Status Update
Pikes Peak Observatory

December 11, 2017

Bob Sallee, Chairman, Board of Directors

Pikes Peak Observatory

Mission:

To engage and excite students, teachers, researchers, and the public in science and technology through the exploration and understanding of our environment and the Universe

Pikes Peak Observatory

Function: informal and formal STEM education and research

Outcome: Inspire the next generation of Earth and space scientists while creating a more environmentally aware, scientifically-literate public

Pikes Peak Observatory

Purposes:

- Research and environmental education, engaging students in STEM disciplines,
- Increase environmental, atmospheric and space science literacy of summit visitors, and
- Provide awareness of the important role of astronomical/meteorological observations and science to the history of Pikes Peak and contributions to U.S. western expansion.

Pikes Peak Observatory

Lunt LS152THa 152mm
H-alpha solar telescope

Solmirus Corporation ASIVA
All Sky Infrared Visual Analyzer

PlaneWave Instruments PW1000
1-meter Observatory System

Pikes Peak Observatory

Current Status

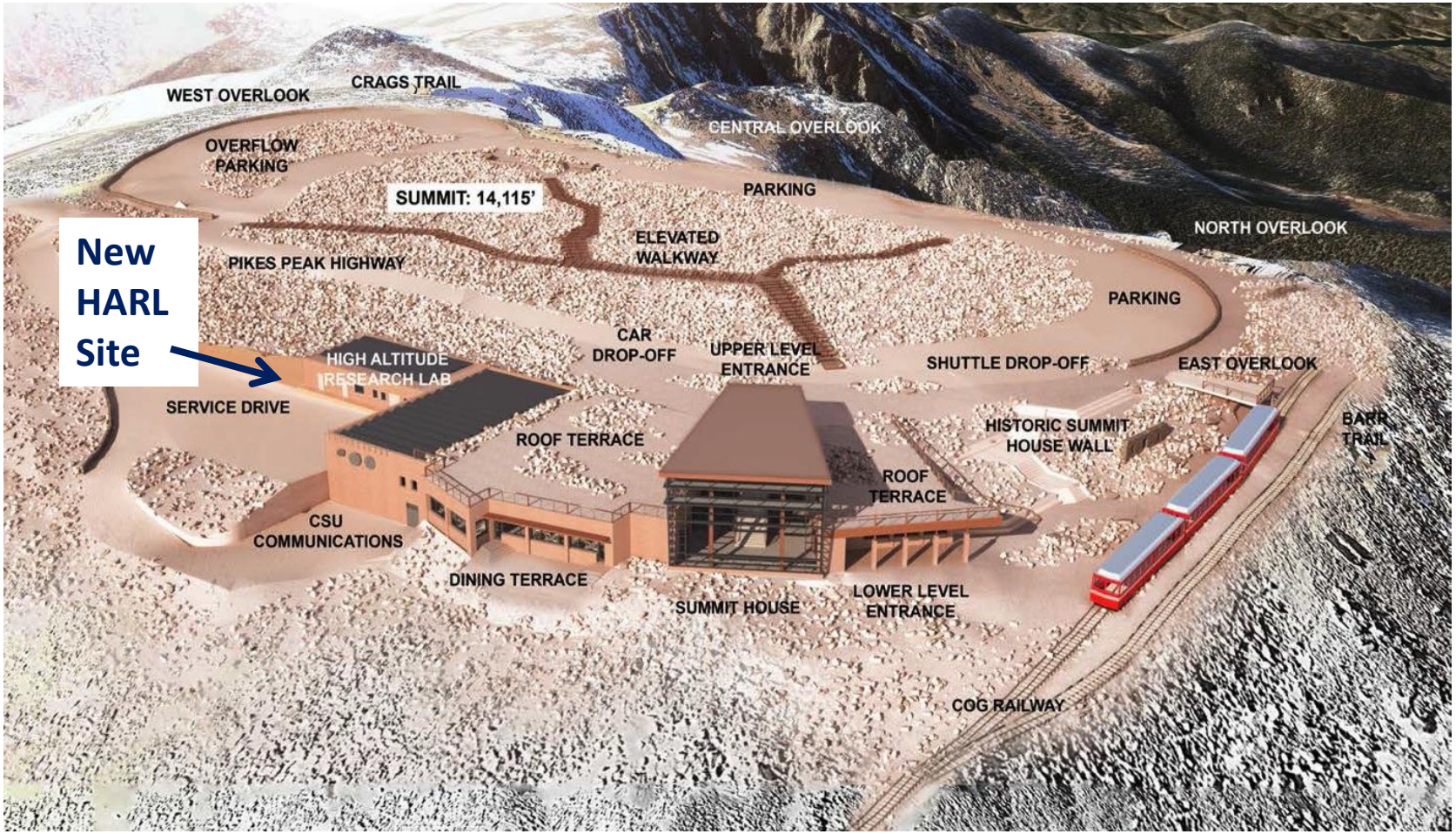
- Application was made to the Forest Service for a Special Use Permit on 09/27/2017

