

LANCASTER COUNTY VISITORS IMPROVEMENT FUND
GRANT REQUEST

Name of Organization: Branched Oak Observatory

Contact Person: Michael Sibbersen - CEO or Matthew Anderson - COO

Address/City/State/Zip: 14300 NW 98th St. Raymond, NE 68428

Telephone: (402) 321-9532 Fax: n/a _____ Email: msibbersen2@unl.edu

Organization Status: Non-Profit Association _____ Civic Group _____ Other _____

(If other, please attach explanation)

Applicant Government/organization Federal ID number: EIN: 47-4467998

If tax exempt organization, designate IRS classification: 501(c)3 _____ 501(c)6.

Provide a detailed description of your exhibit/attraction: Branched Oak Observatory (BOO) is a public astronomy education facility 25 minutes northwest of Lincoln, Nebraska. At this unique star park, students of all ages, as well as other members of the general public, have the opportunity to explore the night sky through a variety of telescopes and participate in programming in the astronomy education center. The facility is comprised of the Boller-Sivill Observatory, the La Rue Coffee Astronomy Education Center, the Constructive Enterprises Visitor Center, eight 8-ft² concrete pads, the Prairie Astronomy Club Launch Pad (a 30-ft² concrete pad), and the newly built Everts S. Sibbersen Memorial Observatory (ESSMO). Every month the facility holds a number of on-site and outreach events, with over 2000 visitors each year.

Number of attendees estimated: Out of town 400 attendees per year. Local: 1000 attendees per year.

Check all that apply:

- Expanding and improving any existing visitor attraction.
 Planning or developing such expansion improvements, exhibits or additions.
 Acquiring or expanding exhibits for existing visitor attractions.
 Promotion and advertising costs associated with such exhibits.
 New Construction

Please describe project as indicated above.

Project Description: The ESSMO project began two years ago, and has been a labor of love for Michael Sibbersen. Besides the dome, all major construction costs were financed by the Sibbersen family. The actual construction, however, would not have been possible without the tremendous efforts of all the Branched Oak Observatory volunteers. The facility is all but complete, awaiting only the installation of a main optical instrument. For this size observatory, and for the multiple-purpose nature of the facility (general observation / education / astrophotography / research) we believe the .5 meter CDK500 telescope and L500 Mount from PlaneWave Instruments would be an optimal system. The total cost of the system delivered and installed is \$64,747

Project Start Date _____3/15/19____ Completion Date _____9/15/19

Is this project part of a larger renovation project? _____ Yes

If yes, please describe the entire project:

Current Progress / Funding: The new ESSMO facility, developed by BOO CEO Michael Sibbersen in

memory of his father, is nearly complete. It features a 15 foot Ash (brand) dome, a concrete pier, and a wheelchair-accessible fully-equipped control room. Funded to this point by Michael Sibbersen, the observatory is in need of a primary telescope system. It is our desire to house a research-grade instrument inside this facility.

As it pertains to the grant related project, provide breakdowns of radio and television advertising, showing individual costs, call letters and cities of origin. Also give breakdowns of magazine advertising by individual publications and costs. Similarly, separate the costs for brochures, travel shows by location, billboard advertising, etc. Include target market demographics

We have a very sparse operating budget. We do not charge visitors for visiting the property or for our large events. Our only expenditures, currently covered by donors and volunteers, are for the insurance of the property and facilities for large events such as port-a-potties, tables, food, and signs. We generally only advertise on our Facebook page, where we have over 2500 followers, in local online activity calendars, and free radio spots for events. We also have volunteers speak to local community groups about various topics like on solar observing, meteorites, eclipses, and other astronomical current events.

Do you anticipate submitting future applications for projects relating to this project? Yes

Total projected budget (attach detailed budget)
Total Revenue \$0 Total Expense **\$64,747**

The grant request is for the amount of the purchase and installation of a new large telescope. We do not expect revenue from the general public because we do not charge for use of the facilities. It is run solely by donations and volunteer efforts.

How will your project impact new visitor recruitment and lodging tax revenues?
A new large telescope would bring additional visitors and would be used for astronomical research. We anticipate having more events highlighting current astronomical events such as comets, lunar eclipses, meteor showers, and others if we had the new equipment to furnish the domed observatory.

