

CITY COUNCIL STUDY SESSION ITEM

SUBJECT

New City Building Design Development Update

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POLICY ISSUES

Update on sustainable design initiatives in the project including function, scope and priority of “green roofs” for the New City Building.

DIRECTION NEEDED FROM COUNCIL

Action

Discussion

Information

BACKGROUND/ANALYSIS

The design team has completed final design development recommendations for the project. As a follow-up to the design development presentation provided for Council on March 29, the team will be providing more detailed design information in areas where Council had questions or recommendations for the design. This study session will focus in more detail on three issues: sustainable design, “green” roofs, and the roof above 911 communications center. Additional topics will be covered in future Council sessions (see upcoming briefing topics below).

Sustainable Design

Last fall, Council approved the preliminary scope and budget for this project based on the schematic design recommendations. As part of that discussion, Council directed the team to pursue as many sustainable design initiatives on the project as could be justified within the cost parameters established in the preliminary budget.

Following is a representative list of the sustainable design achievements that are part of this project:

Site

- Dense urban site uses existing infrastructure
- Proximity to transit options
- Location and facilities in building promote bicycle commuting
- Project creates new green space in the urban environment
- Covered parking reduces “heat island” effect
- Green roofs reduce “heat island” effect and reduce storm water runoff
- Lighting designed to minimize light pollution

Water Efficiency

- New fixtures to be low flow

Energy Efficiency

- Main building mechanical systems replaced with new high efficiency equipment
- Existing “dual duct” HVAC system delivers tempered air very efficiently
- New high-performance glazing saves energy
- Building is to be thoroughly commissioned by and independent commissioning agent
- Cooling equipment to contain no HCFC’s

Materials

- Reuse existing building shell (less window glass)
- Reuse most of existing infrastructure

Indoor Environment

- High-volume copiers and printers are located in rooms with dedicated exhaust
- Mechanical system designed to maintain best industry practice for thermal comfort
- Displacement ventilation used in many building spaces, best possible delivery of air

Other sustainable design initiatives could be considered for the project should Council decide to add them to the project. They are listed here as options. Design feasibility, cost, and schedule implications would need to be studied if any of these options are selected.

Potential Sustainable Design Options

- Alternative fuel vehicle refueling stations
- Rainwater harvesting to water plants
- Groundwater use to run fountains
- Enhanced building systems management equipment
- Specification of aggressive recycling of construction debris
- Specification of high-recycled content materials
- Carbon dioxide sensors in all high-occupancy spaces
- Specification of low-VOC paints, sealants, adhesives, floor coverings and wall finishes

“Green” Roofs

One of the scope elements that was included in the project as part of the TAC recommendation was “green” roofs. The existing building has a number of low roofs that are immediately accessible from adjacent spaces. The TAC felt that it made sense to upgrade those roof areas so that they could be used as outdoor space by both employees and public. They also recognized the sustainable design benefits of “green” roofs (see below). There are three occupiable roof areas located adjacent to the public meeting and training areas providing outdoor break-out space from these areas. These occupiable roof areas have both landscape and paving areas. There is one of the lower roofs areas that is not occupiable. This roof is directly visible from the second floor and is proposed as fully landscaped with no paving areas. The project team will show each roof area and describe the proposal for use and design for each area including the reasons for the distribution of paving and landscaping on each of them. The team will also show costs for these roofs as well as a recommended prioritization. The base roofing system (membrane system) will cost approximately \$12/sf without paving or landscaping. Paving adds approximately \$9/sf. Landscaping adds approximately \$18/sf.

Following are some of the benefits of “green” roofs:

- **Increases energy efficiency of the Building.** A building loses much of its heat in winter through the roof, and summer sun exposure on a typical commercial roof can absorb the solar radiation and increase the demand on air conditioning at the upper floor. A green roof's layer of soil and vegetation increases the insulation layer on the roof and reflects the solar radiation, improving the building's mechanical system efficiency.
- **Reduces roof maintenance and increases the life span of the membrane.** The primary cause of deterioration in a typical commercial roof system is the exposure to the sun's harmful ultraviolet rays, and its subjection to extreme temperature fluctuations. By adding a layer of drought-tolerant plant material that will naturally thrive in the local climate and exposure, the waterproof layer of the roof system is given an important layer of protection.
- **Reduces the Urban Heat Island effect.** An Urban Heat Island is the thermal gradient differential that occurs between developed areas with extensive paving, asphalt and heat absorbing surfaces, and undeveloped areas of natural landscape and forest. This effect can impact the microclimate and human and wildlife habitat. Vegetation is among the ultimate high-albedo surfaces, while the loss of water from the soil by evaporation and transpiration from the plants cools and re-oxygenates the surrounding air.
- **Reduces storm water run off.** An extensive type green roof can absorb 50% to 90% of the rainwater that falls on it. The water is retained and used by the plant material. Water that does make it to the drain line is filtered by the soil, reducing contaminants. This method of storm water management is beneficial to the municipal storm water / sewer systems by reducing the amount and the rate of rainfall run-off that enters these systems, limiting disruption of natural water flows.
- **Creates a pleasant environment.** In a building of this size with a wide variety of public spaces and up to 900 employees, areas of accessible green roof provide a welcome and well-used amenity for the public and for employees.
- **Enhances the building's 5th façade.** The aesthetic of the roof plane is often ignored on a typical commercial building. A green roof improves the cityscape by beautifying the surface looked down upon by so many in the building and neighboring high-rises.

Roof above the 911 Communications Center

While the typical membrane roofing system costs \$12/sf, the design team is recommending a higher quality roofing system (\$17/sf) for the roof above the 911 Communication for the following reasons:

- Large number of antennas (over 60 of them) and communications equipment on this roof establishes a different performance criteria for the roof to respond to the extensive foot traffic required to service and maintain the equipment. These criteria are better met with the higher quality system
- The higher quality system provides better flexibility and performance in interfacing with the structural support required for the antennas and equipment.
- 911 Communications Center is a 24 hour operation. It cannot be shut down to accommodate a roof repair or equipment change on the roof. The higher quality system

allows for changes to occur that interface with the roofing with less potential impact to the space below.

Upcoming Council Briefings

April 26: Council tour of the furniture mock-ups in the new building. Design follow-up on the landscape and garage screening for the SE corner of the project including the design of the end of the concourse. Design follow-up on concourse amenities and security options. Design follow-up on covered walkway to main entry.

May 3: 2 hour Study Session—Project scope/budget update including reconciled design development estimates, contingency recommendations, and scope options.

May 10: Public Hearing on project scope, design and budget. Design follow-up on interior and exterior scope and finish options. Follow-up on design and funding options for the pavilion. Presentation of public art proposals for the project.

May 17: 2 hour Study Session—Discussion on project scope/budget, MACC, and bond sale.

May 24: Study Session—Action (or discussion) on project scope/budget, MACC, and bond sale.

June 1: IF NEEDED Council Action—MACC adoption, bond sale authorization.

ATTACHMENT(S)

N/A

AVAILABLE IN COUNCIL OFFICE FOR REVIEW

N/A