  Response is due at the end of January
- Alternate Sites have been examined
- Architectural Renderings have been created
- Construction Costs have been estimated
- Operations Concept has been developed
- Educational Content has been determined

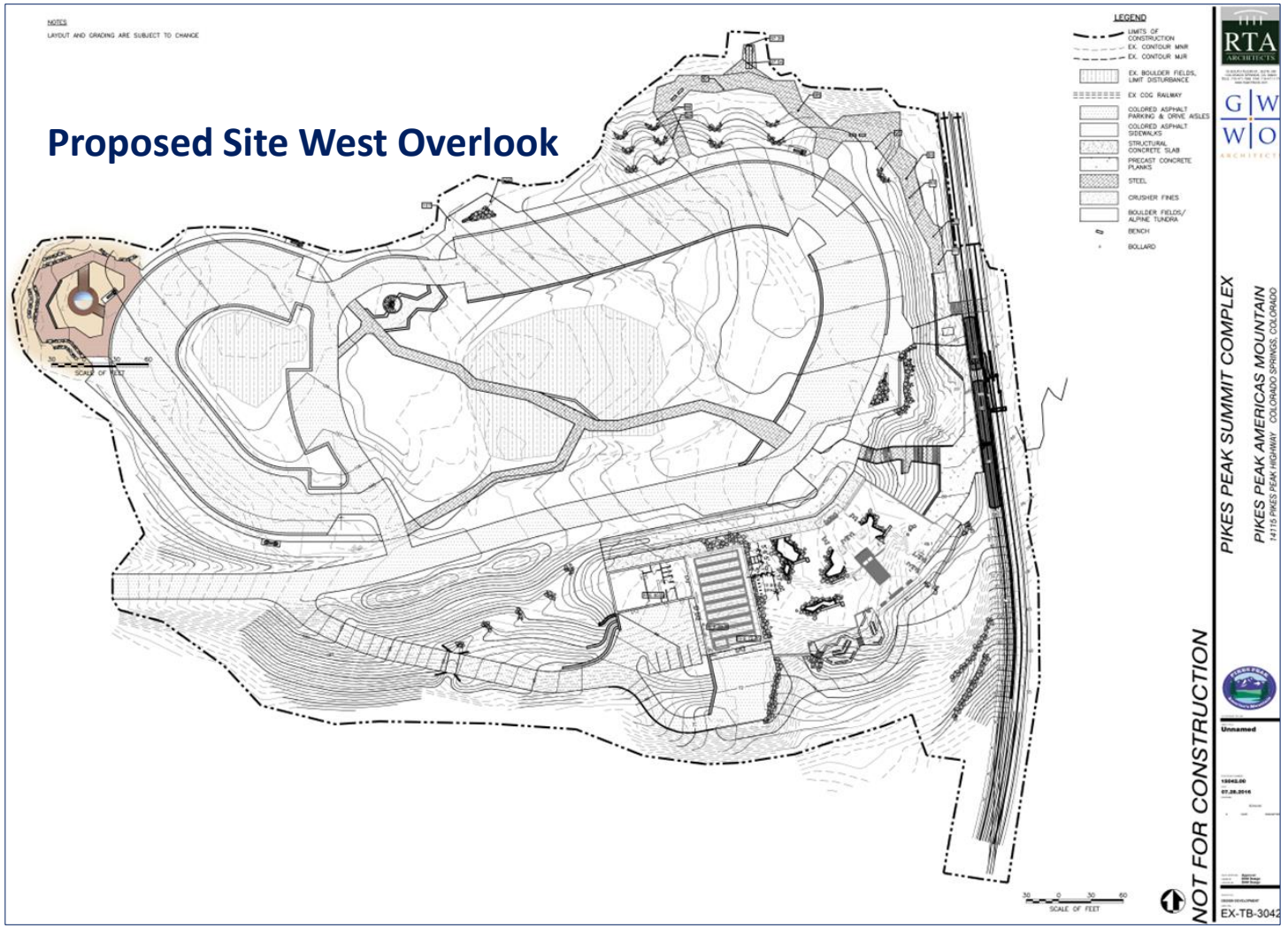
Pikes Peak Observatory

Army HARL

Pikes Peak Observatory