Estimated annual visitors: Local: 1500 Outside of Lincoln: 1000

Estimated Annual economic impact of your facility and/or project based on lodging tax use
(Use multipliers listed below)

Is this based on annual use of the facility or for a specific event/exhibition? Annual Use

of hotel overnights utilized: 200 x \$350. (* Multiplier – see below *)

- * National/Regional event Multiplier - \$375 per night
- * State event - \$350 per night
- * Local event (no overnight stays expected) - \$245 per night

TOTAL ECONOMIC IMPACT BASED ON FORMULA: \$70,000

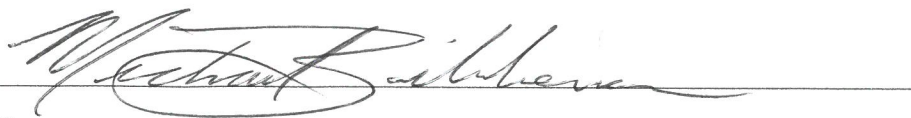
Is this grant request in addition to other project related grant requests? None that are current.

If yes, then list other grant requests _____

Grant amount requested from Visitors Promotion Committee

\$64,747

Signature of Applicant

A handwritten signature in black ink, appearing to read "Michael F. Silberman", written over a horizontal line.

Date 1/27/19

Return your completed Application to:

Lincoln Convention and Visitors Bureau
Attn: Jeff Maul, Executive Director
1128 Lincoln Mall, Suite 100
Lincoln, NE 68508

For more information:
(402) 434-5343
jmaul@lincoln.org

Project description and budget for telescope at Branched Oak Observatory

Requesting funds for the purchase and installation of mount and telescope at Branched Oak Observatory

L500 Direct Drive Mount / 0.5 m CDK 500 Plane Wave Telescope - \$50,000
Motorized Focuser - \$1000
Focuser Accessory - \$800
Delta T heater system - \$1000
Light Shroud - \$150
Visual Adapter - \$160
Dovetail Bar - \$349
Keller EZ Saddle - \$349
Ascend Mount Balancing Accessory - \$299
Equatorial Wedge for L500 - \$3000
Crating and Shipping – \$2200
Pier Plate Design - \$100
Installation - \$5340

Total installed - **\$64,747**

Budget for Everts S. Sibbersen Memorial Observatory (not including telescope)

Donated Ash Dome = \$15,000
Main observatory building and control room = \$15,000

Total spent so far - **\$30,000**

Annual Operating Budget for Branched Oak Observatory (2018)

Insurance for property per year = \$2460
Communication costs (internet) = \$1200
Grounds keeping costs = \$600
Port-a-potty rental = \$600
Office and educational supplies = \$100
Non-profit of the Midlands membership = \$50

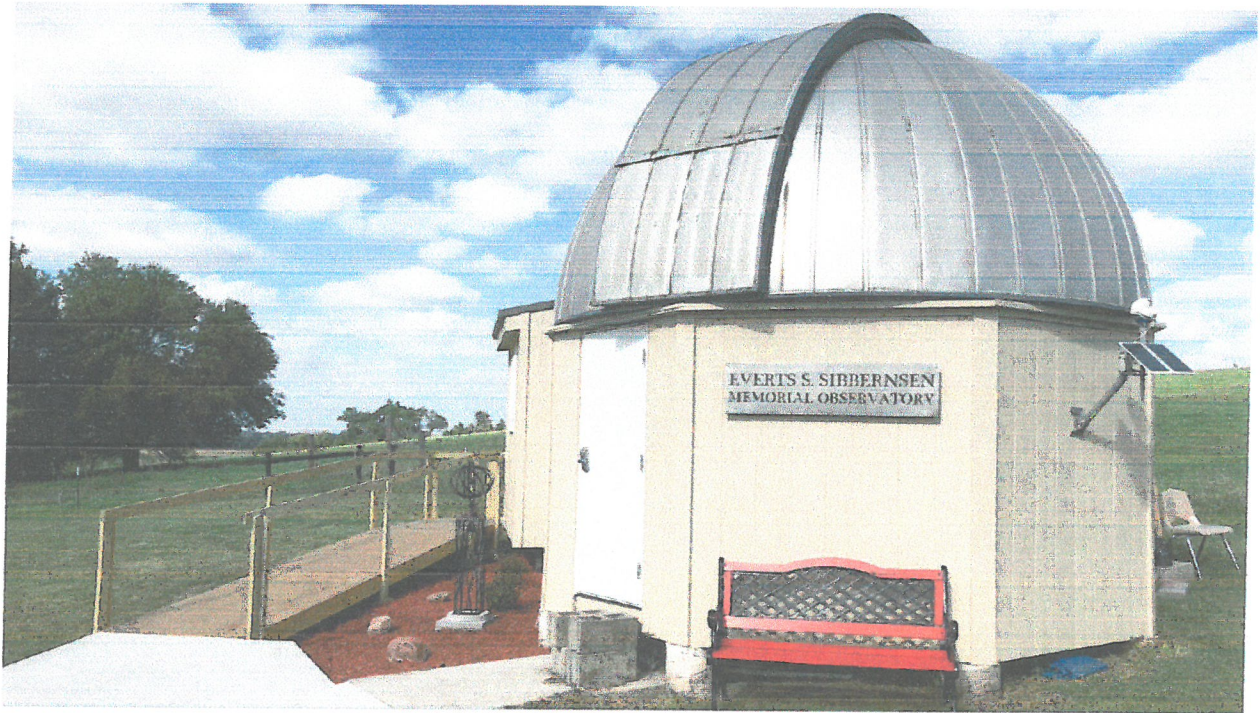
Total baseline operating budget per year = **\$5010**

