



# **An Observatory on the UNC - Asheville Campus**

# Location

» The observatory will be located uphill and north of the Reuter Center at the end of UNC – Asheville's "road-to-nowhere" (Nut Hill Road).



# Location

- » With some tree removal, this location is a great in-town, on-campus site for an observatory.
- » It is one of the highest spots on campus and removed from the rest of the campus structures.
- » Although this is not a dark-sky site, it is very convenient for instruction and outreach. There are minimal outdoor lights in the immediate area.
- » Some infrastructure is already in place at the site – thus lowering construction costs.
- » There is limited parking at the site, but the parking lot at the Reuter Center will be used for shuttle pickup to make the short uphill trip to the observatory.



# History

- » This site was at one time the planned location of a campus conference center – back in the mid 1990s.
- » There was much opposition to the conference center from the Asheville community – so much that the project was abandoned.
- » What was left is UNC-Asheville's “road-to-nowhere”.
- » It will soon be the “road-to-somewhere” – the road to solar system and the stars and galaxies above.






# History

- » This will be Asheville's first public observatory!
- » We're long overdue!
- » The idea for an Asheville public observatory began in 2004 when a local amateur astronomer approached The Health Adventure about including observational astronomy as part of their planned Momentum Science Center.
- » UNC-Asheville was to partner with Momentum in this project primarily by providing a site on the school's campus.
- » The Momentum Science Center went bankrupt in early 2011.



# Partnership — enter the local astronomy club

- » In the spring of 2011 the Astronomy Club of Asheville (**ACA**) approached UNC-Asheville officials about becoming the new partner in making the observatory plans a reality.
- » ACA is an IRS 501(c)3 non-profit and would provide funding for the construction of the observatory.
- » UNC-Asheville would provide the site and cover all the operating expenses of the facility.
- » The two entities would share use of the facility.
- » A partnership for making the observatory a reality is formed! 

# Funding

- » The Astronomy Club of Asheville (**ACA**) obtained grants from the Community Foundation of WNC that were distributed to UNC-Asheville for the construction of the facility.
- » UNC-Asheville used its own grant funds to purchase telescope equipment for one of the two primary telescope piers to be housed at the observatory.
- » ACA will purchase the telescope equipment for the other telescope pier.
- » The project is now ready to move into the full design phase. >

