

Utilization Plan for Ofunato Port

Ofunato City,Iwate Prefecture,Japan

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1 Introduction

(1) Background to the formulation of this plan

Ofunato Port is the largest distribution base for ocean freight transport in Iwate Prefecture and has contributed significantly to the development of the prefecture as well as Ofunato City itself.

Port facilities and roads were severely damaged in the tsunami of the Great East Japan Earthquake. However, with the support of the national and prefectural governments we have reached a point with the recovery and reconstruction where prospects look bright. Looking forward it is hoped that Ofunato Port will be utilized making use of this infrastructure.

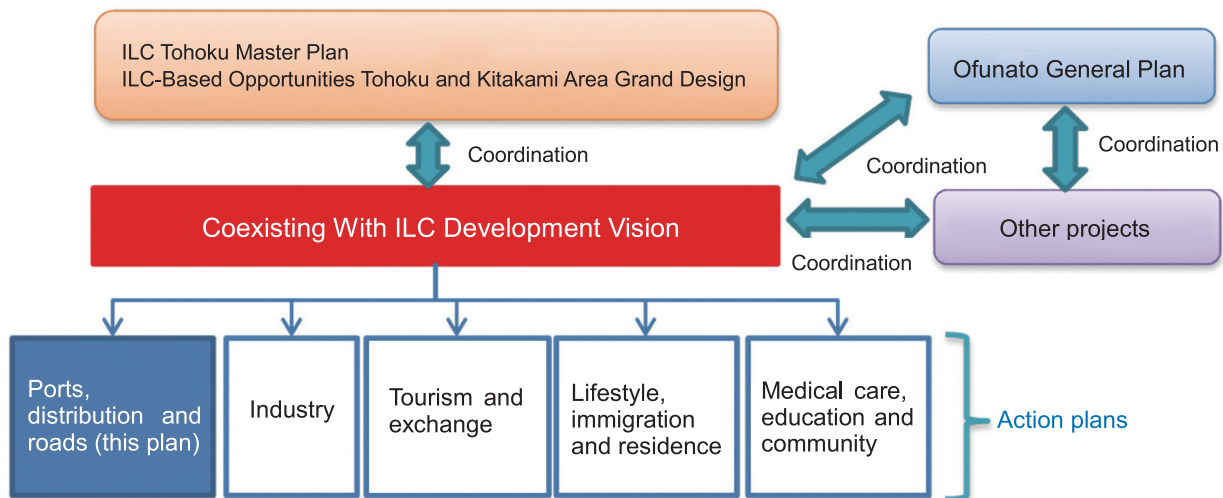
Furthermore, it is anticipated in the ILC Tohoku Master Plan by the Tohoku ILC Promotion Council that Ofunato Port will play a major role in the realization of the ILC as it is a well-positioned distribution base for the construction of the ILC.

(2) Purpose of formulating this plan

We have created a practical plan that will contribute to the development of the regional economy through utilization of the port by examining possibilities from all angles. This plan will help us achieve the goals of unloading at Ofunato and utilizing the land behind the port as a distribution hub and construction site for inspection, assembly and storage as in part 1 of the Coexisting With ILC Development Vision Action Plan, as well as to build and strengthen the distribution network to the proposed ILC construction site.

(3) Positioning of this plan

This plan defines specific action plans in the field of ports, distribution and roads which is one of 5 fields in the future vision represented in the Coexisting With ILC Development Vision formulated in coordination with the ILC Tohoku Master Plan and the ILC-Based Opportunities Tohoku and Kitakami Area Grand Design.



(4) Initiation period of this plan

The initiation period is divided into three phases.

- ① Preparation phase 2019-2022 (4 years)
- ② Construction phase 2023-2031 (9 years)
- ③ Operation and maturation phase . . . 2032-2051 (20 years)

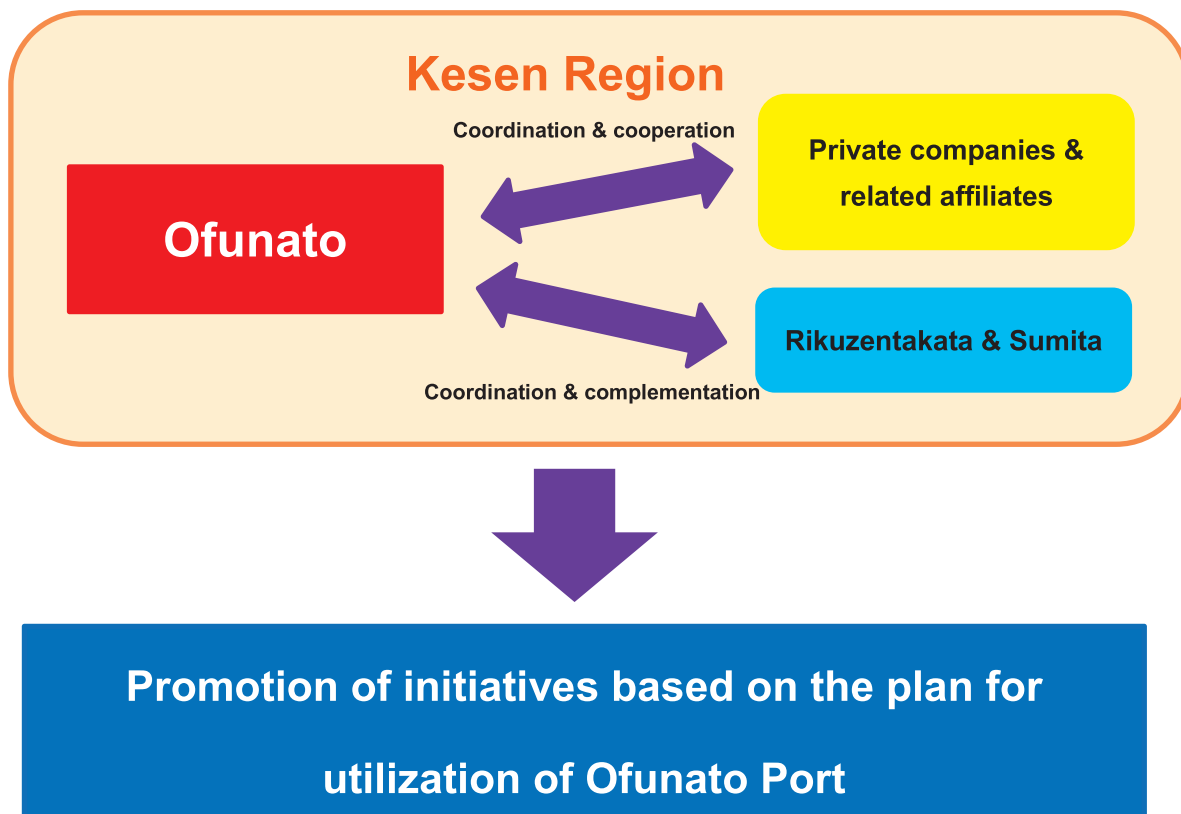
*The phases may change based on the movements in attracting and realizing the construction of the ILC in Iwate.

Phases	Preparation	Construction	Operation and Maturation
Duration	4 years	9 years	20 years
Years	2019-2022	2023-2031	2032-2051

(5) Promotion system for this plan

We will coordinate and cooperate with affiliates such as port-related enterprises, including private companies and the Chamber of Commerce and Industry under their respective roles to promote the plan in Ofunato City.

Additionally, we will promote this plan while considering the perspectives of the local region, and we will also cooperate alongside the 2 cities and 1 town that make up the Kesen region.



2 Outline of the plan

(1) Purpose of the plan

In order to promote utilization of Ofunato Port during construction of the ILC, the purpose of this plan is to examine the transportation of construction materials from Ofunato Port to the proposed ILC construction site.

(2) Policies of the plan

- ① The ILC transportation products currently envisioned to be subject to consideration and the specifications of the products (dimensions and weight) will be based on the transportation product list described later.

Additionally, transportation products will be classified into 5 types according to their specifications. Products that have measurements at the time of loading that are within the standard restrictions of the highway rules (width 2.5m, length 12.0m, height 4.1m, total weight 25.0t) will be classified as general cargo. Products that exceed these values and require special vehicle passage permission for transportation are classified as wide items, long items, tall items or heavy items.

