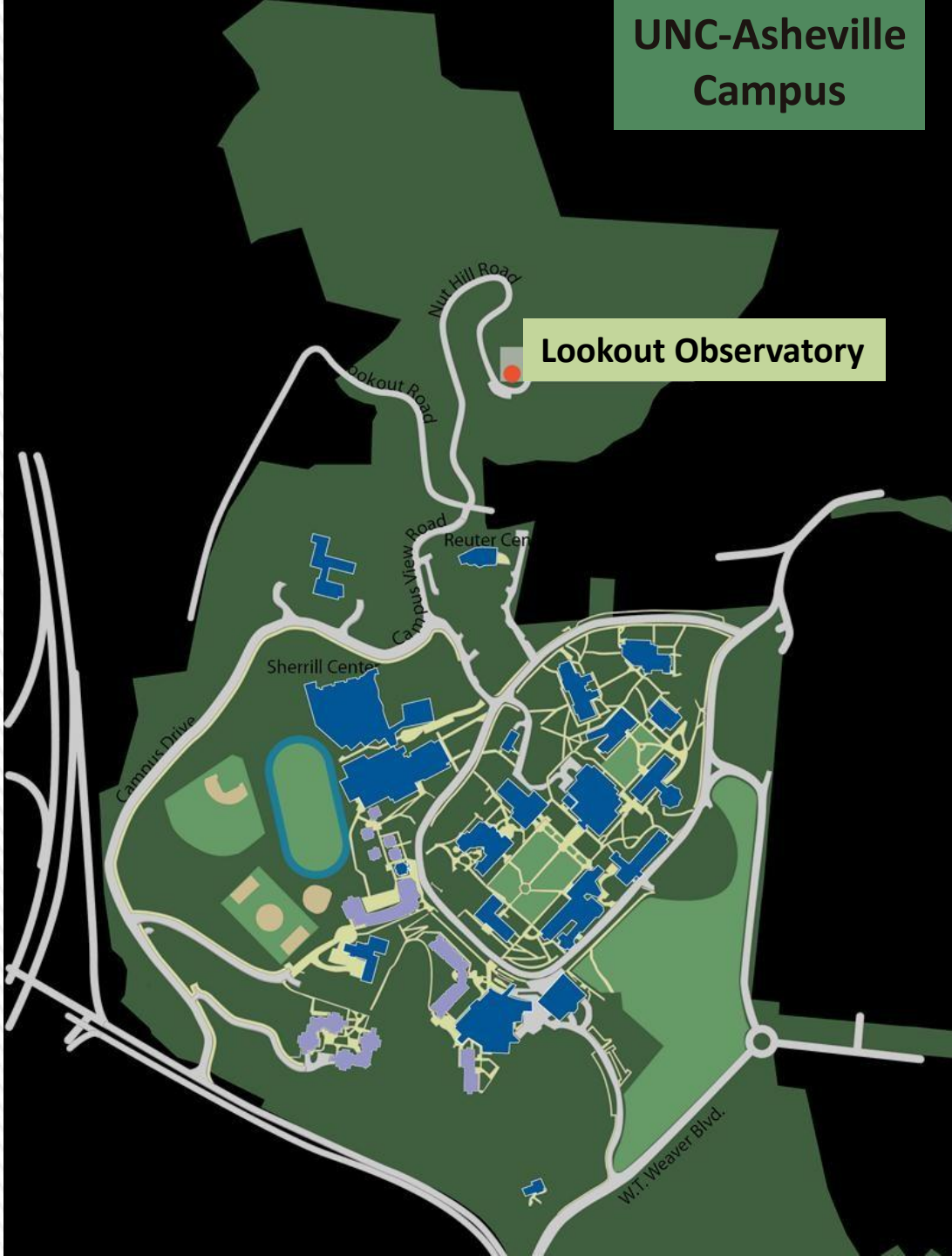
An Observatory on the UNC - Asheville Campus

Location

» **Lookout Observatory** is located uphill and north of the Reuter Center at the end of what was UNC – Asheville's "road-to-nowhere" (Nut Hill Road).

Lookout Observatory was completed and opened in the fall of 2014.



Location

- 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.
- There is limited parking at the site, but the parking lot at the Reuter Center is used for shuttle pickup to make the very 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 is now the "road-to-somewhere" – the road to solar system and the stars and galaxies above.

