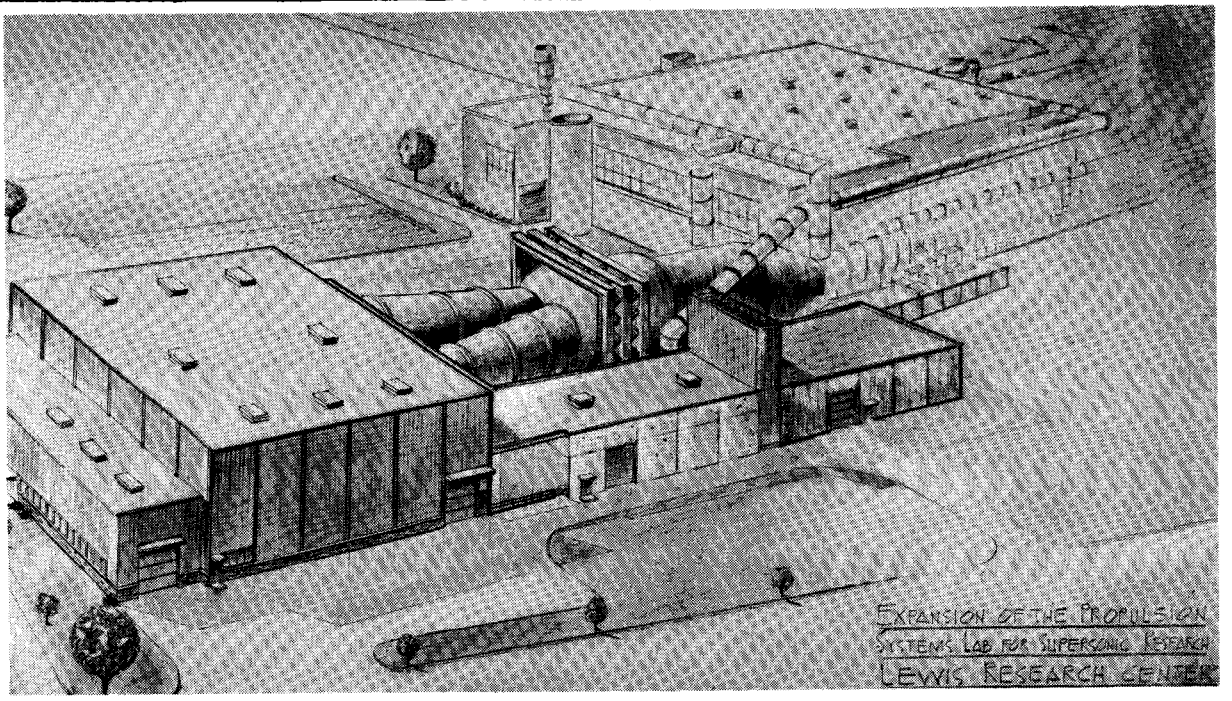


Architectural rendering shows the ***Propulsion Systems Lab Expansion*** *which will be completed in late* 1969.

Work on PSL Expansion in Early Stages

Excavation of the area northwest of the Utilities Building will end later this month, leaving a 35-foot deep hole, 200 feet wide and 500 feet long, to serve as the construction site for the Propulsion Systems Lab Expansion.

The excavation was the first step in a series of contracts to build the PSL Expansion which will cost an estimated $14 million.

Overseeing the design and construction details, Robert Godman, chief of Engineering Services, explains that the Expansion will house two altitude chambers, 24 feet in diameter and larger than those in the existing PSL. One of the test cells will serve as a facility to test future large turbines. Also, one of the largest waterbreak dynanometers in the world will be installed for the turbine.

"Another unique feature is that the PSL Expansion will be all at ground level," Godman said in comparing it to the present two-story PSL.

He explained that the excavation site was originally a ravine, later filled in when the airport was built. Consequently, it was necessary to remove much fill dirt and extend the pilings, which help support the building, down very deeply to hit shale.