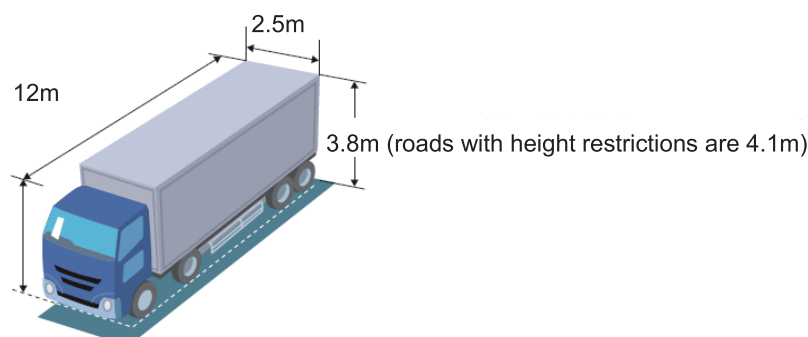
	Standard Restrictions (Upper Limits)
Dimensions	
Width	2.5 m
Length	12.0 m
Height	3.8 m (Roads with height restrictions are 4.1m)
Minimum turning radius	12.0 m
Weight	
Total weight	20.0t (Highways and roads with weight restrictions are 25.0t)
Axle weight	10.0 t
Adjoined axle weight	18.0t: if the wheelbase of the adjoined axles are less than 1.8m 19.0t: if the wheelbase of the adjoined axles are 1.3m or more and if each of the adjoined axle weights are 9.5t or less 20.0t: if the wheelbase of the adjoined axles are 1.8m or more
Wheel load	5.0 t

*Road with height restrictions: If the road structure is designated as well maintained and there being nothing to impede safe transport by the road administrators, standard height limit is 4.1m. (Tamoyama Sano City Road, National Highway 45 Ofunato, Sanriku Coastal Road, National Highway 107.)

*Road with weight restrictions: If the road structure is designated as well maintained and there being nothing to impede safe transport by the road administrators, the standard total weight depending on the vehicle length and wheelbase (distance between the front and rear axles) is up to 25.0t. (Sakarigawa Ugan City Road, Tamoyama Sano City Road, Sanriku Coastal Road, National Highways 45, 107, 340, 343 and 284.)

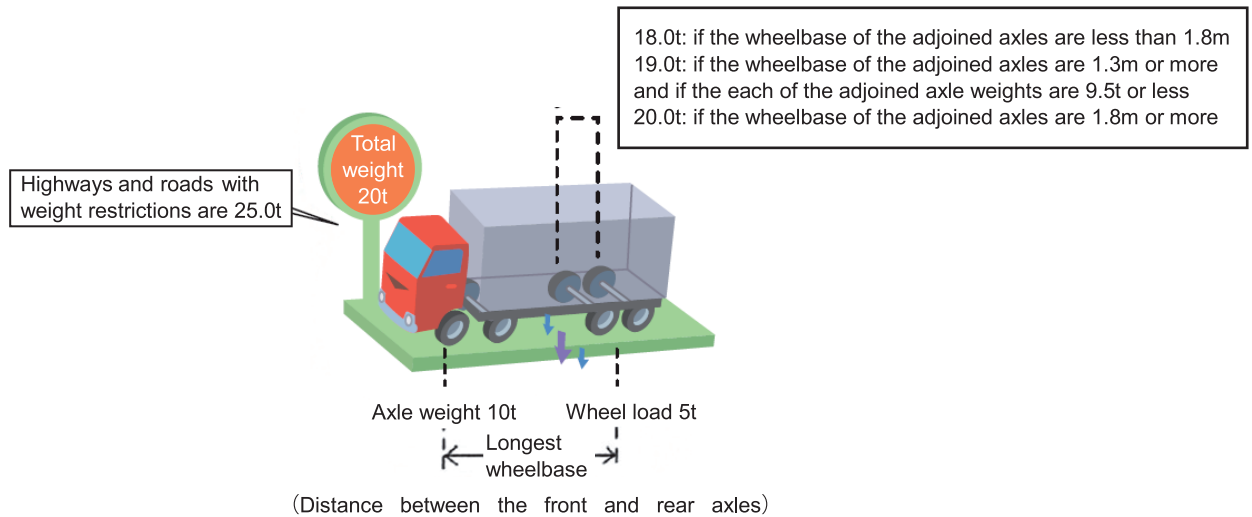
*Extract from the Special Vehicle Passage Handbook 2018 by the Ministry of Land, Infrastructure, Transport and Tourism, Designated roads are in the Road Information Handbook

Diagram of Standard Limits (Dimensions)



* Extract from the Special Vehicle Passage Handbook 2018 by the Ministry of Land, Infrastructure, Transport and Tourism

Diagram of Standard Limits (Weight)



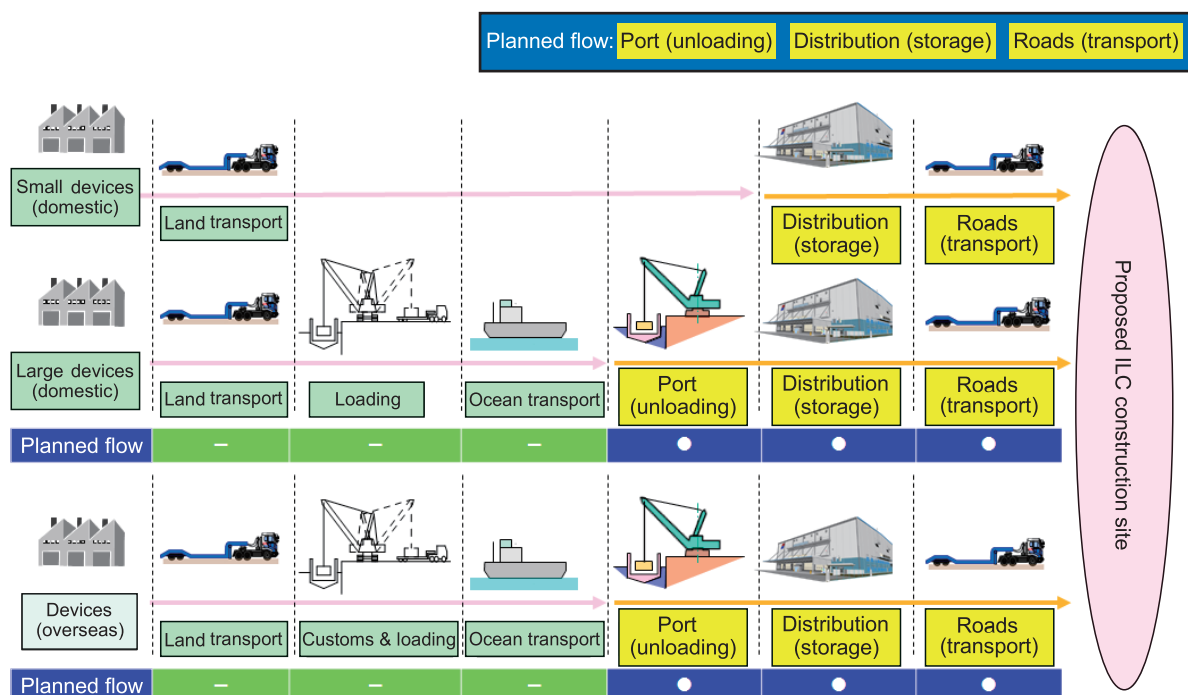
*Extract from the Special Vehicle Passage Handbook 2018 by the Ministry of Land, Infrastructure, Transport and Tourism

Dimensions where Special Vehicle Passage Permission is necessary (measurements that exceed the standard restrictions for a loaded vehicle)

Wide items	Items that exceed 2.5m in width
Long items	Items that exceed 12.0m in length
Tall items	Items that exceed 4.1m in height
Heavy items	Items that exceed 25.0t in total weight

- ② We are planning 3 stages for the transportation of products from Ofunato Port to the proposed construction site; port (unloading), distribution (storage) and roads (transport).

Flow of product transportation (device manufacture delivery to proposed construction site)



(3) List of products to be transported

The number of products to be transported is estimated to be approximately 270,000. The products at the upper limit of the specifications are a solenoid 7.6m in width (wide item), a medium pressure tank 23.0m in length (long item), a cold box 4.7m in height (tall item) and a cold box 80.0t in total weight (heavy item).