History

- This is Asheville's first public observatory!
- It was long overdue!
- The idea for an Asheville public observatory began in 2004 when a local amateur astronomer, Bernard Arghiere, 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)** President, Bernard Arghiere, 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

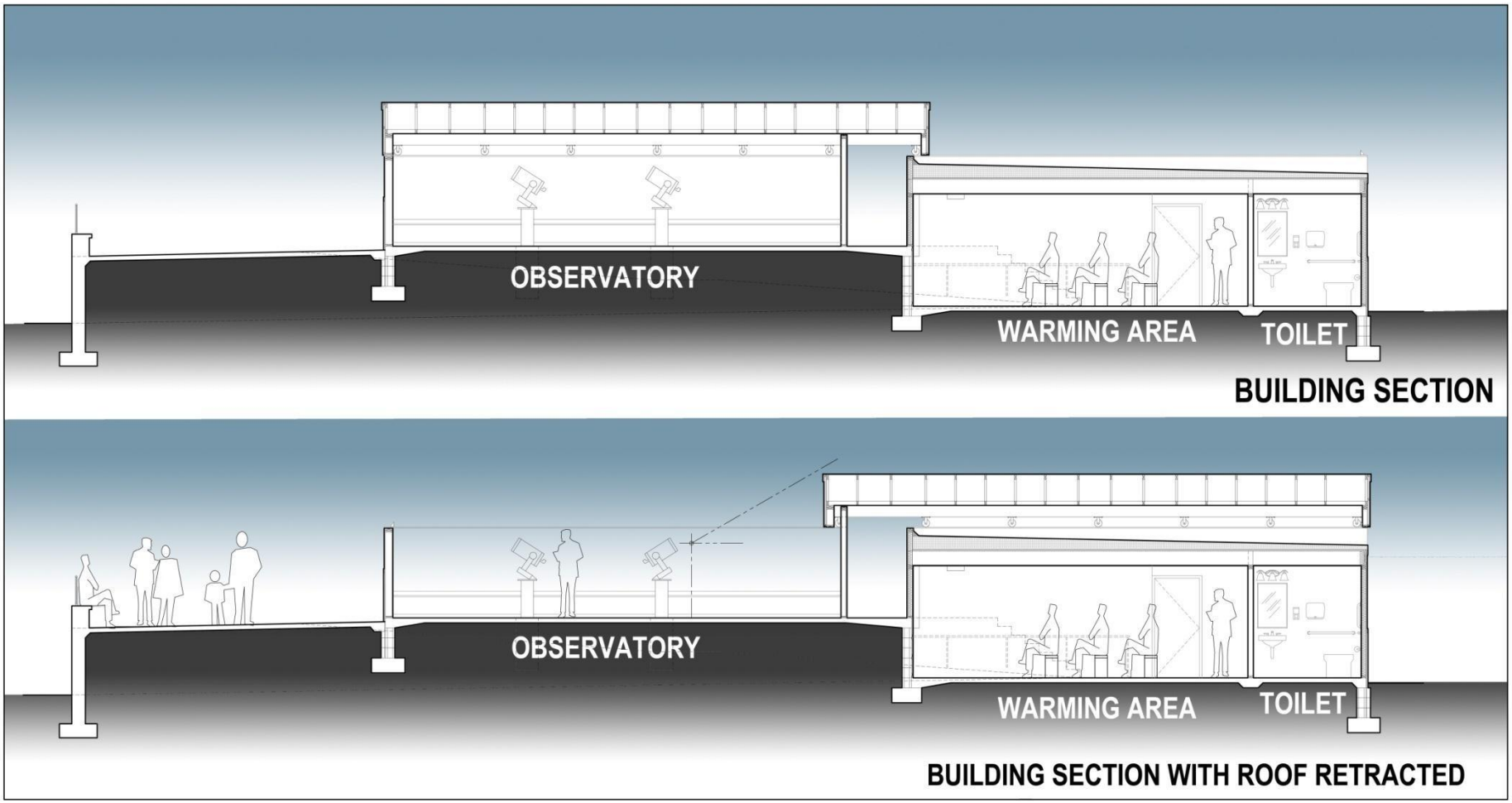
- The Astronomy Club of Asheville **(ACA)** obtained grants from the Community Foundation of WNC that were distributed to UNC-Asheville for the construction of the facility.
- UNC-Asheville used its own grant funds to purchase telescope equipment for one of the two primary telescope piers to be housed at the observatory.
- ACA purchased the telescope equipment for the other telescope pier.

