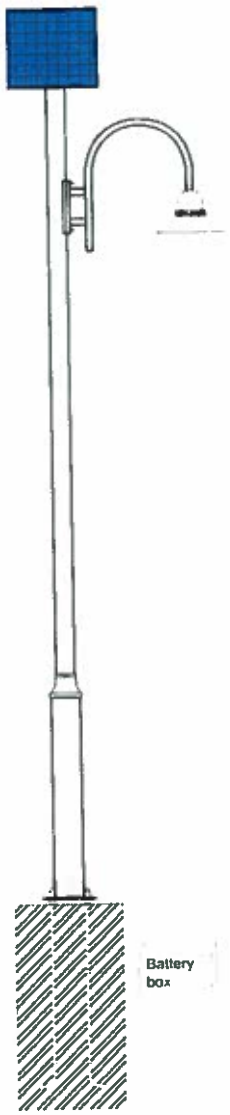
Signature _____ **Date** _____

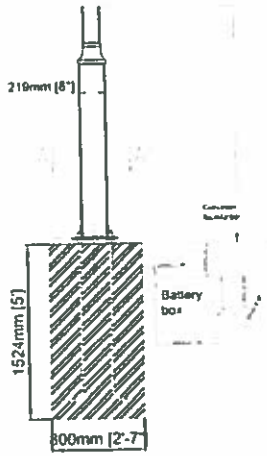


Glover Street Illumination Project

Attachment 4

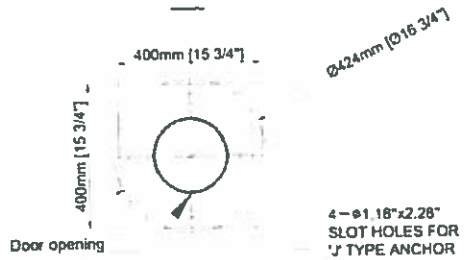






ANCHOR BOLT DETAIL

A-A

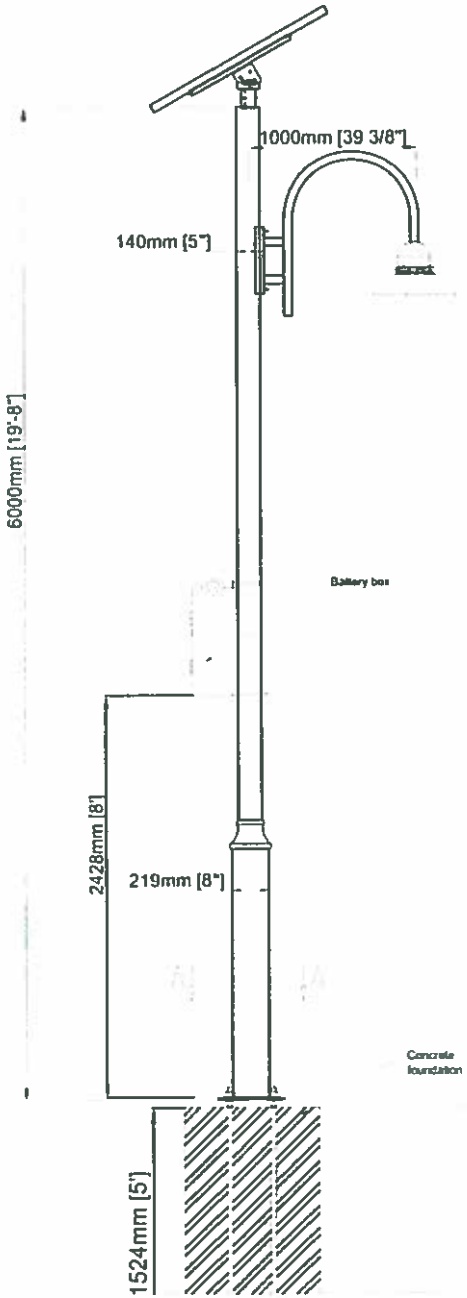


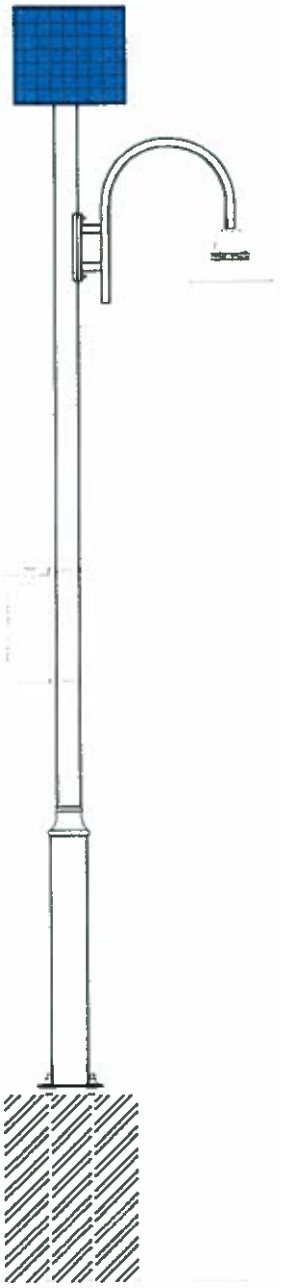
Flange Detail

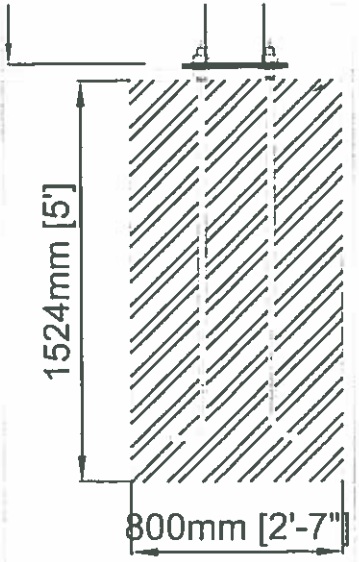
- Foundation dimensions shall be confirmed by a local engineering company. Greenshine New energy will not be held liable for any defect of the concrete foundation due to improper sizing.
- Drawings are based using hot-dipped galvanized steel, powder coating with a thickness of $\frac{2}{3}$".
- *EPA of the system exclude the EPA of the pole, includes the solar panels, brackets, arm and LED fixture and battery box.
- **Wind resistance of the poles are indicative and further customization can be provided.

Tilt angle of the solar panels	15	30	45	60
EPA (ft^2)*	7.66	10.29	12.54	14.27