The estimated completion date of the entire project is December 1969. The building construction and services at the site are now under contract to Gilmore Olsen.

It will not be until mid-1968 that installation of the heavy steel facility systems will begin. The two altitude chambers with separate diffusers, a common plenum chamber, a large heat exchange cooler, a spray cooler, and an exhaust regular system are all fabricated of heavy steel and will be welded at the site structure.

The contract packages which will follow include the installation of combustion air piping for air condition; controls for data systems; safety systems, such as fire extinguishers; and also roads and landscaping.

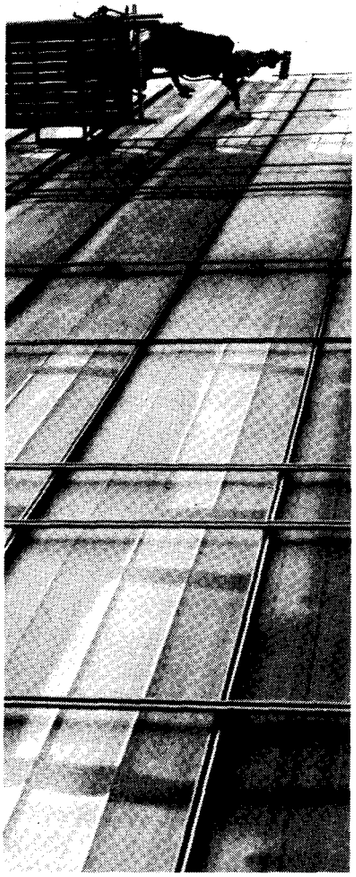
But right now it's still a big hole.

Excavation of the site for the PSL expansion will end this month.

Ground Tests OK

A major ground test program of the Apollo/Saturn V has been successfully completed at the NASA-Marshall Space Flight Center.

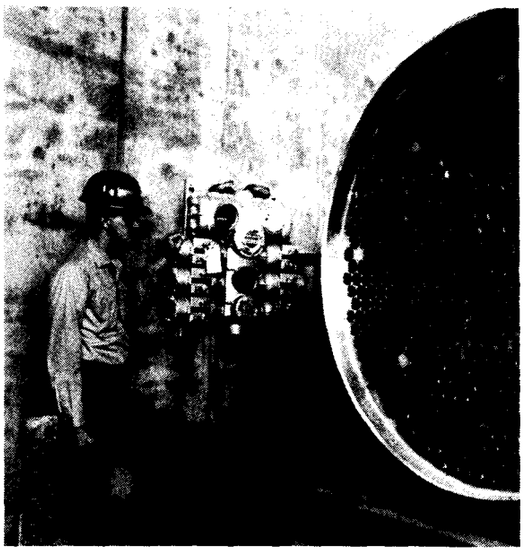
Initial dynamic tests started with the first stage of the Saturn V. Subsequent tests included the second and third stages, instrument unit and the Apollo spacecraft. Tests included the bending and vibration characteristics of the complete vehicle.



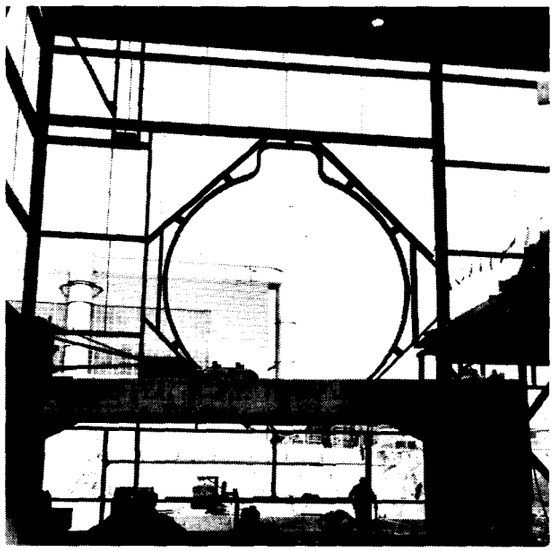
Installing insulation containment strips against inside wall sheeting of PSL Expansion Building.