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.
- Bernard Arghiere represented the Astronomy Club of Asheville 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 was used for this approximately 20’ x 30’ observatory room.



Design – why not a dome

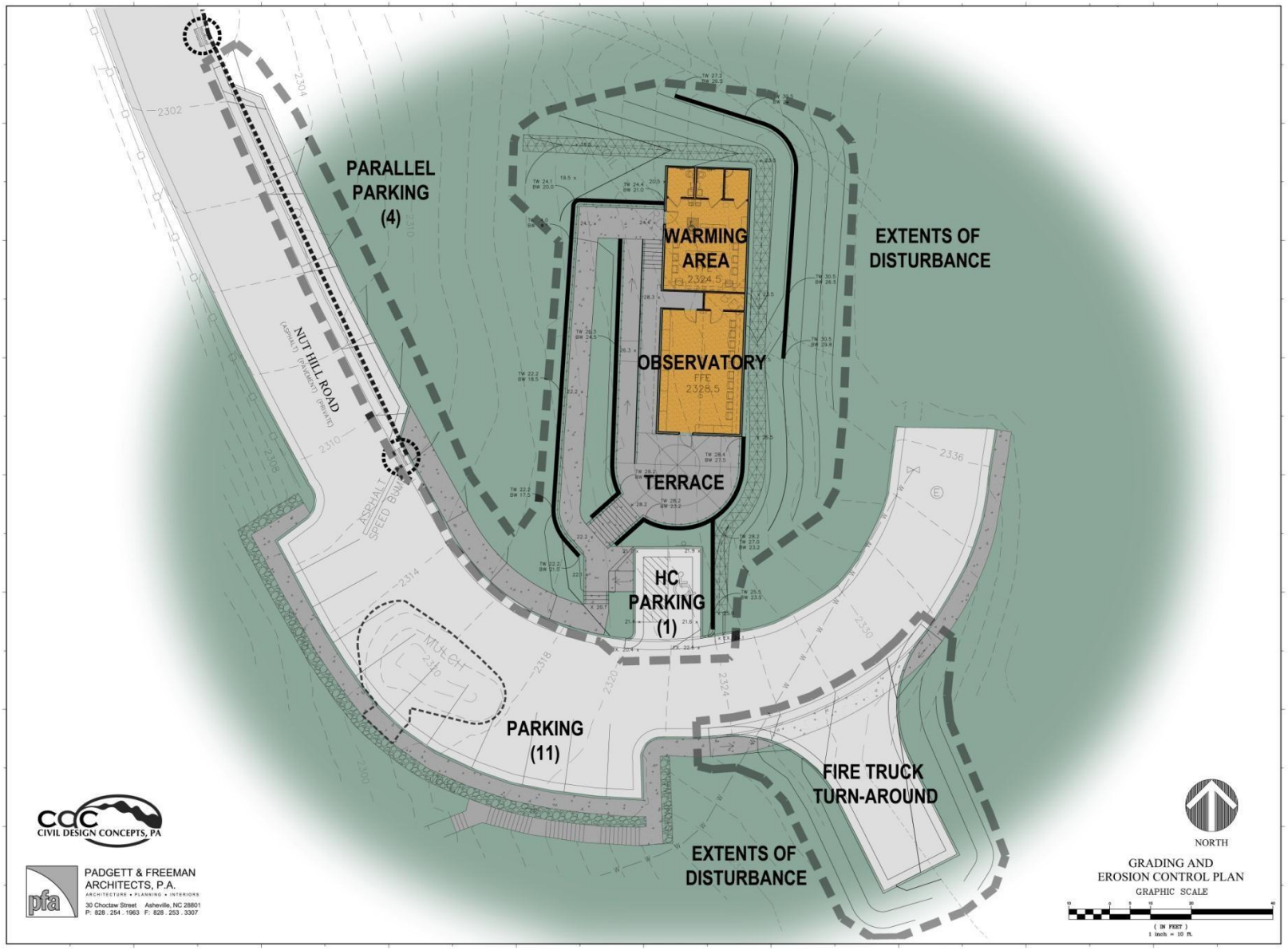
Design – why not a dome

- 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.