① Preconditions

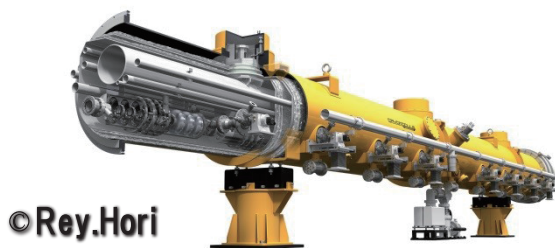
- I Currently, we are working on the understanding that all of the ILC experimental equipment is targeted for unloading at Ofunato Port.
- II Construction materials and equipment for engineering and construction work of the ILC Research Center are not included.
- III As the manufacturer of the equipment has not been decided yet, the dimensions, weight and quantities may change as the project progresses.

Product Name		Type	Dimensions(m)			Weight(t) (1 item)	Number of items	Case study
			Width	Length	Height			
Accelerator equipment	Cryomodule	Long item	1.0	12.7	1.0	10.0	906	II
	Extension quad (magnet)	Heavy item	1.0	2.0	1.0	15.0	8	VI
	In addition to above, other accelerator-related equipment	General cargo	-	-	-	-	81,889	I
Measuring instruments	Iron yoke (barrel)	Heavy item	-	-	-	50.0	288	VI
	Iron yoke (end cap)	Heavy item	-	-	-	30.0	336	VI
	Analog hadron calorimeter	Heavy item	-	-	-	20.0	-	VI
	Detailed hadron calorimeter (end cap module)	Heavy item	-	-	-	50.0	16	VI
	Detailed hadron calorimeter (end cap detector)	Heavy item	-	-	-	22.5	16	VI
	VTX/FTD (for measuring instruments)	Heavy item	-	-	-	30.0	-	VI
	Solenoid	Wide & heavy item	7.6	7.6	2.5	57.0	6	III・VI
	Anti-DiD (for measuring instruments)	Wide & heavy item	3.4	6.6	2.1	65.0	8	III・VI
	In addition to the above, other measuring instrument related equipment	General cargo	-	-	-	-	4,860	I
Electrical	110MVA transformer (for central substation)	Wide, tall & heavy item	4.0	4.4	3.6	34.0	3	III・V・VI
	35MVA transformer (for sub extra high voltage substation)	Wide, tall & heavy item	4.0	6.5	4.4	45.0	5	III・V・VI
	In addition to above, other electrical equipment	General cargo	-	-	-	-	66	I

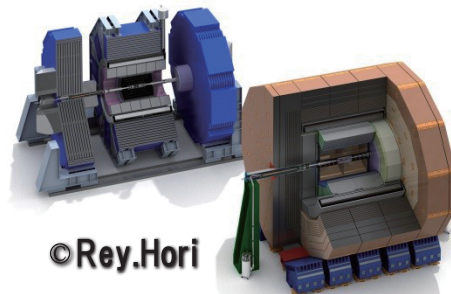
List of products to be transported (continued)

Product Name		Type	Dimensions(m)			Weight(t) (1 item)	Number of items	Case study
			Width	Length	Height			
Machines	Outside air conditioner (for air conditioning and ventilation)	Wide item	2.5	3.8	2.3	2.3	6	III
	Air conditioner for tunnel (for air conditioning and ventilation)	Wide item	3.5	4.7	2.3	3.8	6	III
	Water tank (for water supply equipment)	Wide & tall item	3.4	4.0	3.4	5.6	36	III・V
	Cooling tower (device for cooling water equipment)	Wide & tall item	3.7	9.0	4.0	8.9	36	III・V
	Heat transfer device (device for cooling water equipment)	Wide item	2.7	2.5	0.6	3.0	12	III
	Cooling tower (for helium cooling water equipment)	Wide & tall item	3.5	6.2	4.5	6.4	36	III・V
	In addition to the above, other machine-related equipment	General cargo	-	-	-	-	168,252	I
Helium refrigerators	Cold box	Wide, long, tall & heavy item	4.4	17.0	4.7	80.0	10	III・IV・ V・VI
	Compressor unit	Wide, tall & heavy item	3.0	6.0	4.0	15.0	56	III・V・VI
	Refrigerator upper side unit	Wide, tall & heavy item	3.7	9.1	4.4	34.0	7	III・V・VI
	Refrigerator lower side unit	Wide, long, tall & heavy item	3.5	14.0	4.0	50.0	7	III・IV・ V・VI
	Medium pressure tank	Wide, long, tall & heavy item	4.0	23.0	4.3	70.0	42	III・IV・ V・VI
	Liquid helium storage insulation container	Wide, long, tall & heavy item	2.5	12.0	2.5	50.0	7	III・IV・ V・VI
	Stationary ultracold storage	Wide, tall & heavy item	3.0	10.0	3.0	30.0	7	III・V・VI
	In addition to the above, other helium refrigerator related equipment	General cargo	-	-	-	-	11,627	I
Total(largest in dimension)			Widest (7.6)	Longest (23.0)	Tallest (4.7)	Heaviest (80.0)	268,554	

*Created based on meetings with ILC related personnel



Cryomodule



ILD&SiD (detector)

(4) Current status

① Current state of the port

Ofunato Port is located on the south coast of Iwate Prefecture and was designated as an important port in 1959. In addition to playing a leading role as base for regional logistics, the port also plays an important role at the center of regional development.

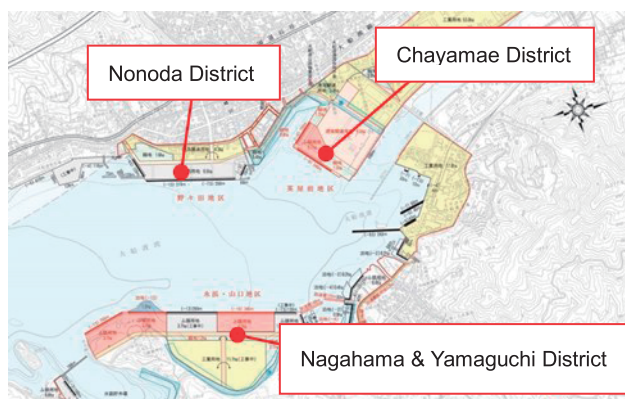
There are quays in Nonoda District, Chayamae District and Nagahama & Yamaguchi District. In order to increase the volume of cargo handled, a public wharf is also currently under development in the Nagahama & Yamaguchi District and the land for the wharf that adjoins to the quay (-13m), completed in 2008 is also approaching completion.

Panoramic view of Ofunato Port



*Picture of Ofunato Port taken October 2018

Layout of the port districts

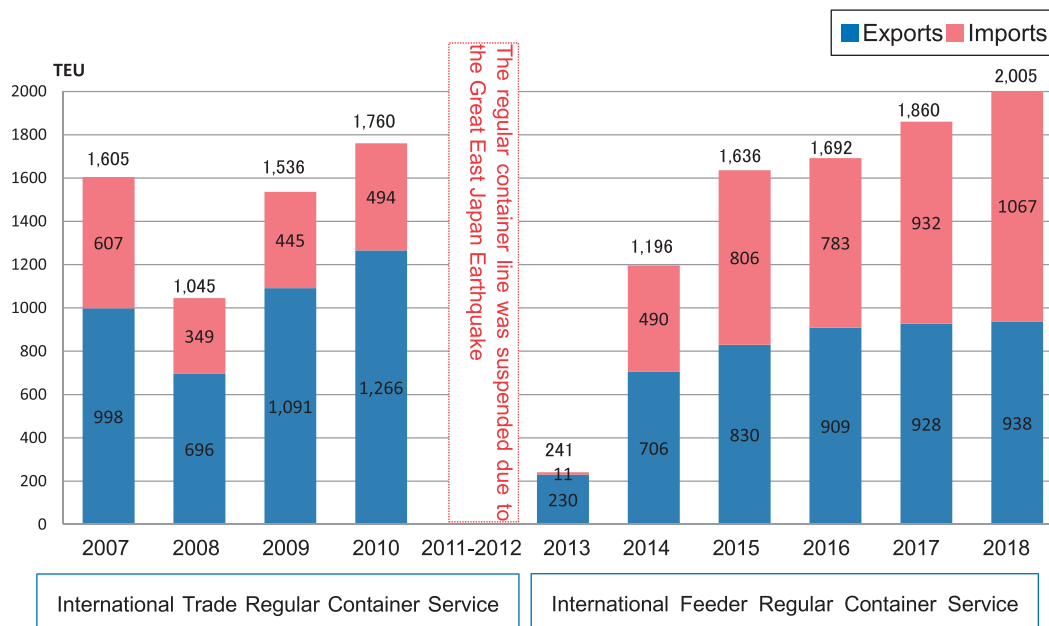


*Ground plan from the Ofunato Port Project created February 2017

Furthermore, with the international feeder regular container service line connecting Ofunato Port and Keihin Port being opened, there is improved balance between imports and exports and increasingly efficient distribution so the volume of containers handled here is steadily increasing.