# Design Team

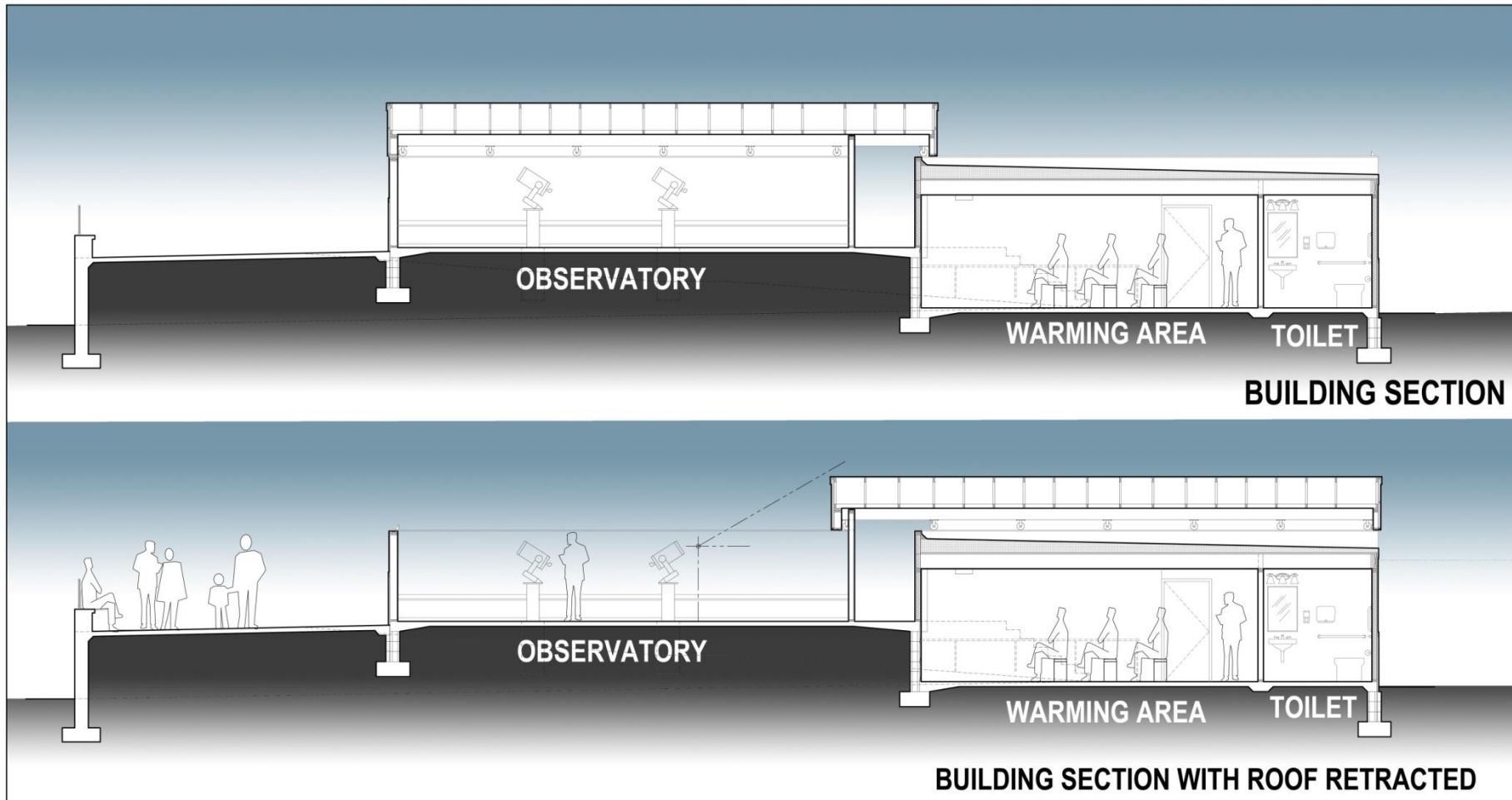
- » An architect, Maggie Carnevale, from the local firm Padgett & Freeman, led the design process.
- » Representatives from the UNC-Asheville administration as well as 3 instructors from the Physics Department, led by Brian Dennison, Ph.D., were part of the design team.
- » The Astronomy Club of Asheville was also represented on the design team.
- » Rounding off the group were a few staff from the university's plant construction and operations division.





# Design - the roll-off-roof

- » A motorized roof removal system will be used for this approximately 20' x 30' observatory room.



# Design – why not a dome



# Design – why not a dome

- » The classic observatory dome design only allows you to view a very narrow piece of the sky while at the telescope.
- » Education and outreach are much easier when you can see the whole-sky.
- » A walk outside the dome is necessary to get a whole-sky view.
- » The dome design also limits the number of folks who can be “inside” the observatory building.
- » Each independent telescope instrument would need its own dome. >

