

PRECAST CONCRETE & LEED

INTENSIVE MANAGEMENT UNIT, MONROE CORRECTIONAL COMPLEX— IMU/SEG

Project Type: Correctional
Location: Monroe, WA
Owner/Developer: Washington State Department of Corrections, Olympia, WA
Architect/Engineer: INTEGRUS Architecture, Spokane and Seattle, WA
Contractor: Absher Construction Company, Puyallup, WA
Precaster: EnCon Washington, Puyallup, WA



OVERVIEW

The 140,000-square-foot IMU/SEG project, which scored 37 points on the USGBC LEED-NC rating system, consists of an Intensive Management Unit (IMU) and Segregation Management Unit (SMU). This new facility, constructed at a cost of \$277 per square foot, houses inmates classified as Intensive Management Status (IMS) and inmates classified as Segregation Management Status (SMS).

Two housing wings on both levels of each building have 32 single-occupancy cells, and one housing wing on both levels of each building has 36 single-occupancy cells (four cells for handicapped use), resulting in a total of 100 single-occupancy maximum-security cells for each building. Each wing is located around a control room for optimum visibility. Each housing wing consists of a main level and mezzanine level, with two showers on each level. The wings are divided in half to provide a total of 12 individual pods of 8 cells, or 9 cells where accessible cells are provided. Each pod, including those on the mezzanine, has a dedicated entry door for inmate movement and delivery of services. The administrative-services wing provides support to the housing wings with correctional staff offices and break rooms, inmate visiting, counseling rooms, hearing rooms, storage space, food services and linen storage, and holding and isolation cells.

Because of the extreme security concerns, the structure consists of precast concrete exterior sandwich walls. All cells are constructed of precast concrete as well as bunks, tables, and stools within the cells.

(cont...)

25 PERCENT

Amount of baseline energy-use reduction due to precast concrete panel design.

58 PERCENT

Reduction in potable water consumption.

60 MILES

Distance from precast concrete manufacturing facility to the jobsite.

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Exterior, IMU/SEG



Interior, IMU/SEG



Precast concrete sandwich wall panels

The facility is staffed to have a maximum number of 20 employees work in the building and house a maximum number of 200 inmates. Employees are encouraged to utilize the bus or ride bicycles to work, and all inmates either walk or are bussed to the facility. Van pools are also implemented on the campus to achieve ride sharing and other transportation alternatives. During the design phase, design teams worked with the campus to eliminate some existing parking stalls.

The design team also worked with mechanical and electrical engineers to implement better energy-saving strategies by increasing the R-value of the insulated precast sandwich wall panels, installing efficient HVAC control systems, introducing rainwater collection systems, and hiring a commissioning agent to monitor the system's accuracy and efficiency.

The project was designed and specified to achieve a LEED silver rating. However the project actually achieved a gold rating. The project contract and documents include the elements of the project and materials that have a high recycled content and/or were manufactured in nearby neighborhoods. A sign-off letter system was also established in the contract documents to ensure that the awarded contract submitted correct information, recycled-content ratios, and distances from the manufacturers, in order to precede the work.

PRECAST CONCRETE'S CONTRIBUTION TO SUSTAINABLE CONSTRUCTION PRACTICES

Materials & Resources:

Precast concrete systems were incorporated that use a high fraction of local materials, including aggregates, steel, cement, and fly ash in the concrete. The precast concrete fabricator's plant was less than 60 miles from the job site and panels were sized to allow for maximum stacking and a minimum amount of trucking.

The specific goal was to incorporate a minimum of 50% recycled materials, based on material cost. Approximately 97% of construction waste was diverted for repurposing and more than 99% of construction waste and debris was recycled. Additionally, more than 60% of construction materials were harvested or manufactured locally, including the precast concrete wall panels.

Energy & Atmosphere:

A thermally efficient precast sandwich wall panel shell was utilized. The precast concrete panels were designed to exceed the baseline model energy code by at least 25%, and use 27% less energy than comparable noncertified buildings.

Sustainable Sites:

The facility has on-site retention and treatment of stormwater. Precast concrete retention tanks were used as the collector basin.

Water Efficiency:

Rainwater collection is used by toilets in inmate areas. This feature contributes to a 54% reduction in water consumption and a 58% reduction in potable water consumption as opposed to a comparable facility.

Indoor Environmental Quality:

The precast concrete components produce no dust or airborne contaminants during construction or service because the precast concrete elements are fabricated and cured off-site. With the precast concrete components incorporated and the facility constructed, it offers natural lighting for more than 75% of the occupied space. 



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