In terms of container cargo, around 64% of exports are to the USA and the Netherlands and around 70% of imports are from Southeast Asia.

Changes in Ofunato Port Container Cargo Handling Volume (load*)



*Load is loaded freight

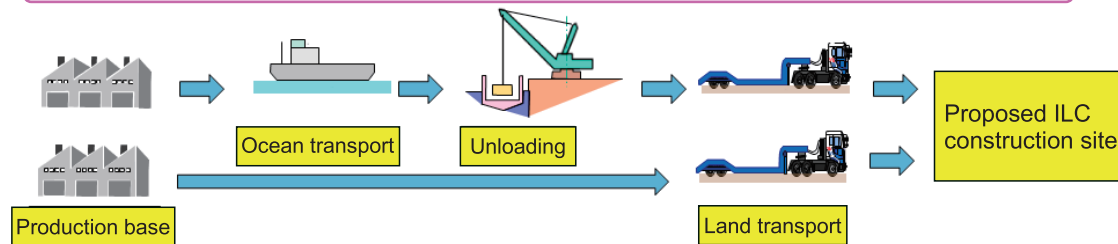
② CurrentStatus of the Storage Location

In addition to Ofunato Port having a large backyard area including Nagahama & Yamaguchi District, there is a relatively flat land area (for industry) in the port district.

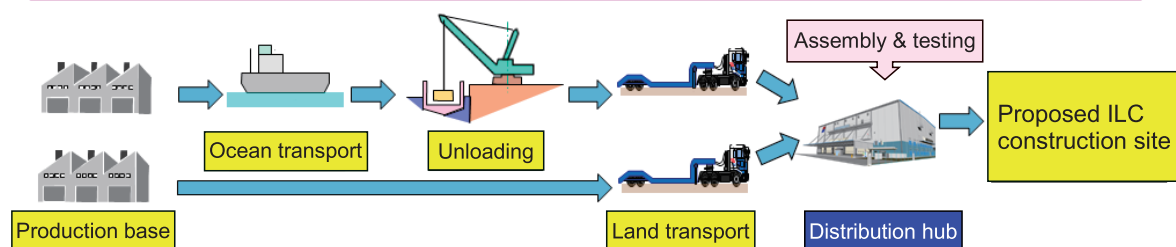
In order to optimize the construction process for the construction of the ILC, Ofunato Port makes a suitable place as a distribution hub where testing, assembly and storage of ILC-related products can be done in terms of its site and location being just 45 to 55km from the proposed ILC construction site and with it being envisaged that unloading can be done at the port as it is now without large-scale improvements and repairs.

Distribution Hub Concept

Until now: Manufactured products are delivered from the makers directly to the delivery destination



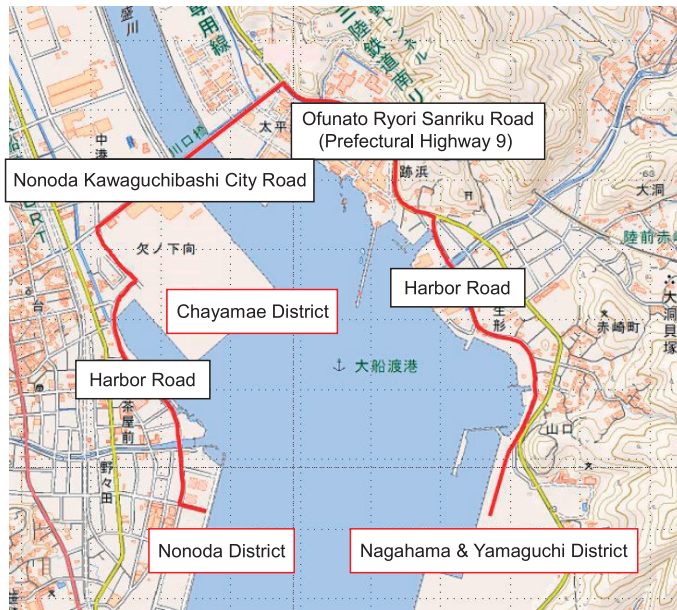
Distribution hub concept: Manufactured products regardless of the maker are collected at a base close to the delivery destination and then delivered as necessary. It may be necessary for assembly and testing to be done at the base in addition to just storage.



③ Current road link network

I Roads within Ofunato Port area

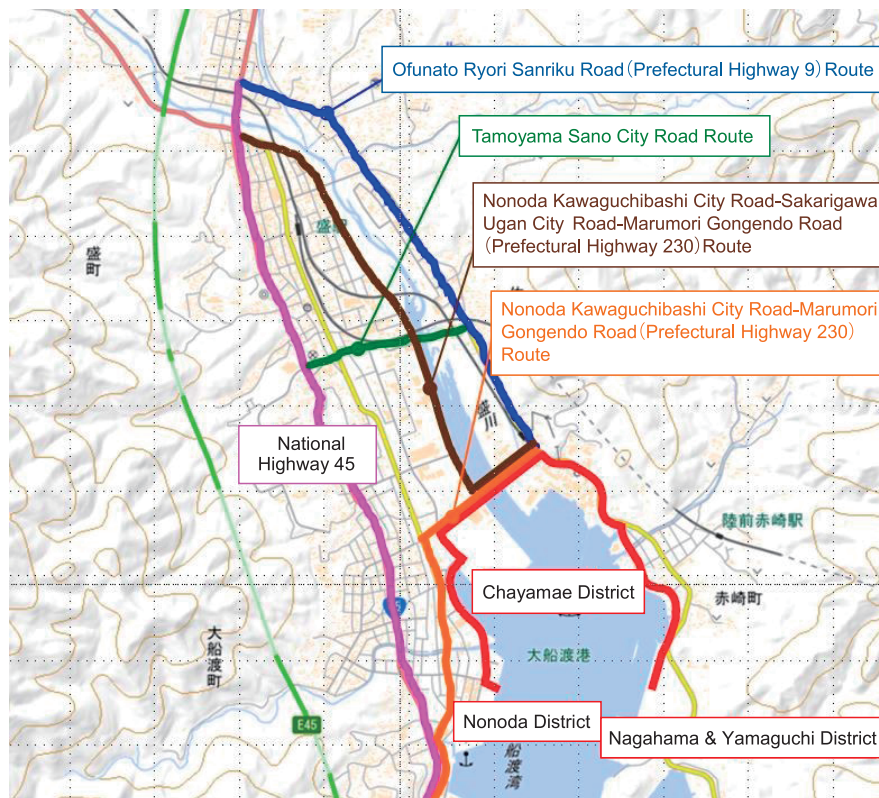
The roads between the 3 quays within Ofunato Port area are connected to the Harbor Road, Nonoda Kawaguchibashi City Road and the Ofunato Ryori Sanriku Road (Prefectural Highway 9).



*Map created by the Geographical Survey Institute

II Roads connecting the Ofunato Port quays to National Highway 45

The routes connecting the Ofunato Port quays to National Highway 45 are the Ofunato Ryori Sanriku Road (Prefectural Highway 9) route, the Tamoyama Sano City Road route, the Nonoda Kawaguchibashi City Road-Sakarigawa Ugan City Road-Marumori Gongendo Road (Prefectural Highway 230) route and the Nonoda Kawaguchibashi City Road-Marumori Gongendo Road (Prefectural Highway 230) route.



*Map created by the Geographical Survey Institute

III Roads from Ofunato Port to the proposed ILC construction site

The 3 routes below have been selected as possible routes from Ofunato Port to the proposed ILC construction site.