Note: Some large events, such as our annual Star-B-Q, have expenses totaling approximately \$5000 including pizza, raffle items, rented tables, signage, and golf carts for transportation. This has been completely funded through individual and corporate donations in the past.

Marketing Budget

\$0

All marketing is done on Facebook or during free radio spots or free community calendars. Some posters and signs have been made for previous events through donations from a local sign company.



Telescope Components & Costs

Project: Branched Oak Observatory
14300 NW 98th St.
Raymond, NE 68428
info@branedoakobservatory.com

January 27, 2019
Version: 1.0

INTRODUCTION.....1

WHAT WE DO1

SALES1

CONSULTING1

DESIGN2

INSTALLATION & TRAINING2

PROJECT MANAGEMENT REFERENCE SITES.....3

PRIVATE RESIDENCE, UTAH, USA3

AMERICAN PUBLIC UNIVERSITY SYSTEM, WEST VIRGINIA, USA3

PRIVATE RESIDENCE, TEXAS, USA.....4

UC BERKELEY, CALIFORNIA, USA4

VENDOR EXPERIENCE.....5

PLANEWAVE CDK20/L-500 MOUNT6

TELESCOPE OFFSET.....6

PIER ADAPTER PLATE6

REFRACTOR MOUNTING7

TELESCOPE SYSTEM8

PLANEWAVE CDK500 TELESCOPE SYSTEM8

TELESCOPE INSTALLATION10

INTRODUCTION

Observatory Solutions specializes in professional observatory solutions for astronomy enthusiasts. We provide observatory project management services — from determining observatory and equipment through sales, installation, and hands-on training.

WHAT WE DO

We've successfully managed over 50 observatory project installations across the U.S. and the world, developing customized solutions that integrate site design, observatory style, and equipment configuration. Our goal is to manage the observatory project from start to finish, providing a turnkey solution for our customers.

SALES

We are an authorized dealer for quality observatories, telescopes, mounts and piers. Our team works closely with manufacturers and vendors to schedule and coordinate delivery dates for your observatory project according to your construction timeline. The observatory workflow process generally takes several months, so be sure to contact us during your initial concept phase or the very beginning of your observatory project so we can do our best to complete your installation by your expected target date.

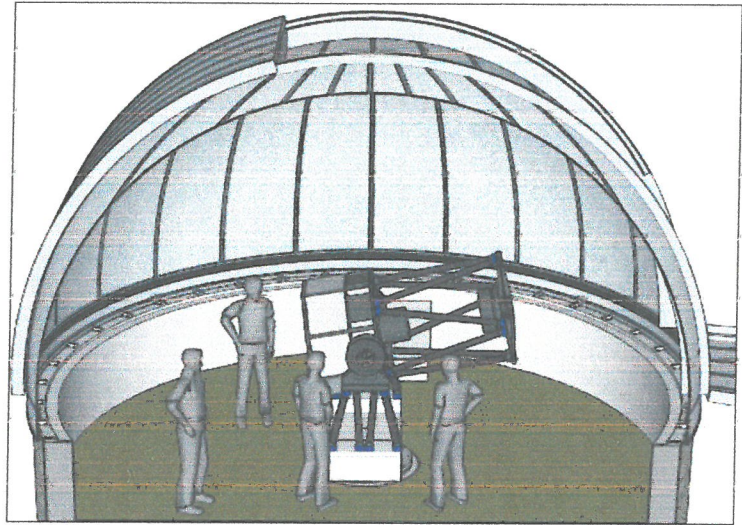
CONSULTING

With our knowledge and expertise in this highly specialized field, we can advise you on your observatory site, dome or roll-off roof selection, and telescope equipment. We can also assist you with remote viewing and astrophotography.