Pikes Peak Observatory



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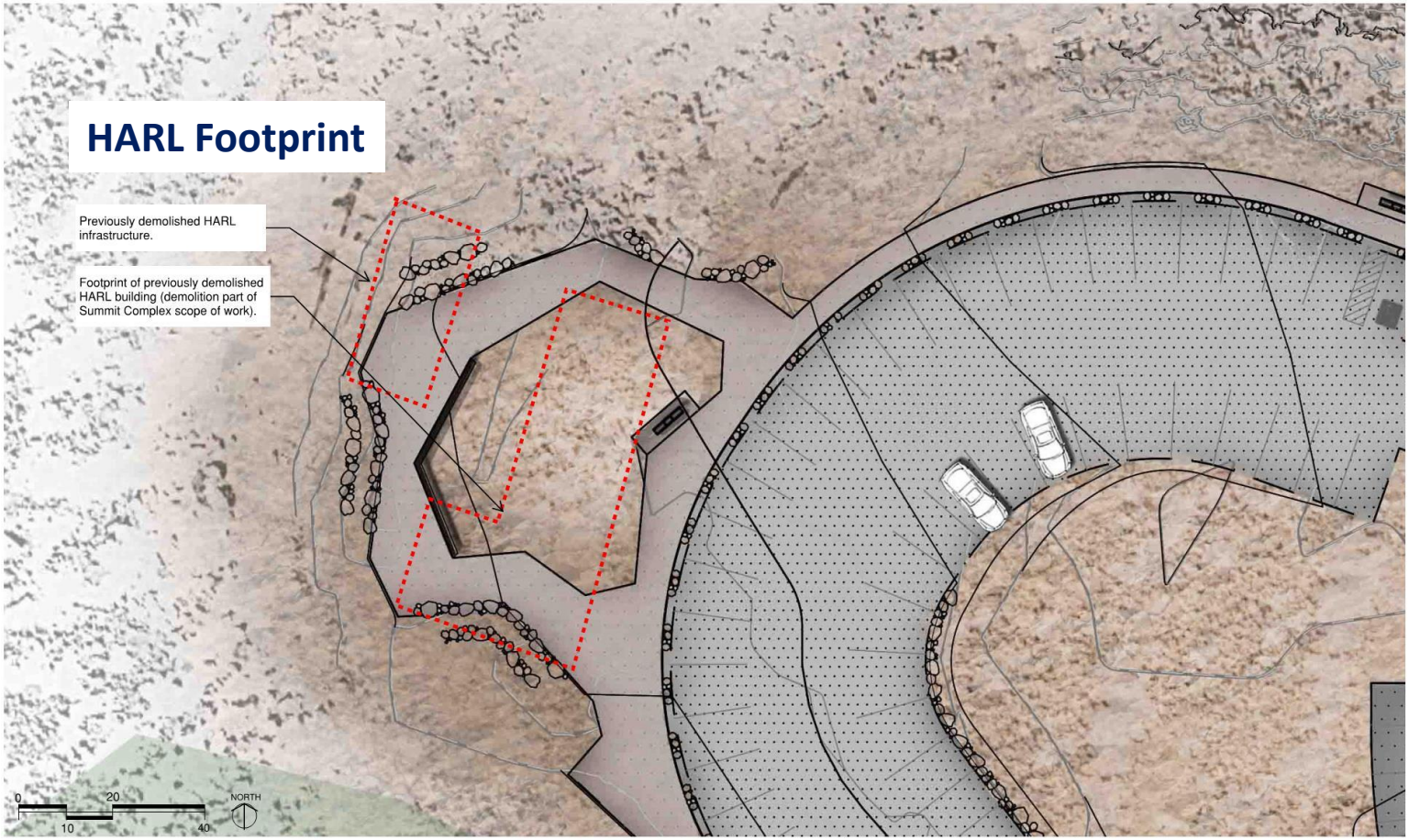
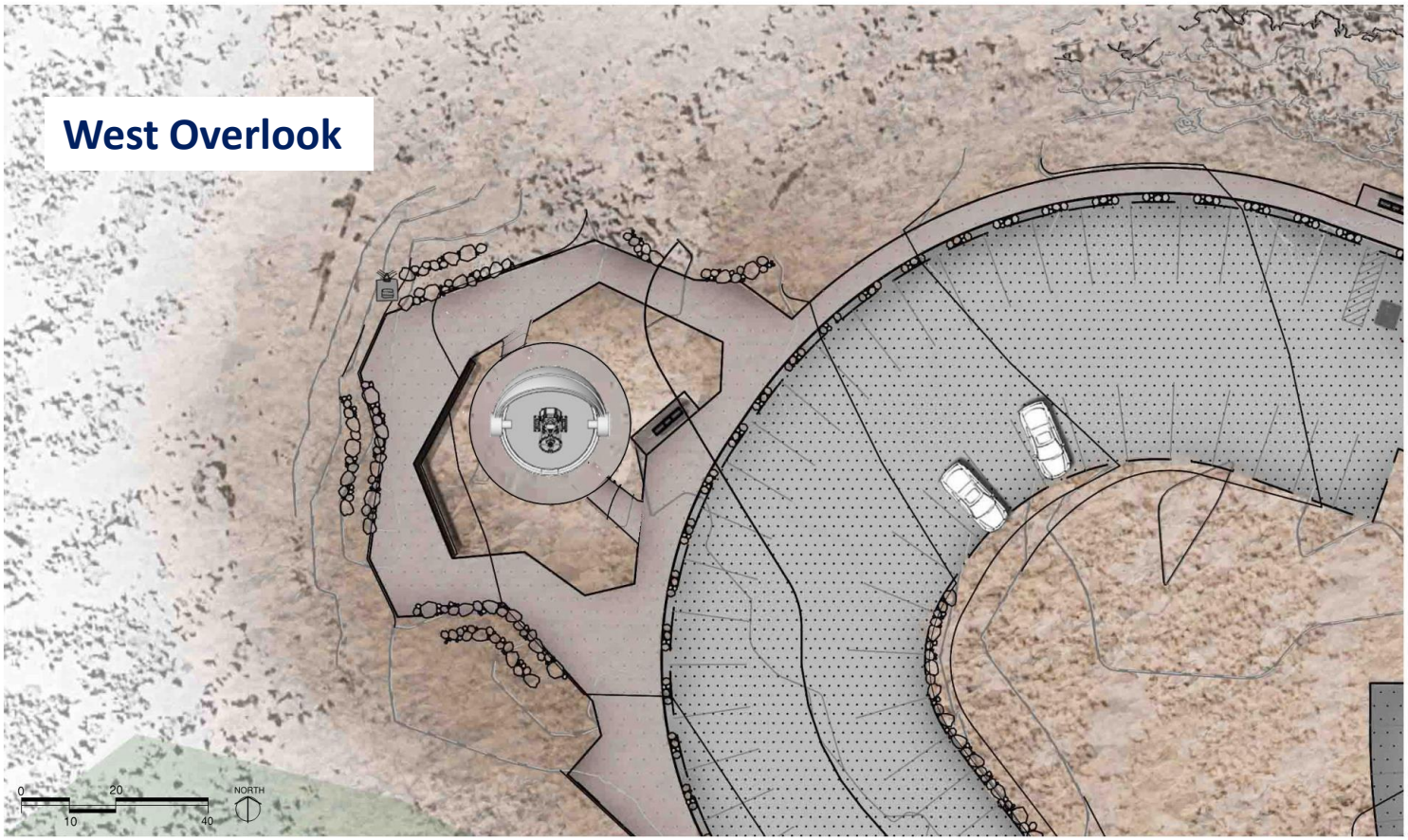