Photos by

John Marton



Electrical inspector Chuck Jennings points out terminal block connections of explosion proof circuit breaker panels. At right is tube end of a heat exchanger.



Circular frame for exhaust ducts outlines existing PSL Equipment Bldg.

PSL Expands Out & Up

The muscle of men and machines, tons of steel and concrete, and engineering know-how backed up by human ingenuity have been used to fashion the foundation and superstructure of the Propulsion Systems Lab expansion over the past year.

Last October the Gillmore-Olson Co., contractor for the first construction package, completed excavating the lot east of the existing PSL. Since then the contractor has poured all of the concrete for the building foundation (supported by steel piles), for the base of the 200 foot long combustion air tunnel, and for the first floor. By the end of August workers also had completed putting up about 700 tons of structural steel to form the skeleton of the building.

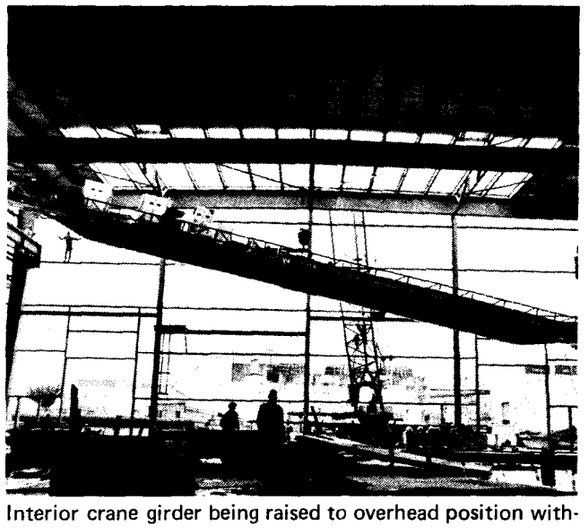
Another major job presently underway by the contractor is the large heater building attached to the PSL expansion. The three heat exchangers installed in it boost air temperatures to 1200° Fahrenheit.

Now that the major structural work is out of the way, the more than 50 contractor employees on the site will concentrate on the finishing work. Ed Fassbender, Lewis' civil engineer in charge of the construction phase of the project, says work now is progressing on the metal siding for the building. "We expect to have the building closed in against the weather by the end of October."

Various construction trades also are at work installing the interior plumbing, heating and lighting systems, and setting in place pre-cast concrete slabs in preparation for roofing installation.

The contractor, following blue prints prepared by the Facilities Engineering Division, is a little past the half way point in its work. To ensure that all goes smoothly, the work is overseen by three Lewis inspectors from the Construction Division. Assigned to the site full time, they are: Ray Bremer, chief inspector; Art School, mechanical inspector; and Chuck Jennings, electrical inspector.

Below, mechanical inspector Art School oversees seam welding of cooling tower supply line.

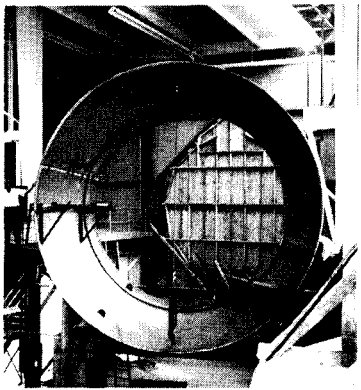


Interior crane girder being raised to overhead position within the PSL Expansion Building.