We also have the construction experience to team with your architect or builder. We perform physical site reviews and construction plan reviews to ensure that building specifications meet appropriate requirements for the observatory and telescope system that will be installed .

DESIGN

We provide general modeling of the observatory to ensure the desired equipment works within the space, to calculate offsets and height for the telescope pier and to determine the rough dimensions for the observatory structure. We maintain 3D models of the products we sell which allows us to provide accurate measurements to architects and builder. It also gives the customer a feel for the observatory when finished and helps us prepare for a smooth installation of observatory and equipment.



INSTALLATION & TRAINING

We provide supervision and guidance of your crew to properly assemble the dome and install the electronic components. We thoroughly test the dome, making sure the rotation and shutter operate smoothly in both manual and mechanized modes. We also install the pier, mount, and telescope, and perform a rough polar alignment of the system before the telescope is mounted. Once the telescope is installed, we test the entire system and complete the final polar alignment. We can also test the dome's automation software and its integration with your telescope system.

We offer personalized on-site training that includes how to operate and maintain your dome, and how to use your telescope and accessories, including astrophotography equipment.

PROJECT MANAGEMENT REFERENCE SITES

Below are selected customers where Observatory Solutions has or is providing complete project management services. A broader list of projects is at: <http://www.observatorysolutions.com/projects.php>

PRIVATE RESIDENCE, UTAH, USA

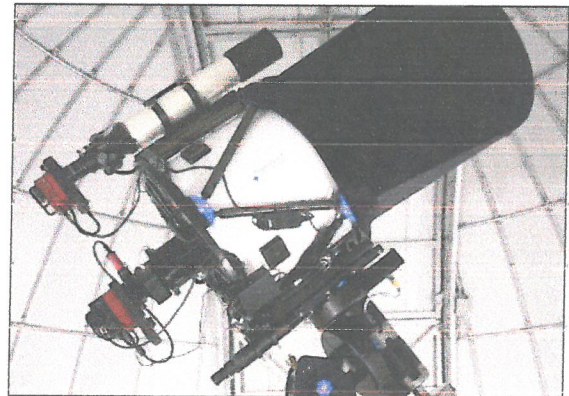
The observatory will be part of new home construction that started in 2016. The observatory consists of a 24.5' Ash dome and a PlaneWave 1-meter telescope. The Ash Dome was installed in November, 2017. The 1-meter telescope installation is scheduled for Fall, 2018.

Observatory Solutions Project Page: <http://www.observatorysolutions.com/jc-ut.php>



AMERICAN PUBLIC UNIVERSITY SYSTEM, WEST VIRGINIA, USA

The American Public University System (APUS) project was completed in August, 2015. This project includes a 6.9 m (22.5') Ash Dome, PlaneWave CDK24 (0.61 m) telescope, PlaneWave A200 German Equatorial Mount, custom designed pier by Observatory Solutions, dome automation through Observatory Solutions, Santa Barbara Instruments Group (SBIG) 16 megapixel CCD camera with 7 position filter wheel and off-axis guider and a SBIG 8.3 megapixel CCD with 8 position filter wheel.



Observatory Solutions Project Page: <http://www.observatorysolutions.com/apus.php>

PRIVATE RESIDENCE, TEXAS, USA

This private residence project was completed in July, 2014. This project includes a 3.8 m (12.5') dome with automation, PlaneWave CDK700 (0.70 meter) Alt-Az telescope system, Tele Vue 12.7 cm (5 inch) refractor and a Santa Barbara Instruments Group 8.3 megapixel color CCD camera. Observatory Solutions performs a minimum of 6 observatory maintenance trips per year, providing ongoing equipment and software updates. We also operate the observatory for all special events.