PIKES PEAK OBSERVATORY
EXISTING HARL SITE - PROPOSED OBSERVATORY SITE

Pikes Peak Observatory



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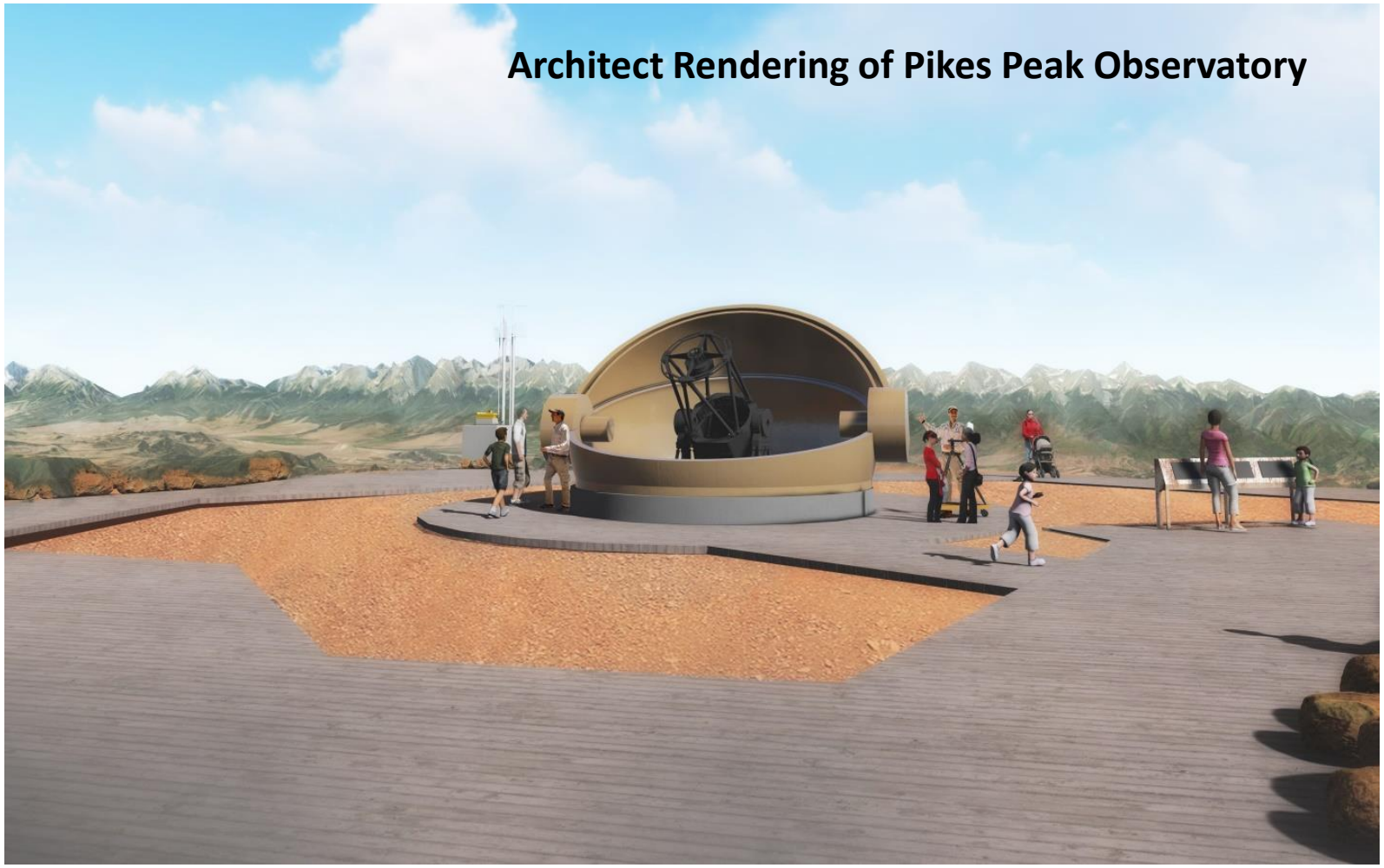