· Route A

[Key]  Route A

Passes through: Ofunato-Sumita-Oshu-Ichinoseki

Roads: National Highway 45-National Highway 107-National Highway 397-Esashi Murone Road (Prefectural Highway 10)

· Route B

[Key]  Route B

Passes through: Ofunato-Rikuzentakata-Ichinoseki

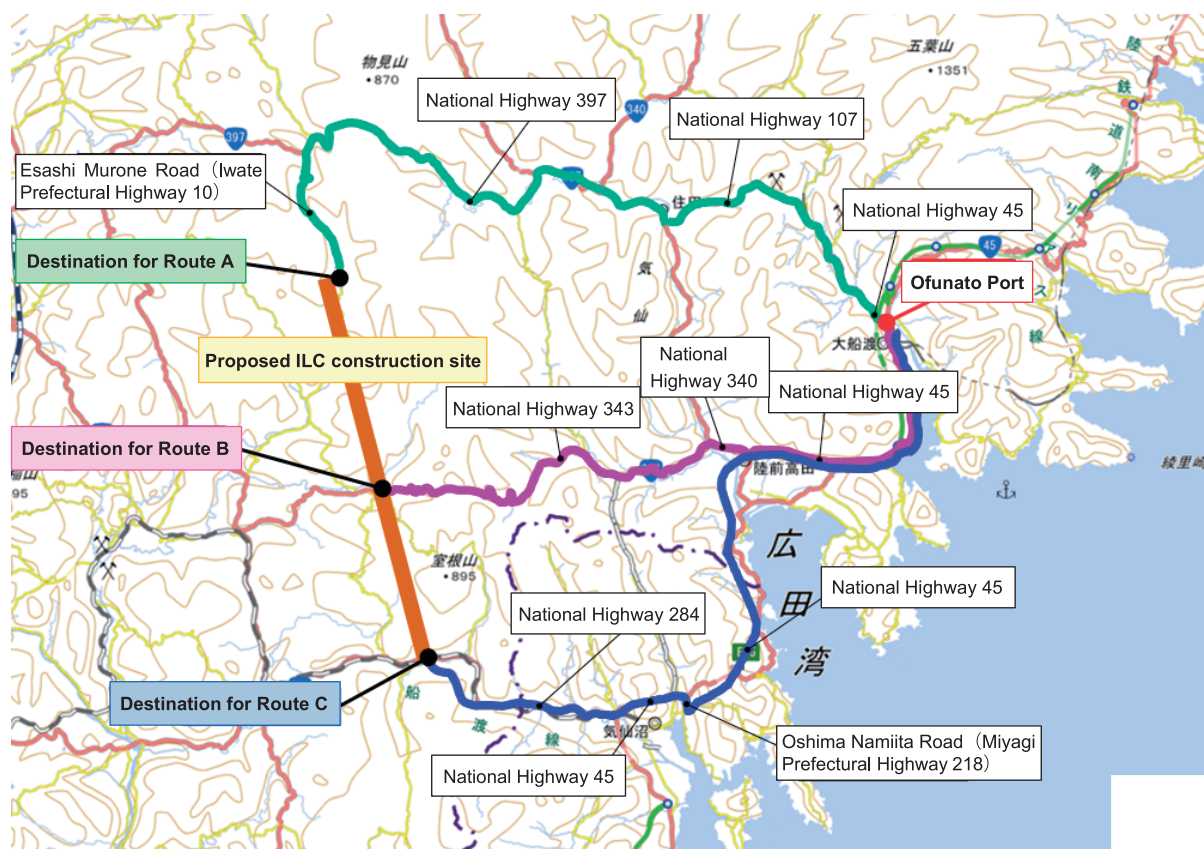
Roads: Take National Highway 45 and the Sanriku Coastal Road (Ofunato Goishi Kaigan IC-Rikuzentakata IC)-National Highway 340-National Highway 343

· Route C

[Key]  Route C

Passes through: Ofunato-Rikuzentakata-Kesennuma-Ichinoseki

Roads: Take National Highway 45 and the Sanriku Coastal Road (Ofunato Goishi Kaigan IC-Kesennuma Kita IC)-Oshima Namiita Road (Miyagi Prefectural Road 218)-National Highway 45-National Highway 284



*Map created by the Geographical Survey Institute

3 Survey

(1) Survey contents and methodology

Case studies were carried out using the methods below to survey the port, storage locations and all sections of the road network to be used as well as dividing the list of products to be transported into categories based on their particular characteristics.

① Contents and methodology of the survey of the port

- I Meeting with ILC related personnel concerning methods of transporting products and special considerations
- II Survey of Ofunato Port's facilities
- III On-site survey of Ofunato Port

② Contents and methodology of the survey of the storage location

- I Meeting with ILC related personnel concerning methods of transporting products and special considerations
- II Survey of the storage areas of Ofunato Port
- III On-site survey of the proposed storage sites

③ Contents and methodology of the survey of the roads

- I Meeting with ILC related personnel concerning method of transporting products and special considerations
- II Obtain road information from the Road Transportation Manual and Road Traffic Census
- III On-site survey of the transportation routes
- IV Meeting with road management and maintenance personnel

(2) Survey results

① Investigation results of the port

- I Summary of the facilities of the districts investigated

A Nagahama & Yamaguchi District

District name	Facility type	Summary of facilities				Notes
		Water depth	No. of berths	Length	Target ships	
Nagahama & Yamaguchi	Quay	-13.0m	1	290m	Deadweight 40,000t	<ul style="list-style-type: none"> • No equipment for handling cargo • Wharf currently under development
		-7.5m	1	130m	Deadweight 5,000t	

B Nonoda District

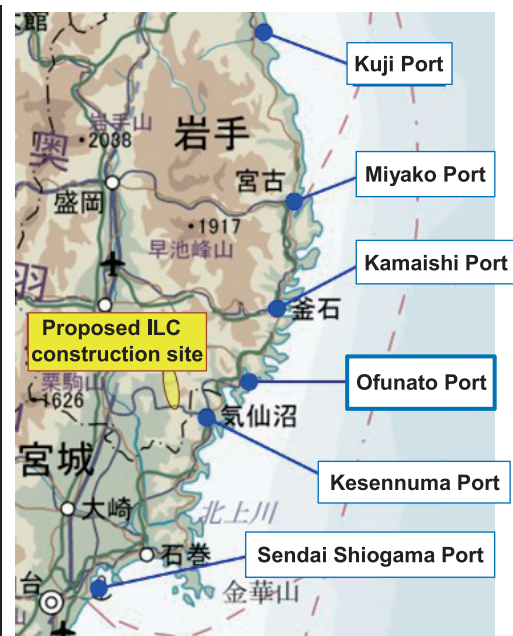
District name	Facility type	Summary of facilities				Notes
		Water depth	No. of berths	Length	Target ships	
Nonoda	Quay	-13.0m	1	270m	Deadweight 40,000t	<ul style="list-style-type: none"> • International Feeder Regular Container Service Line • There is a private self-propelled harbor crane (stationed at quayside -13m)
		-7.5m	2	260m	Deadweight 5,000t	
		-4.5m	2	120m	Deadweight 1,000t	

C Chayamae District

District name	Facility type	Summary of facilities				Notes
		Water depth	No. of berths	Length	Target ships	
Chayamae	Quay	-9.0m	2	330m	Deadweight 10,000t	• Mainly bulk cargo is handled here
		-6.0m	2	210m	Deadweight 2,000t	• There is a private crawler crane and a crane truck

Summary of the port facilities at Ofunato Port and other ports in the vicinity (Reference)

Port name	Facility specifications (largest)	Incoming ships (Max. possible in tonnes)	Transport distance to site	Type
Kuji	Water depth: -10m Length: 185m	12,000	Shortest: 225 km Longest: 260 km	Important port
Miyako	Water depth: -12.0m Length: 240m	30,000	Shortest: 140 km Longest: 170 km	Important port
Kamaishi	Water depth: -11.0m Length: 190m	18,000	Shortest: 90 km Longest: 115 km	Important port
Ofunato	Water depth: -13m Length: 290m	40,000	Shortest: 50 km Longest: 80 km	Important port
Kesennuma (Miyagi Prefecture)	Water depth: -7.5m Length: 130m	5,000	Shortest: 40 km Longest: 50 km	Area port
Sendai Shiogama (Miyagi Prefecture)	Water depth: -14.0m Length: 330m	50,000	Shortest: 145 km Longest: 170 km	International base port