UC BERKELEY, CALIFORNIA, USA

The observatory was part of the Campbell Hall replacement project that started in 2013. Observatory Solutions installed the dome in December of 2014 and came back onsite in January 2015 for installation of the pier, installation of the mount and telescope, setup of the dome and telescope automation system, system configuration and testing, and observatory training.

The observatory consists of a Pier-Tech 16.5' walk in dome with automation system. Mathis Instrument 500/750 fork mount with high resolution encoders on both RA and Dec axes, PlaneWave CDK17 (0.43m) telescope with Hedrick focuser and Delta-T dew prevention system and PlaneWave steel pier.



Observatory Solutions Project Page: <http://www.observatorysolutions.com/ucb.php>

VENDOR EXPERIENCE

Observatory Solutions is a dealer for, and has extensive product knowledge of, the following vendors:

Ash Dome: Observatory Solutions is an authorized dealer for Ash Domes and has extensive knowledge of Ash Dome assembly, operation and automation system.

PlaneWave Instruments: Observatory Solutions is an authorized dealer for all PlaneWave products and has experience in installing and configuring PlaneWave mounts and telescopes.

AstroSysteme (ASA): Observatory Solutions is an authorized dealer for all ASA products and has experience in installing and configuring ASA mounts and telescopes.

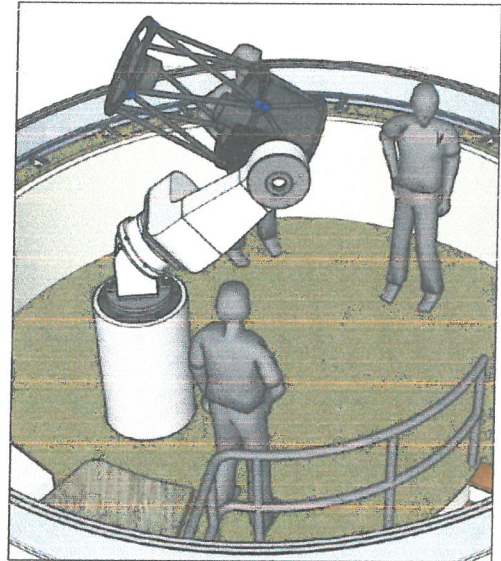
Santa Barbara Instruments Group (SBIG): Observatory Solutions is an authorized dealer for SBIG and has extensive knowledge of SBIG CCD cameras, filter wheels, off-axis guiders and the software for operating the cameras.

Astrodon Imaging: Observatory Solutions is an authorized dealer for all Astrodon filters and other imaging products.

PLANEWAVE CDK20/L-500 MOUNT

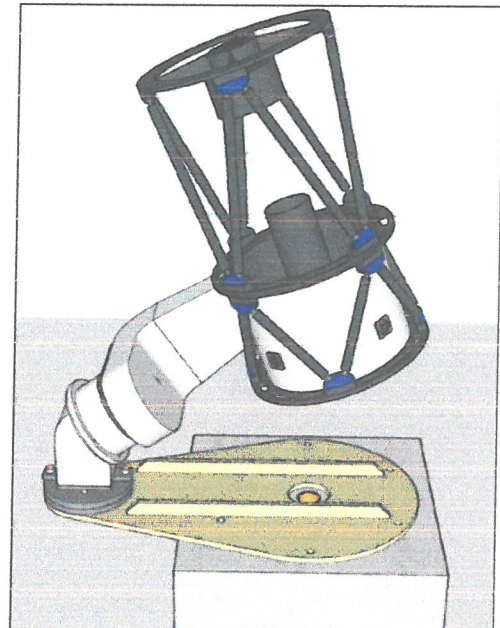
TELESCOPE OFFSET

The CDK20/L-500 telescope system that is attached to an equatorial wedge will require the telescope pier be offset to the south for the optical center of the telescope to be in the center of the dome. A rough calculation for the Branched Oak Observatory puts the offset at 31.5".



