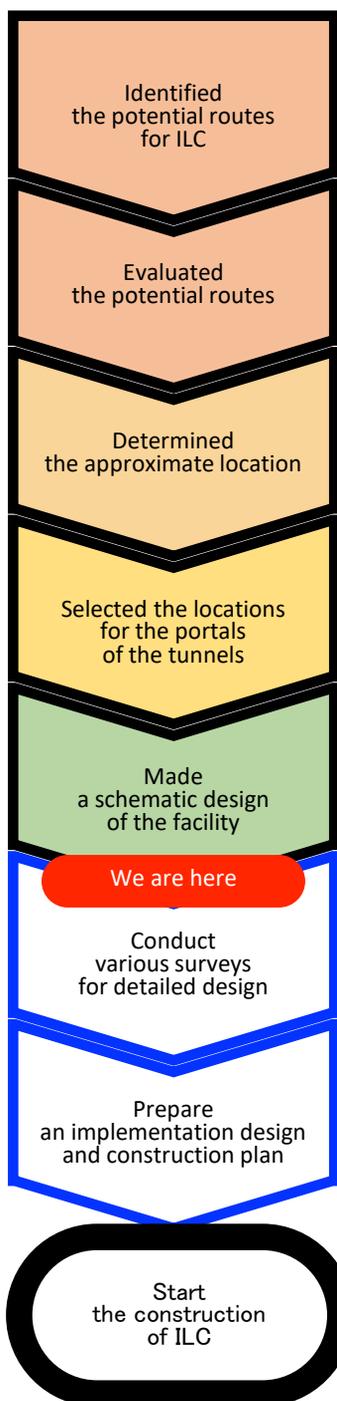


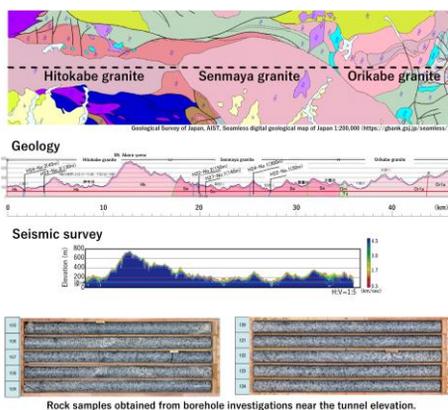
The design for the ILC civil engineering facilities, as presented in the ILC technical design report (TDR), was developed by the international design team (GDE) without assuming a specific construction site. The design of civil engineering facilities would vary significantly depending on the topography, geology, and existing infrastructure of the construction site.

After the publication of the TDR, Tohoku University has been conducting geological and topographical surveys and advancing the design of civil engineering facilities, assuming the construction of the ILC at the Kitakami site in Tohoku. These surveys and designs have involved experts with extensive specialized knowledge and practical experience from relevant academic societies, such as Japan Society of Civil Engineers and the Japanese Geotechnical Society, and private companies.

Since the establishment of the Tohoku ILC Project Development Center (TilcPDC) in 2020, Tohoku University has participated in the TilcPDC, with surveys and designs being conducted under its guidance.



Geological survey for route selection



In the Kitakami site, granite is distributed over approximately 50 kilometers from north to south. To minimize the risk of civil engineering works crossing geological boundaries, the ILC facility will be constructed within the granite body. Several options of the potential routes within the granite body were considered to select the most favorable layout.

Seismic surveys conducted along the entire route indicate the presence of hard granite at the elevations planned for the accelerator tunnels. Borehole surveys confirmed the presence of very stiff and high-quality granite.

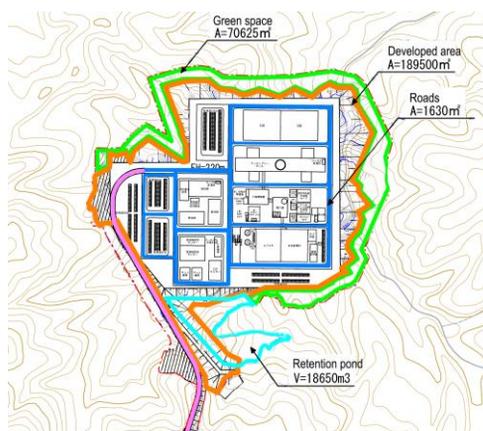
Civil engineering plan



The underground accelerator tunnel is connected to the surface by access tunnels. Adjacent to the portals of the access tunnels, it is necessary to install various facilities required for accelerator operation.

Considering the results of geological surveys, we examined the appropriate routes for the access tunnels. To minimize the length of the access tunnels, we selected the positions of the tunnel portals. We verified whether we could secure land with sufficient area near the portals for placing the facilities. Additionally, we made a plan for locating facilities necessary for assembling detectors above the collision point on the surface.

To assess the impact on the surrounding areas, landscape simulations and other evaluations are being conducted.



The map in the background shows an image, which differs from reality.