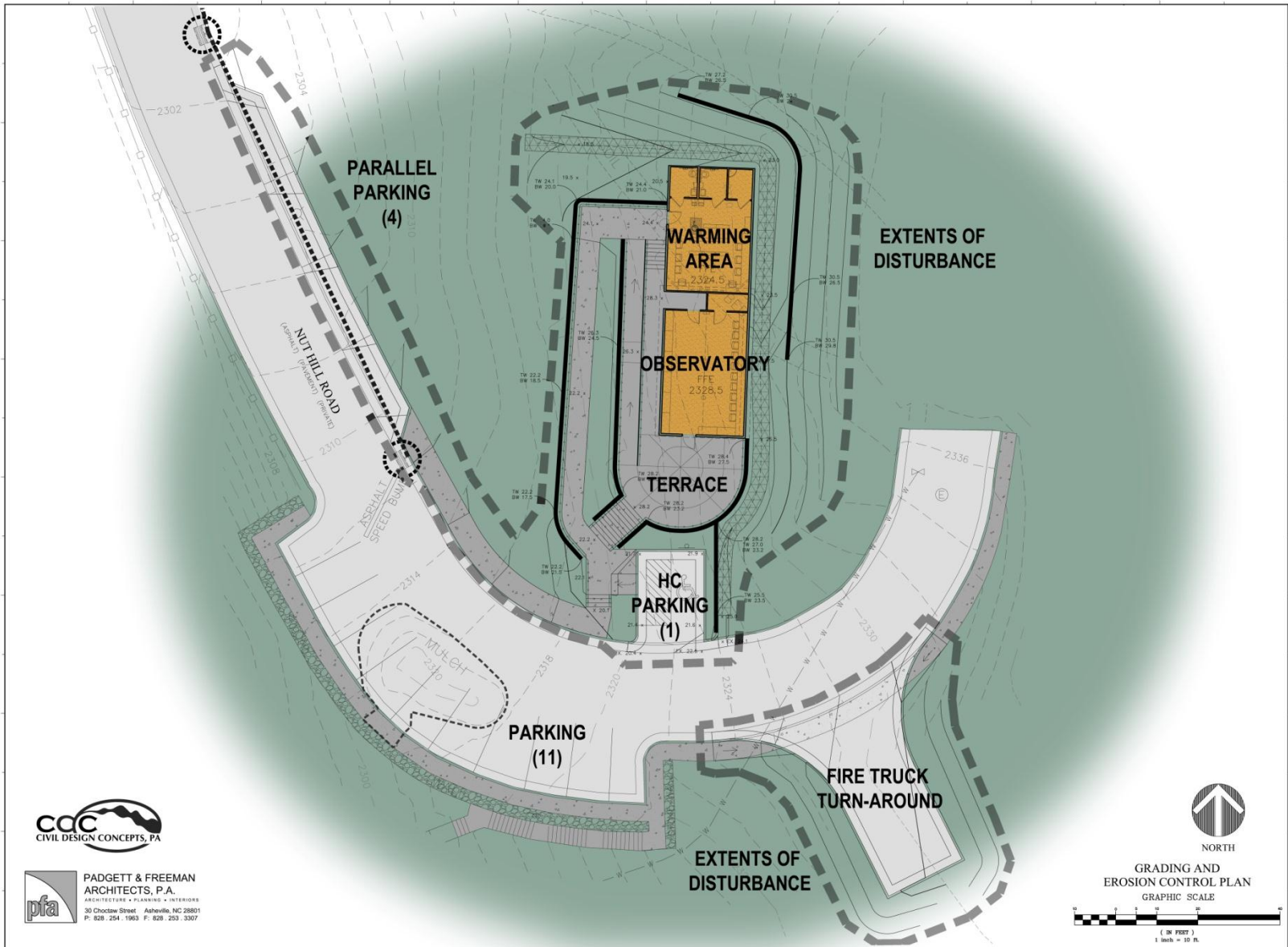
# Design

- » Other significant design elements include bathrooms and a combination warm room and small class room attached to the observatory structure.
- » The classroom will have audio/video equipment with live “feeds” from each of the two telescope piers.
- » There will be a patio area outside the observatory where additional portable telescopes may be set up, and visitors/students may gather.
- » Although the available space will be limited, there will be some storage for portable telescopes at the observatory.