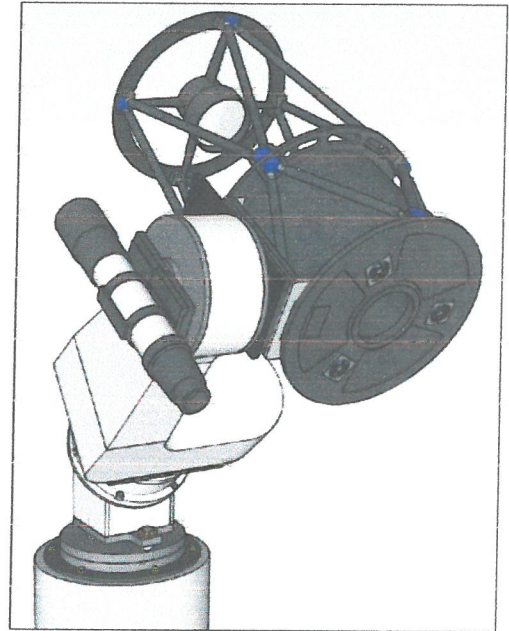
PIER ADAPTER PLATE

If there is a pier already in place in the center of the dome, the offset can be accomplished with the use of a pier adapter plate. The 3D rendering to the right shows a plate design Observatory Solutions did for Prairie View A&M University to offset a CDK24/L600 setup.



REFRACTOR MOUNTING

With the single fork arm L-Series mounts from PlaneWave, an additional telescope can be mounted on the opposite side of the fork arm. The 3D rendering to the right shows a CDK20/L500 setup with a 100mm refractor.



TELESCOPE SYSTEM

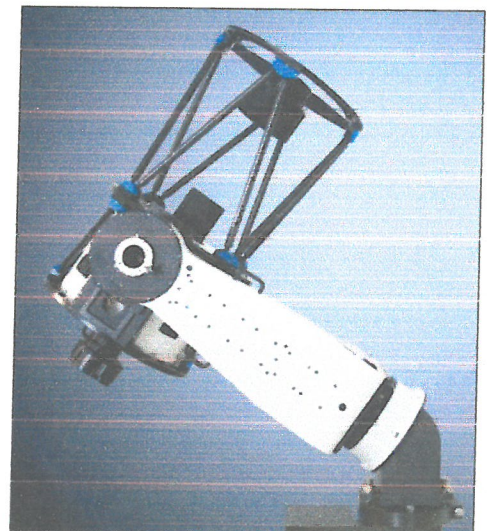
PLANEWAVE CDK500 TELESCOPE SYSTEM

The CDK500 Telescope System combines the CDK20 (0.51 m) f/6.8 astrograph telescope with the L-500 direct drive mount.

The PlaneWave Instruments CDK20 is a 20 inch (0.51 m) f/6.8 Astrograph telescope with Corrected Dall-Kirkham (CDK) optics. The telescope has a dual truss design, with 3 cooling fans for the back of the primary mirror. The CDK20 covers a 52 mm field of view without any field curvature, off-axis coma, or astigmatism. The CDK20 now comes standard with low expansion Fused Silica mirrors and built-in dew heaters for both primary and secondary mirrors.

The PlaneWave L-500 Direct Drive mount combines versatility, simplicity and affordability into a compact stand-alone mount. In its Alt/Az configuration it is considerably more compact than its equatorial counterpart, allowing a larger telescope to fit in a smaller enclosure. The mass it takes to make a rigid Alt/Az mount is substantially less, leading to cost savings. Unlike German Equatorial Mounts, there are no meridian flips to deal with, and no large protruding counterweights to create a dangerous hazard in a public observatory. This mount is designed with zero backlash and zero periodic error, virtually silent motion and slew speeds of up to 50 degrees per second. It comes standard with high resolution encoders on each axis for precise positioning.

The L-500 Direct Drive mount can be Alt-Az or Equatorial mounted.



Description	Qty	Cost (\$)	Total (\$)
CDK500: CDK20 (0.51m) / L-500 MOUNT COMBINATION			
PlaneWave CDK20, 20 inch (0.51 m) f/6.8 Corrected Dall-Kirkham Astrograph telescope. Comes standard with Fused Silica mirrors and dew heater plates. L-500 Alt/Az Direct Drive Mount.	1	\$50,000	\$50,000
https://www.observatorysolutions.com/products/cdk500.php			
Hedrick Motorized Focuser	1	\$1,000	\$1,000
Electronic Focuser Accessory	1	\$800	\$800
Delta T System	1	\$1,000	\$1,000
CDK20 Light shroud	1	\$150	\$150
Visual adapter for eyepieces	1	\$160	\$160
Dovetail Bar: Mounting guide scope to top of CDK20	1	\$349	\$349
Keller EZ-Saddle: Mounting a refractor, with 4" Losmandy plate, to the other side of the fork	1	\$349	\$349
Ascend Mount Balancing Accessory	1	\$299	\$299
Equatorial Wedge: For latitudes 37°-43°	1	\$3,000	\$3,000
		SUBTOTAL:	\$57,107
CDK20 Crating charge			\$350
L500 Crating charge			\$350
Shipping (Estimate)			\$1,500
		TOTAL:	\$59,307
		DOWN PAYMENT (50% of SUBTOTAL):	\$28,554
		Current Lead Time: 4-6 months	
Additional Components			
Pier Adapter Plate Design	1	\$100	\$100