Wind resistance** (mph)	145	145	145	145

Proposal	Greenshine		
System	Lumina series -Decorative pole - 20' pole -1 panel		
By		Date	

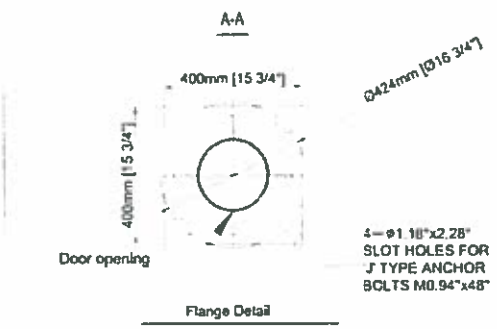






ANCHOR BOLT DETAIL

M1.18"*59" ANCHOR BOLTS WITH
2 HEX NUTS
2 WASHERS PER BOLT



- Foundation dimensions shall be confirmed by a local engineering company. Greenshine New energy will not be held liable for any defect of the concrete foundation due to improper sizing.
- Drawings are based using hot-dipped galvanized steel, powder coating with a thickness of $\frac{3}{4}$".
- *EPA of the system exclude the EPA of the pole, includes the solar panels brackets, arm and LED fixture and battery box.
- **Wind resistance of the poles are indicative and further customization can be provided.

Tilt angle of the solar panels	15	30	45	60
EPA (ft^2)*	6.68	9.31	11.57	13.3
Wind resistance** (mph)	145	145	145	145

Proposal	Greenshine		
System	Lumina series -Decorative pole - 20' pole - 1 panel		
By		Date	