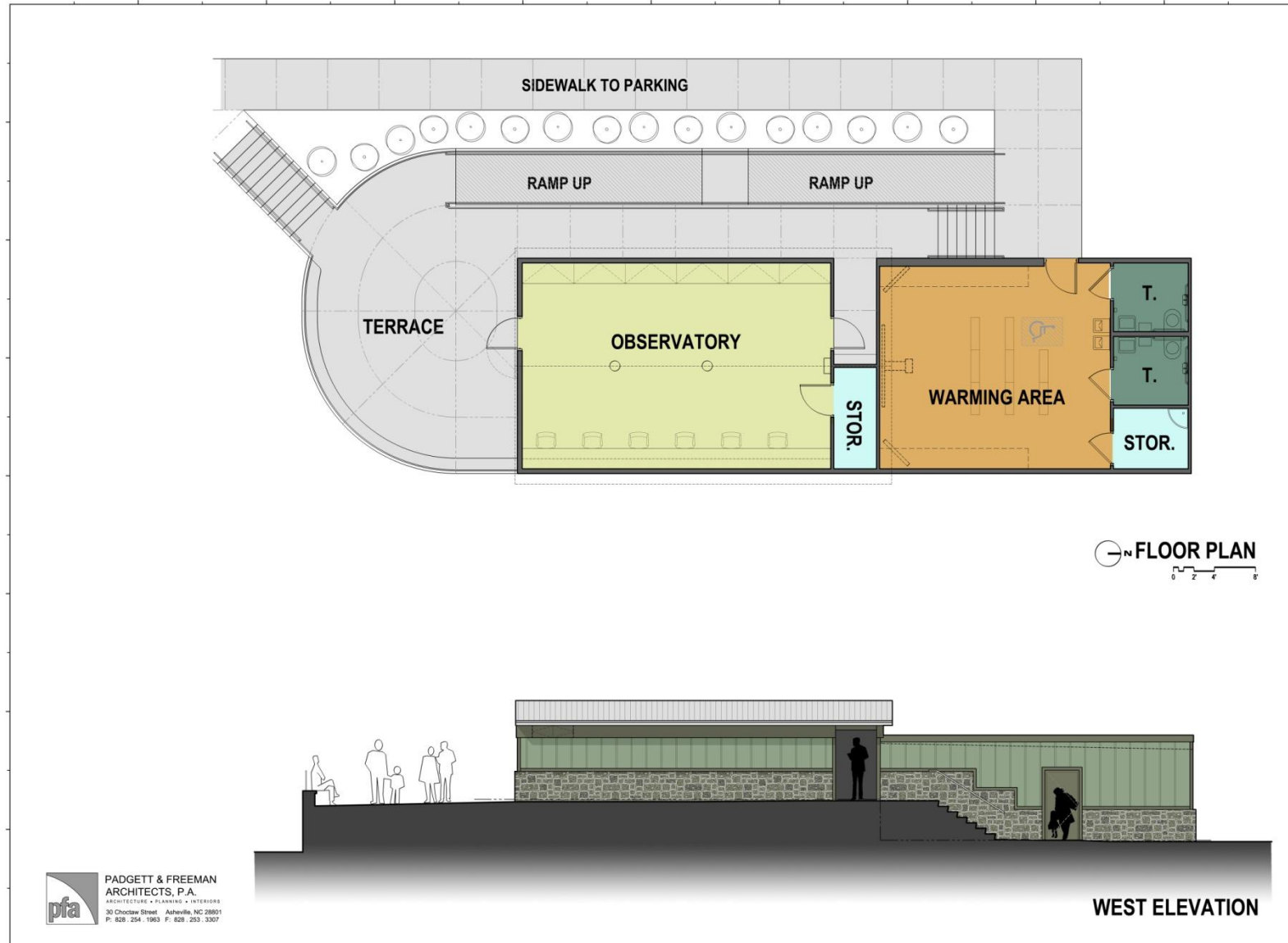


# Design – Site Plan





# Design - the Structure



# Equipment - telesocpes

- » There will be two telescope piers – one dedicated for university use and one dedicated for ACA use.
- » Both piers will support two tandem telescopes for a total of 4 instruments.
- » The primary instrument on each pier will be a 14-inch aperture f/11 Celestron Schmidt-Cassegrain design telescope.
- » Each primary telescope will have a side-by-side mounted apochromatic (APO) refractor telescope for wider field viewing and imaging.