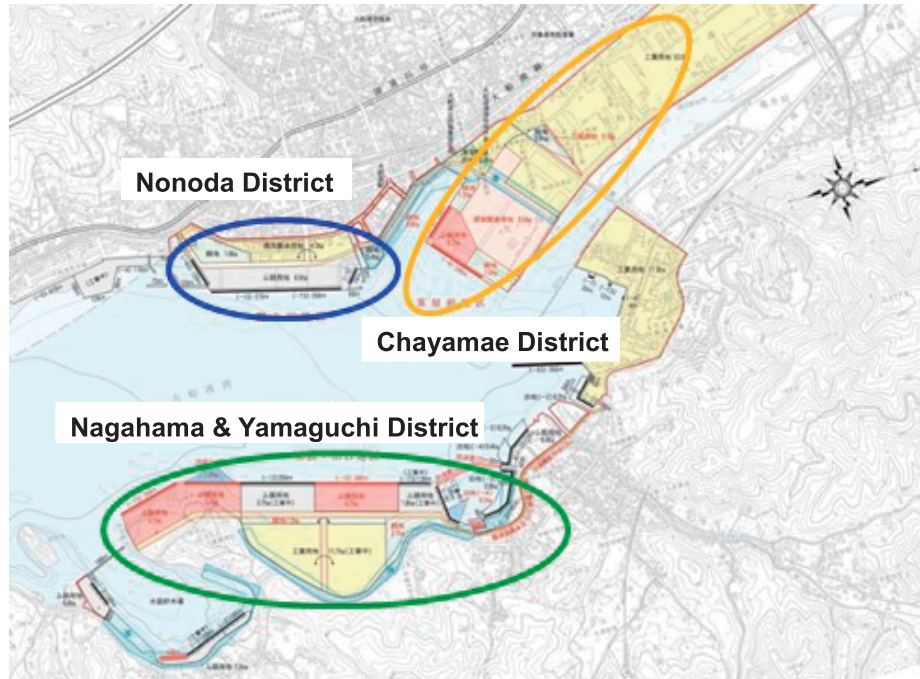


*Map created by the Geographical Survey Institute

② Results of the survey of the storage areas

I Summary of the Ofunato Port sites

	Nagahama & Yamaguchi District	Nonoda District	Chayamae District
Wharf site	3.7ha (planned to be partly in operation from 2018) 1.8ha (planned to be in operation from 2019)	6.5ha (existing)	15.7ha (existing)
Industrial site	5.3ha (development finished), 6.4ha (under development)	-	53.0ha (existing)
Green space	3.3ha (under development)	2.0ha (existing)	0.9ha (existing)



*Ground plan from the Ofunato Port Project created February 2017

II Facilities, environment and equipment desired for the distribution hub

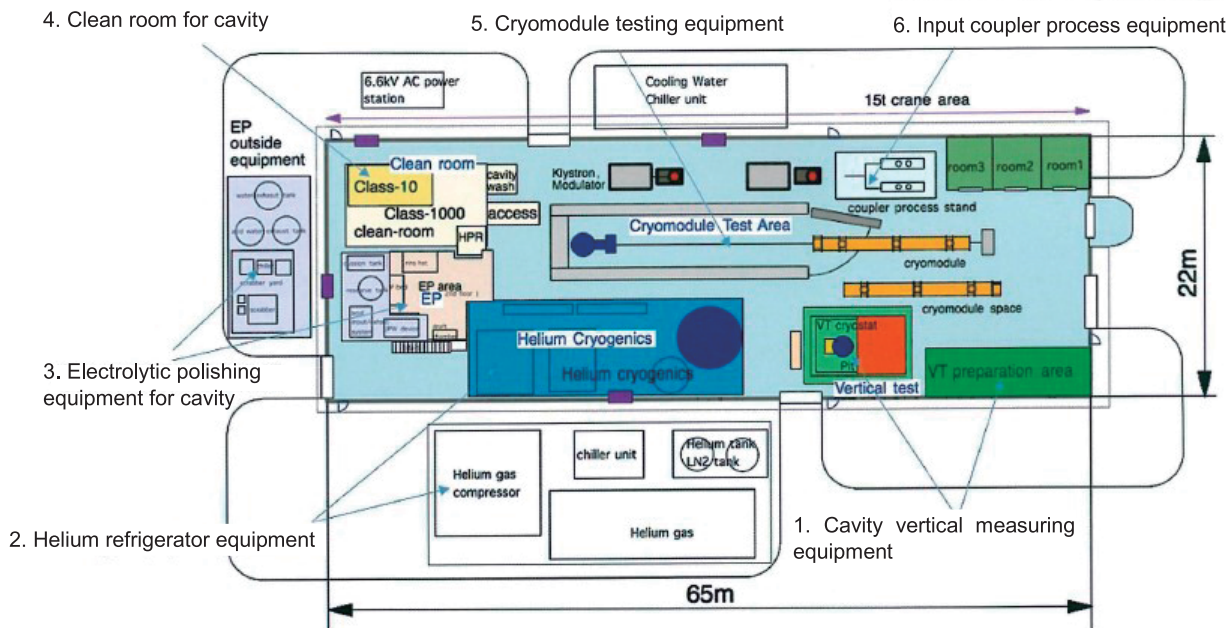
- A Storage facilities for equipment imported from overseas by ocean-going vessels
- B Storage facility for heavy goods (large items)
- C Facilities with the necessary equipment to maintain quality
- D Facilities where cryomodules can be inspected, assembled and stored
- E The transportation time from the storage facility to the proposed ILC construction site is within 2 hours

Image of cryomodule storage



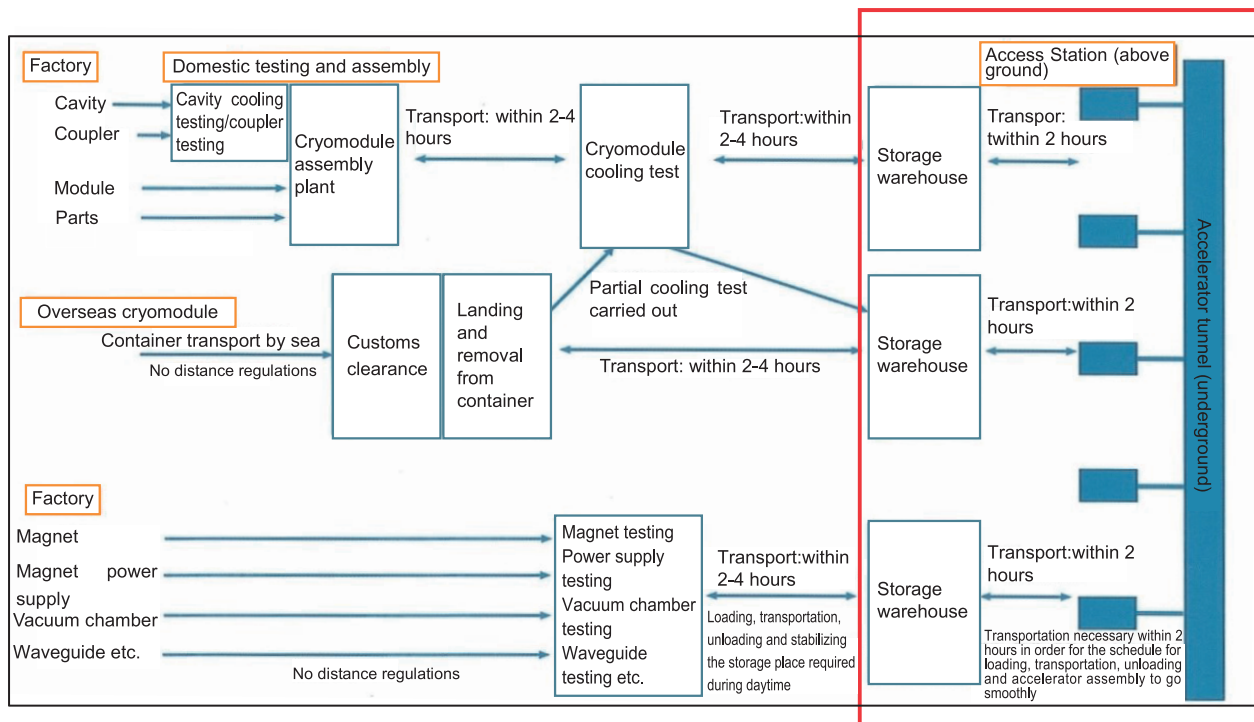
*Regional base for ILC accelerator assembly, maintenance and storage from the ILC Guidelines Series 2