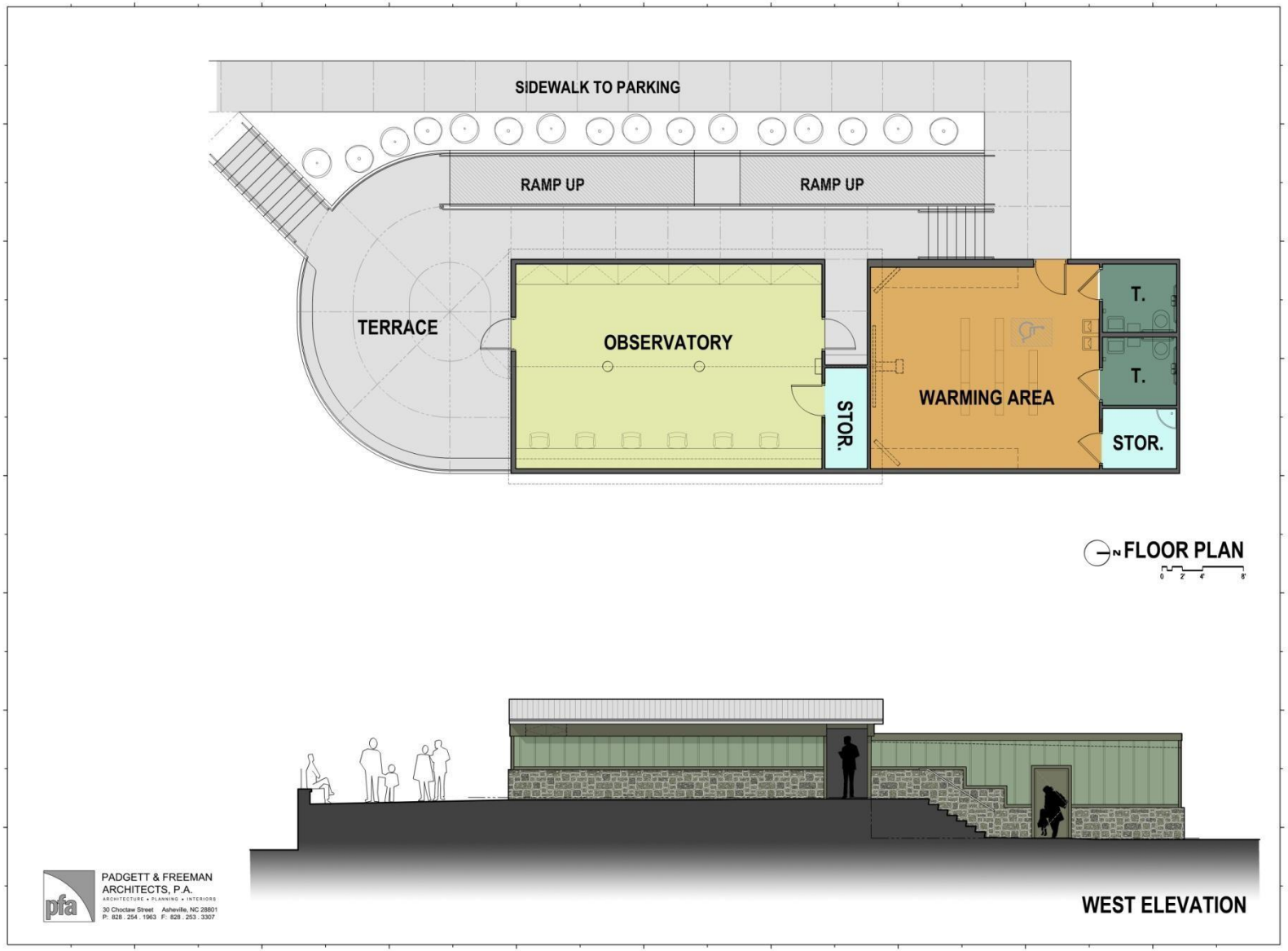
Design

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

Design – Site Plan



Design - the Structure



Equipment - telesocpes

- There are two telescope piers – one dedicated for university use and one dedicated for ACA use.
- Both piers support two tandem telescopes for a total of 4 instruments.
- The primary instruments on each pier are 14- inch aperture f/11 Celestron Schmidt-Cassegrain design telescopes.
- Each primary telescope has 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.