# 2 Primary Telescopes

» 14-inch aperture Celestron Schmidt-Cassegrain f/11



**Model Edge HD**



# APO Refractor

- » One of the refractors is a 180mm aperture f/7 Telescope Engineering Company instrument.



# Another APO Refractor

- » The other refractor is a 150mm aperture f/7 Takahashi instrument.





# Equipment – the Mounts

- » A most important part of the observatory is the mount that will be installed atop each telescope pier.
- » The mount is the CPU for operating the telescopes – it controls both the pointing and tracking accuracy of the instruments.
- » The new observatory will use 2 Paramount ME robotic, German equatorial mounts from Software Bisque – a Colorado company.
- » These mounts, when properly polar-aligned with the Earth's axis of rotation for the Asheville site, will provide a dependable, stable and accurate platform for the telescopes.



# Equipment – the Mounts

The mount sits between the telescope and the pier.

The mount and hence the telescope are controlled by software off a laptop computer.



# Equipment – other telescopes

- » Both the UNC-Asheville Physics Department and the ACA will have several portable telescopes stored at the facility to be used on the patio area for both education and outreach, especially during nights with larger crowds.



# What will you see?

- » The observatory's location is in large part a matter of convenience for the students at UNC-Asheville and the Asheville community at-large.
- » You will reach more folks with STEM (Science, Technology, Engineering, and Mathematics), and specifically astronomy, education when the learning experience is nearby.
- » But can you observe much from a site in town with the issue of light pollution, aka “skyglow”?
- » Surprisingly, yes!





# What will you see?

- » Even in light polluted skies, you can easily observe all 8 planets of our solar system, some asteroids and comets, and the Sun and Moon.
- » The observatory will have a few portable **solar telescopes** available for daytime viewing of our nearest star in both “Hydrogen-Alpha” and “white” light.
- » In terms of deep-sky-objects (DSOs) – objects out beyond our solar system – there are many that will be easily visible from the observatory site.





# What will you see?

- » These DSOs include many open (galactic) star clusters as well as some of the brighter globular star clusters.
- » Furthermore some of the brighter planetary and star forming nebulae as well as nearby galaxies like the Andromeda will be easily visible.
- » But the starry glow of our own Milky Way Galaxy will only be visible on those few late nights with great sky transparency.
- » Many of the colorful binary and multiple star systems in our galaxy should also be easily visible.



# What will you see?

- » Because an astro-video camera will be used at times on one of the telescopes, many of these objects, that are too difficult to see visually through the telescope eyepiece(especially in the Asheville skies), will “pop-out” on the video monitor.
- » UNC-Asheville will use a CCD camera for astro-imaging with some of the telescopes.
- » Optimistically the observatory will open in the spring or summer of 2013.



# Who will use it?

- » The observatory will be a shared-use facility.
- » UNC-Asheville's astronomy programs will use it for their students, education, research and outreach.
- » The Astronomy Club of Asheville (ACA) will use it for outreach and public star gazes. Private use of the observatory for personal entertainment is not permitted.
- » Osher Lifelong Learning Institute (OLLI) will have opportunities to enjoy the facility as well.
- » Public openings for school and other groups will be promoted as part of STEM education and outreach.



# Scheduling/Operation

- » An advisory committee, comprised of folks from UNC-Asheville and the ACA, will make recommendations on scheduling and other operational issues regarding the observatory.
- » Only personnel who have completed training certification on the observatory's use and security will be permitted to operate the facility.
- » Training will be provided for docents to operate the observatory – dates and times to be determined.