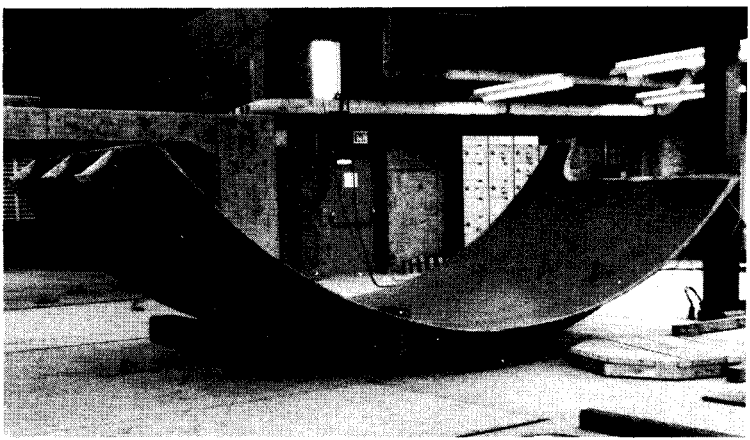
Ray Bremer, chief inspector, examines trough for laying additional domestic water pipes to existing lines.

PSL adds steel

The Construction Division is having no problem keeping track of the progress on the Propulsion Systems Laboratory Expansion these days. Pittsburgh-DesMoines, the general contractor for constructing the two test sections, exhaust duct, plenum chamber and primary cooler. Through this Fall, delivery of the large pieces of steel, each averaging about five tons, will continue as a Pittsburgh - Des Moines crew on site erects the chambers.



Ed Fassbender and his Construction supervisors examine the positioning of one of the PSL Expansion's chamber flanges.
(Martin Brown photo)



A section of the circular test chamber walls rests on the PSL Expansion's lower level prior to erection.
(Martin Brown photo)

PSL expansion building passes 70% complete mark

While engineers probe for new materials and methods to produce more efficient turbo-jet engines, construction is proceeding on the Propulsion Systems Laboratory extension required to perform development testing.

Slated for completion in 1972, two giant 26-foot diameter test chambers will be used to test engines for the aircraft of the eighties.

The project, 70 percent complete, is truly national in scope. The building and support facilities, now complete, were constructed by Gillmore-Olson of Cleveland; the test chambers and coolers, 95 percent complete, are being fabricated and erected by the Pittsburgh Des-Moines Steel Company of Pittsburgh; the just completed cooling tower was fabricated and erected by the Fluor Company of California.

Work is just starting on combustion air and cooling water piping. The piping system will be fabricated in Denver, Colorado, Paducah, Kentucky and Camden, Arkansas. When finished the piping will be shipped here and erected by the Lake Erie Mechanical Company of Cleveland. The electrical controls systems, six percent along, are being installed by the United Power and Controls of Seattle, Washington. Presently under bid is the data acquisition phase of the project.

The configuration of the test chambers makes it appear as a giant "Y" with each leg a test chamber and exhaust duct. Since only one chamber can be operated at a time, the leg not in operation is isolated from the hot gas streams by a davit valve or head. A pneumatic system provides power to move the 11-ton valve from one position to another.

Three turbojet engines will supply hot combustion air to the test engines mounted in the chambers. Combustion air up to 1200 degrees Fahrenheit will be supplied to one chamber and air up to 600 degrees F will be supplied to the other chamber.

The air will be delivered into the chambers at pressures up to 165 psi. Air ducts in the high temperature zones are being equipped with water jacketing and internal heat shields liners to withstand the elevated temperatures while minimizing heat loss.

After the combustion air is used by the engines during tests, it is then exhausted at temperatures up to 3500 F through 17-foot diameter water exhaust ducts to the cooler area.

The cooler area is made up of a primary cooler and a spray chamber. A cylinder 50 feet in diameter, the primary cooler is filled with about 2900 two and three inch water-filled steel tubes. As the hot gases pass around the tubes, the temperature is reduced from the 3500 degrees F to about 600 degrees F. It is then passed downstream and further cooled with water introduced in the spray chamber. The gas, now at about 100 degrees F, is dehydrated as it passes through mats of stainless steel wire meshes before completing its journey through the exhaust.

Bowlers wanted

A few openings are avail-