Owned by the
Astronomy Club of Asheville

Another APO Refractor

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

Owned by the UNC-Asheville

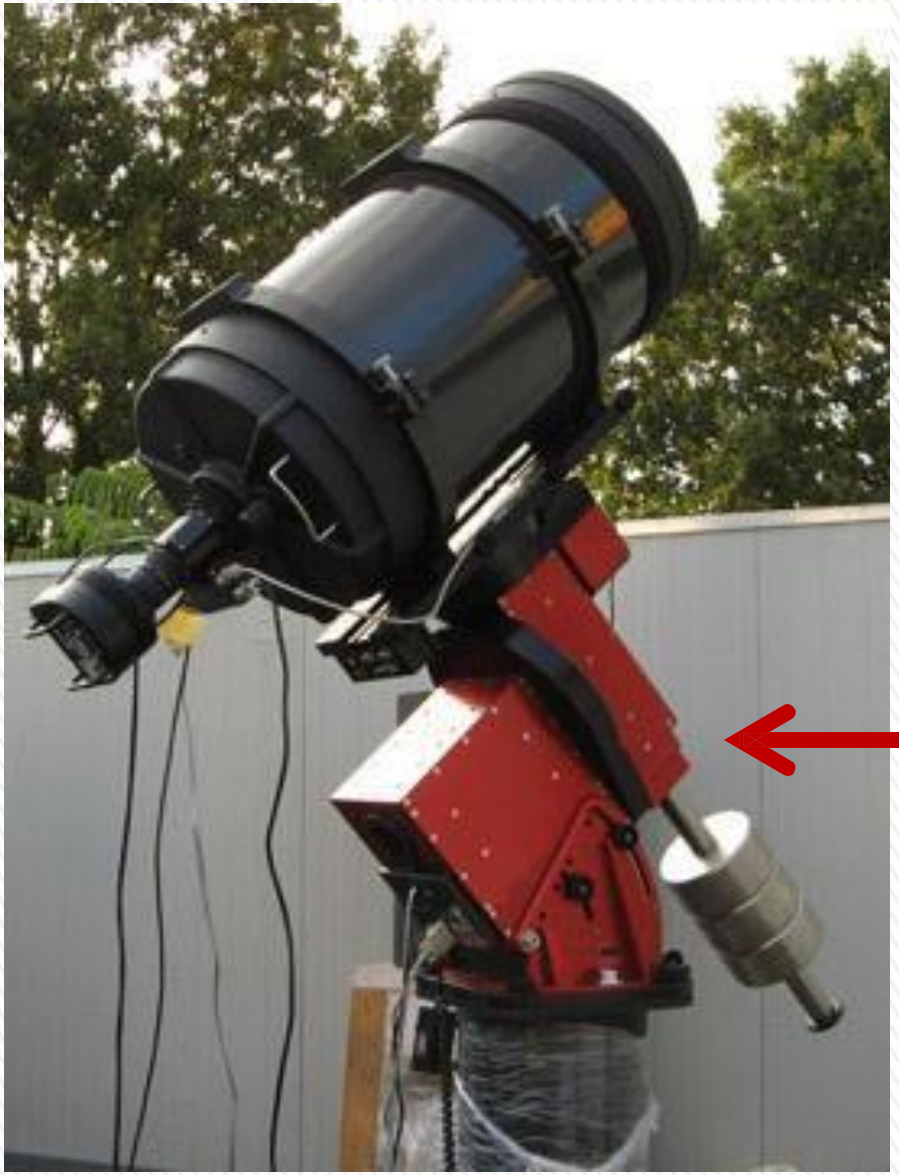
Equipment – the Mounts

- 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 uses 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, provide a dependable, stable and accurate pointing/tracking 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 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 can 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 can 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 has 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 are easily visible from the observatory site.

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What can 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 galaxy, are easily visible.
- But the starry glow of our own Milky Way Galaxy is only visible on those few late nights with great sky transparency.
- Many of the colorful binary and multiple star systems in our galaxy are also easily visible.

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What can you see?

- Because an astro-video camera is 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 uses a CCD camera for astro-imaging with the telescopes.

Who uses the observatory?

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

Scheduling/Operation

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

A few of the Players!

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