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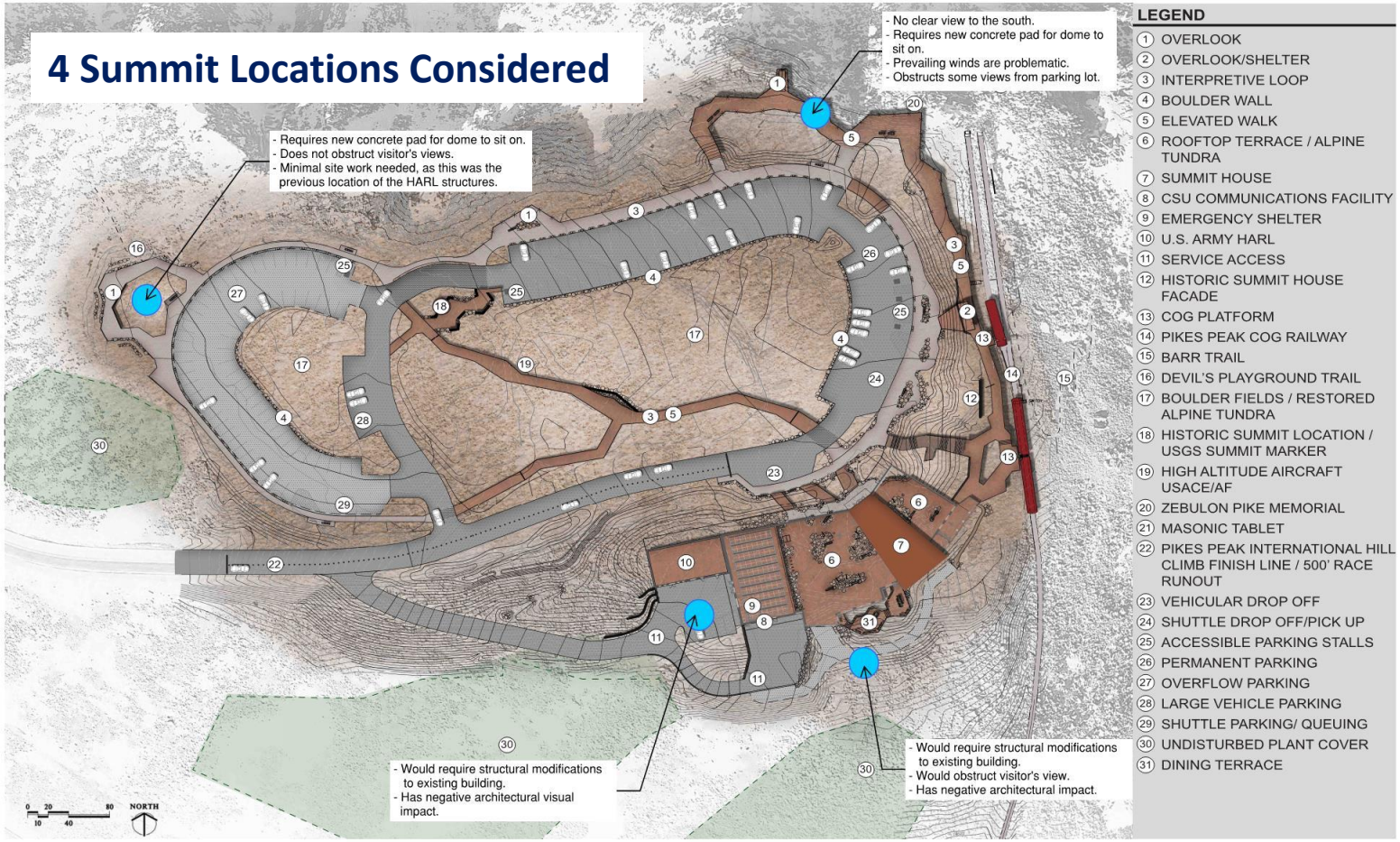