Testing Facility for the Superconducting Acceleration Cavity/Cryomodule



*Outline from the ILC Guidelines Series 2: Regional Base for ILC Accelerator Assembly, Maintenance and Storage

Positional Relationship of Regional Base Equipment Considered for the Construction Process from Transportation of the Cryomodule to Tunnel Installation



*Outline from the ILC Guidelines Series 2: Regional Base for ILC Accelerator Assembly, Maintenance and Storage

③ Results of the survey of the road networks

I Roads within Ofunato Port area

The Harbor Road and Ofunato Ryori Sanriku Road (Prefectural Highway 9) including the mounting of Kawaguchi-bashi Bridge connecting Nagahama and Yamaguchi District, Chayamae District and Nonoda District are under development. As the vehicles that will pass along these roads will be container trailers transporting containers unloaded at Nonoda District to the distribution hub at Nagahama and Yamaguchi District, smooth transport will be possible after this road development is finished.

II Roads connecting the Ofunato Port quays to National Highway 45

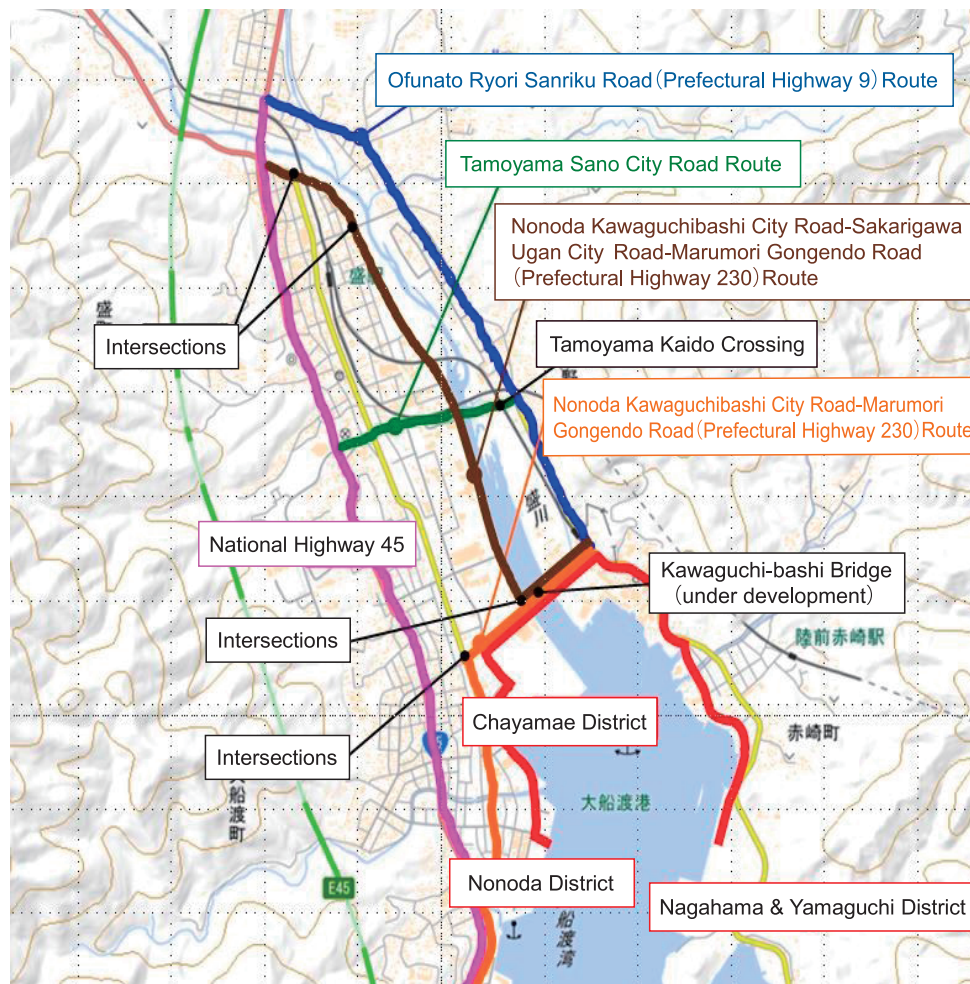
The main routes to National Highway 45 from the proposed distribution hub at Nagahama and Yamaguchi District for the proposed construction site are the Ofunato Ryori Sanriku Road (Prefectural Highway 9) route, the Tamoyama Sano City Road route, the Nonoda Kawaguchibashi City Road-Sakarigawa Ugan City Road-Marumori Gongendo Road (Prefectural Highway 230) route and the Nonoda Kawaguchibashi City Road-Marumori Gongendo Road (Prefectural Highway 230) route.

General cargo within the standard restrictions of the highway rules and 45ft containers can pass along any of these routes without problem.

For other cargo, it is best to avoid crossings and intersections where left and right turns are needed.

Therefore, the Tamoyama Sano City Road route with the Tamoyama Kaido railway crossing, the Nonoda Kawaguchibashi City Road-Sakarigawa Ugan City Road-Marumori Gongendo Road (Prefectural Highway 230) route and the Nonoda Kawaguchibashi City Road-Marumori Gongendo Road (Prefectural Highway 230) route are excluded from the product transportation route and the Ofunato Ryori Sanriku Road (Prefectural Highway 9) route is selected as the best product transportation route for joining National Highway 45 for these products.

Roads connecting the Ofunato Port quays to National Highway 45(continued)



*Map created by the Geographical Survey Institute

III Roads from Ofunato Port to the proposed ILC construction site

Based on the results above, the 3 routes below have been selected as transportation routes from Ofunato Port to the proposed ILC construction site.

Vehicles that are able to transport products along the Sanriku Coastal Road will travel along the Sanriku Coastal Road from Ofunato Goishi Kaigan IC after entering onto National Highway 45 when using routes B and C.

• Route A

[Key] — Route A

Passes through: Ofunato-Sumita-Oshu-Ichinoseki

Roads: Ofunato Ryori Sanriku Road (Prefectural Highway 9)- National Highway 45-National Highway 107-National Highway 397-Esashi Murone Road (Prefectural Highway 10)
(Transportation distance about 55km)