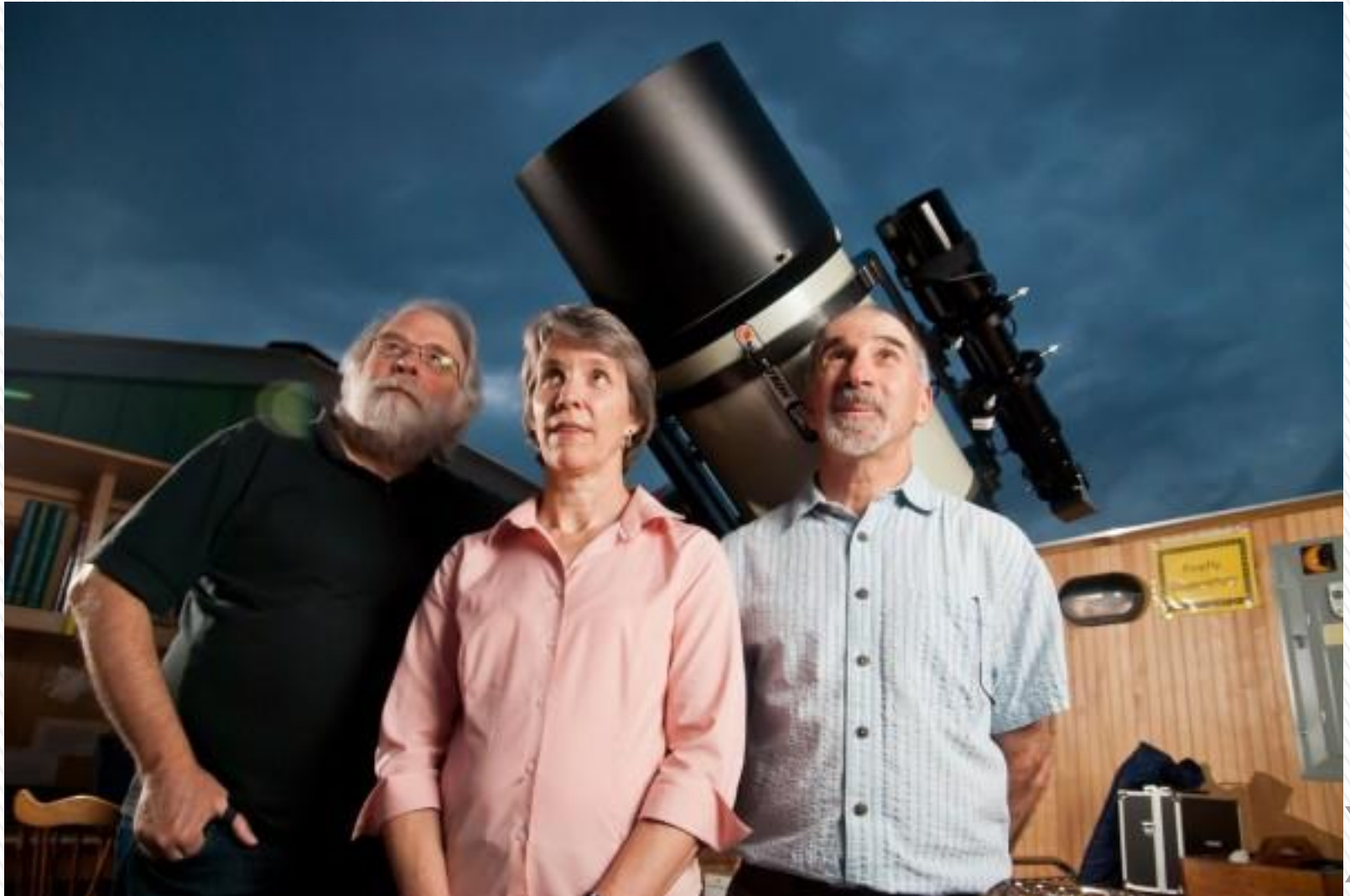
# Scheduling/Operation

- » Ideally there will be a webpage or more where the observatory schedule can be viewed.
- » We hope to have postings on weather and possible cancellations on those web pages as well as images of objects seen through the astro-video camera and the CCD camera.
- » Many of the operational issues are still evolving for this observatory.





# A few of the Players!



Left to right: Brian Dennison, Judy Beck and Bernie Arghiere at Firefly Observatory