PIKES PEAK OBSERVATORY

EXISTING COMPLEX SITE - POTENTIAL OBSERVATORY LOCATIONS

RTA ARCHITECTS

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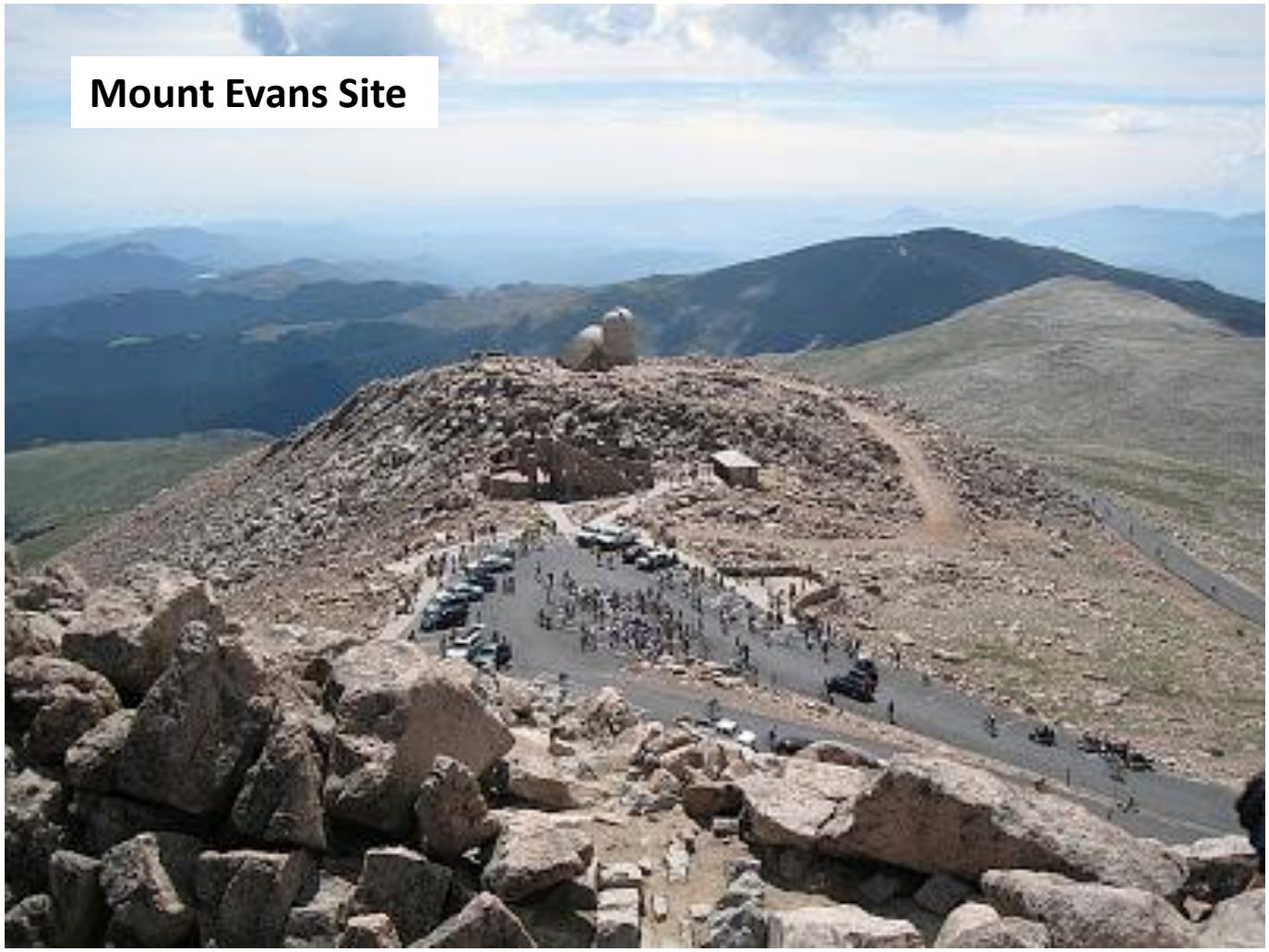
Pikes Peak Observatory