TELESCOPE INSTALLATION

Description	Total (\$)
TELESCOPE INSTALLATION	
<p>Observatory Solutions onsite installation of the telescope system: Cabling all electronics on the telescope system; Installing power components on the telescope system; Optics Collimation; Precise polar alignment of the telescope system; Mount modeling; Testing of the completed telescope system; Onsite training; Documentation.</p> <p>Observatory Solutions will require additional help for installation of the telescope system. The cost of the additional help is not included in the costs shown to the right.</p>	\$2,600
USB2 Extender: Allows control of all connections through a single connection over distances greater than 16'	\$440
Estimated travel expenses (Flight, Accommodations, Food, Transportation)	\$2,300
TOTAL:	\$5,340

INTERNAL REVENUE SERVICE
P. O. BOX 2508
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: JUL 17 2015

BRANCHED OAK OBSERVATORY
14300 NW 98TH ST
RAYMOND, NE 68428-0000

Employer Identification Number:
47-4467998
DLN:
26053591001535
Contact Person: ID# 31954
CUSTOMER SERVICE
Contact Telephone Number:
(877) 829-5500
Accounting Period Ending:
December 31
Public Charity Status:
509(a) (2)
Form 990/990-EZ/990-N Required:
Yes
Effective Date of Exemption:
March 25, 2015
Contribution Deductibility:
Yes
Addendum Applies:
No

Dear Applicant:

We're pleased to tell you we determined you're exempt from federal income tax under Internal Revenue Code (IRC) Section 501(c)(3). Donors can deduct contributions they make to you under IRC Section 170. You're also qualified to receive tax deductible bequests, devises, transfers or gifts under Section 2055, 2106, or 2522. This letter could help resolve questions on your exempt status. Please keep it for your records.

Organizations exempt under IRC Section 501(c)(3) are further classified as either public charities or private foundations. We determined you're a public charity under the IRC Section listed at the top of this letter.

If we indicated at the top of this letter that you're required to file Form 990/990-EZ/990-N, our records show you're required to file an annual information return (Form 990 or Form 990-EZ) or electronic notice (Form 990-N, the e-Postcard). If you don't file a required return or notice for three consecutive years, your exempt status will be automatically revoked.

If we indicated at the top of this letter that an addendum applies, the enclosed addendum is an integral part of this letter.

For important information about your responsibilities as a tax-exempt organization, go to www.irs.gov/charities. Enter "4221-PC" in the search bar to view Publication 4221-PC, Compliance Guide for 501(c)(3) Public Charities which describes your recordkeeping, reporting, and disclosure requirements.

Letter 5436

Letter of Authorization/Intent from Branched Oak Observatory Board

Date: 1/27/19

Lincoln Convention and Visitors Bureau
Attn: Jeff Maul, Executive Director
1128 Lincoln Mall, Suite 100
Lincoln, NE 68508

Dear Mr. Maul,

This letter certifies that the Board of Directors of Branched Oak Observatory has reviewed and approved the enclosed application to the Lancaster County Visitors Improvement Fund Grant.

The Board of Directors is committed to inform and inspire the public in Lincoln about astronomy by sharing the wonders of the night sky in an entertaining and educational way.

Although the Branched Oak Observatory is primarily a resource for the general public, we aim to provide STEM opportunities for area K-12 students in an effort to encourage the next generation of professional astronomers, scientists, and engineers. Further, we plan to work with the University of Nebraska system as well as other colleges in the area to offer observational and research opportunities for undergraduate astronomy students.

The CEO of Branched Oak Observatory attests as an applicant that the organization meets all of the eligibility requirements.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Sibbersen", with a long horizontal flourish extending to the right.

Michael Sibbersen / CEO
Lecturer of Astronomy at UNL
Board of Directors