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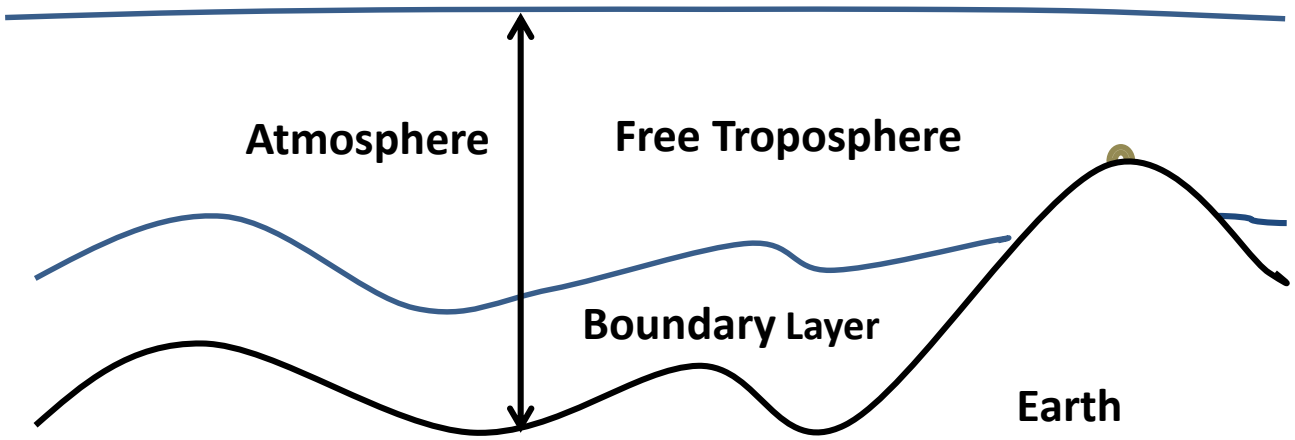

The atmosphere is divided into a boundary layer and the free troposphere.
Physical processes that modify the atmosphere in the boundary layer:

- **Heat transfer to/from the ground**
- **Frictional drag**
- **Evaporation/transpiration**
- **Terrain-induced flow modification**
- **Pollution emission**

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Why Pikes Peak?

- In the Free Troposphere 90% of the time
- Winds within limits (<35 mph) 79% of the time
- Sky conditions clear (useable) 77% of the time
- Dryness- low precipitable water vapor (PWV)
- Year-round accessibility to maintain observatory
- Facilities and parking for guests already exist
- Low environmental impact (previously disturbed site)
- STEM outreach accessible to 600,000 guests annually

Pikes Peak Observatory

Providing Informal STEM Education

- Enhancing the guest experience for summit visitors, improving their science literacy so they can make informed decisions regarding our environment and space (i.e., climate change)
- Highlighting the importance of Earth and space science and the instruments used to advance science
- Celebrating Pikes Peak scientific research and discovery historically, currently, and into the future
- Creating motivation to visit other venues in Colorado Springs that contribute to informal STEM learning

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Historic **STEM** Connections

1820 - botanist Dr. Edwin James discovers Blue Columbine

1874 - 1888 - Army Signal Corps operates weather station

1878 - Langley assembles observatory for total solar eclipse

1892 - 1894 Weather Bureau operates weather station

1890s - CC Prof Loud publishes international newsletter

1893 - Dr. George Hale takes solar observations

1918 - Dr. Sanford Moss tests 1st turbocharged aircraft engine

1935 - Dr. Carl Anderson uses cloud chamber and discovers atomic particles called “mu mesons”

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Observatory Curriculum

Connecting the Science of Pikes Peak to Human Wellbeing and Our Understanding of the Universe

- Importance of water from Pikes Peak Watershed
- Impact of Sun's Energy on Our Lives, Weather, Climate, and Water; what we learn from solar observations
- Exo-planet Research- the Search for planets capable of sustaining life starts with water and solar energy

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Supports U.S. Forest Service Goals

1. **Sustain Our Nation's Forests and Grasslands**... by employing modern technology to help assess environmental conditions and mitigate forest fire risk, and by supporting emergency response
2. **Deliver Benefits to the Public**… by strengthening our community and connecting people to the outdoors
3. **Apply Knowledge Globally**… by advancing knowledge, transferring technology and applications, exchanging natural resource expertise

(Strategic Plan FY 2015-2020)

Pikes Peak Observatory

Timeline

- New Summit Complex to be built 2018-2020
- HARL to be moved to new facility and former HARL facility demolished during the summer of 2021
- Observatory to be installed on former site of HARL
- Construction estimate is $834,000.
- Component cost estimate is $1,200,000.

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The Work Ahead: 2017-2021

- Inform state level officials of STEM potential
- Bring Colorado delegation in DC up to speed
- Respond to Forest Service/NEPA requirements
- Increase awareness/engage with the general public
- Build curriculum around the importance of water, the Earth-sun connection, and habitable planets
- Fund raise / conduct a Capital Campaign
- Complete installation; begin Observatory operation

Pikes Peak Observatory

THANK YOU