• Route B

[Key] — Route B

Passes through: Ofunato-Rikuzentakata-Ichinoseki

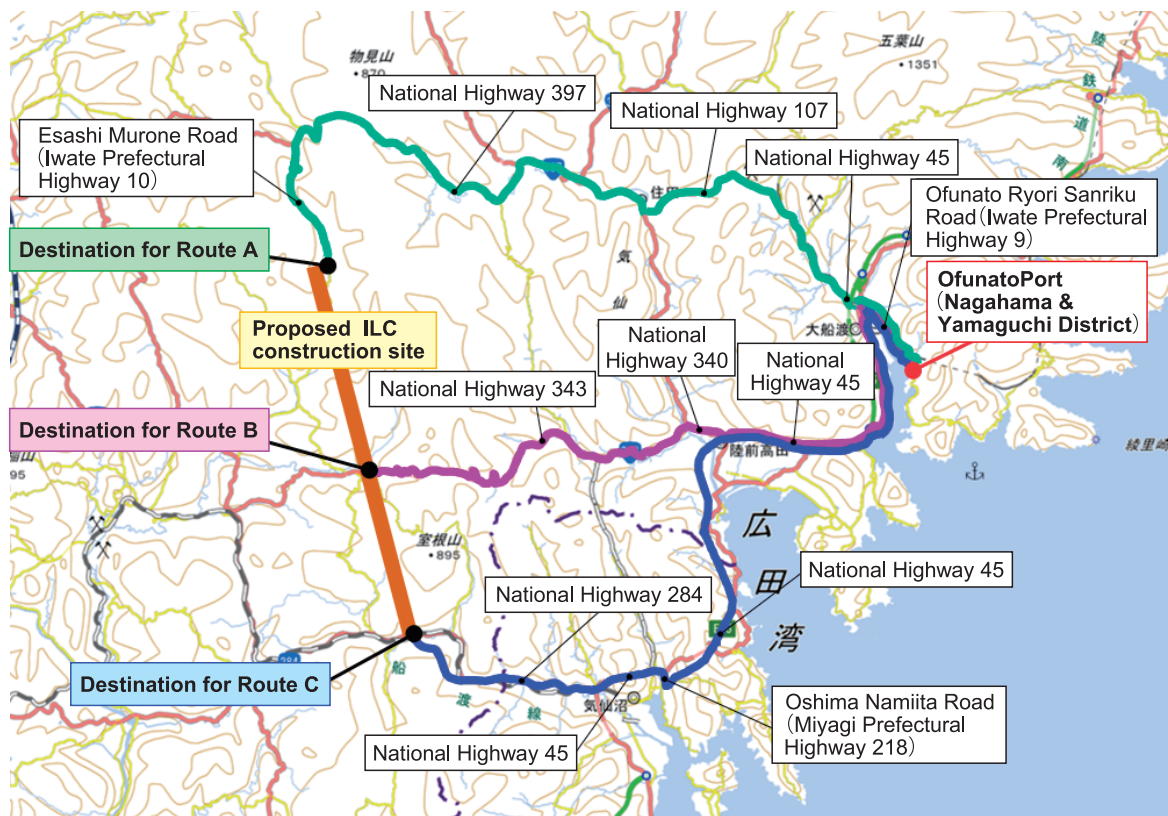
Roads: Ofunato Ryori Sanriku Road (Prefectural Highway 9)-National Highway 45 and the Sanriku Coastal Road (Ofunato Goishi Kaigan IC-Rikuzentakata IC)-National Highway 340-National Highway 343 (Transportation distance about 45km)

• Route C

[Key] — Route C

Passes through: Ofunato-Rikuzentakata-Kesennuma-Ichinoseki

Roads: Ofunato Ryori Sanriku Road (Prefectural Highway 9) National Highway 45 and the Sanriku Coastal Road (Ofunato Goishi Kaigan IC-Kesennuma Kita IC) -Oshima Namiita Road (Miyagi Prefectural Road 218)-National Highway 45-National Highway 284
(Transportation distance about 55km)



*Map created by the Geographical Survey Institute

Main structures along each route

Route A

City/town	Bridges	Overpasses	Tunnels	Notes
Ofunato	14	4	1	
Sumita	28	None	9	
Oshu	4	None	2	
Ichinoseki	3	None	None	

Route B (Via Sanriku Coastal Road: Ofunato Goishi Kaigan IC⇒Rikuzentakata IC)

City/town	Bridges	Overpasses	Tunnels	Notes
Ofunato	6	5	None	
Sanriku Coastal Road	None	None	1	Road restrictions in place
Rikuzentakata	30	1	6	
Ichinoseki	6	None	3	

Route C (Via Sanriku Coastal Road: Ofunato Goishi Kaigan IC⇒Rikuzentakata IC)

City/town	Bridges	Overpasses	Tunnels	Notes
Ofunato	6	5	None	
Sanriku Coastal Road	8	None	5	Road restrictions in place
Kesennuma	11	1	5	Oshima Namiita Road under development
Ichinoseki	4	None	None	

*The Sanriku Coastal Road is under maintenance between Rikuzentakata-Osabe IC and Kesennuma Kita IC (as of 2018)

Main structures along each route (continued)

Route	Road Environment	Traffic Volume	Notes
A	<ul style="list-style-type: none"> • 49 bridges, 12 tunnels, 4 overpasses • Minimum road width 5.5m (Esashi Murone Road (Prefectural Highway 10)) • Minimum height 4.5m (Shiraishi Tunnel) • There are houses and commercial facilities along the road except in the passes 	<ul style="list-style-type: none"> • High volume around Ofunato City center (22,000 cars per day) • Low traffic volume from Route 397 onwards (2,200 cars per day) • Night is about 10% of peak traffic volume 	<ul style="list-style-type: none"> • There is a railway overpass (Sanriku Railway Minami Rias Line, Iwate Development Railway)
B	<ul style="list-style-type: none"> • There is a section on the Sanriku Coastal Road (Ofunato Goishi Kaigan IC - Rikuzentakata IC) • 42 bridges, 10 tunnels, 6 overpasses • Minimum road width 6.0m (Sasanoda Tunnel) • Minimum height 4.6m (Sasanoda Tunnel and others) • There are houses and commercial facilities along the road except in the passes 	<ul style="list-style-type: none"> • High volume around Ofunato city center (22,000 cars per day) • High volume on the Sanriku Coastal Road (14,000 cars per day) • Low volume around Rikuzentakata city center but many large vehicles (2,900 cars per day) • Low traffic volume after Yahagi (4,500 cars per day) • Night is about 10% of peak traffic volume 	<ul style="list-style-type: none"> • There is a railway overpass (Sanriku Railway Minami Rias Line, Iwate Development Railway) • There is a loop bridge on Route 343 (Rikuzentakata • Ichinoseki) <Sanriku Coastal Road traffic restrictions> • Width 2.5m, length 12.0m Height 4.1m, total weight 25.0t
C	<ul style="list-style-type: none"> • There is a section on the Sanriku Coastal Road (Ofunato Goishi Kaigan IC - Kesenuma Kita IC) • 29 bridges, 6 tunnels, 6 overpasses • Minimum road width 4.5m (Route 45 side road) • Minimum height 4.7m (Sasazaki Pedestrian Bridge etc.) • There are houses and commercial facilities along the road except in the passes 	<ul style="list-style-type: none"> • High volume around Ofunato city center (22,000 cars per day) • High volume on the Sanriku Coastal Road (14,000 cars per day) • High volume around Kesenuma city center (17,000 cars per day) • High volume from Route 284 onwards (13,000 cars per day) • Night is about 10% of peak traffic volume 	<ul style="list-style-type: none"> • There is a railway overpass (Sanriku Railway Minami Rias Line, Iwate Development Railway) <Sanriku Coastal Road traffic restrictions> • Width 2.5m, length 12.0m Height 4.1m, total weight 25.0t

*Traffic volume is based on the 2015 national transportation census (general traffic volume survey)

Features of each route

• Route A

- I Transportation distance is about 55km.
- II This route has the lowest traffic volume of the 3 routes studied with National Highway 107 having a traffic volume of 13,000 cars per day and National Highway 397 having 2,200 cars per day.
- III The road width of National Highway 107 and 397 is 6.3m to 9.0m but Prefectural Highway 10 has a 3km section of road with a width of 5.5m.
- IV There are 12 tunnels and 4 overpasses and the minimum cross section of these is 6.3m in width and 4.5m in height.

• Route B

- I This is the shortest of the 3 routes with a transportation distance of 45km.
- II This route has the 2nd highest traffic volume of the 3 routes studied with National Highway 45 having a traffic volume of 14,000 cars per day and National Highway 343 having 4,500 cars per day.
- III The road width of National Highway 343 is 6.0m to 9.0m.
- IV There are 10 tunnels and 6 overpasses and the minimum cross section of these is 6.0m in width and 4.5m in height.

• Route C

- I Using the Sanriku Coastal Road for 24km of the transportation distance of 55km, this is planned to be the shortest of the routes in transportation time.
- II This route has the highest traffic volume of the 3 routes studied with National Highway 45 having a traffic volume of 14,000 cars per day and National Highway 284 having 13,000 cars per day.
- III The road width of National Highway 284 is 7.0m to 9.0m.
- IV There are 10 tunnels and 8 overpasses and the minimum cross section of these is 8.0m in width and 4.7m in height.

(3) Case studies

Based on the survey results we set up the 6 case studies below to examine methods for handling the cargo based on actual operations for products from the transportation product list with different characteristics. The dimensions (width, length, height and total weight) are for loaded vehicles.

Case study I	General cargo	Cargo within width 2.5m/length 12.0m/height 4.1m/total weight 25.0t
Case study II	45ft container	45ft containers
Case study III	Wide items	Cargo exceeding 2.5m in width
Case study IV	Long items	Cargo exceeding 12.0m in length
Case study V	Tall items	Cargo exceeding 4.1m in height
Case study VI	Heavy items	Cargo exceeding 25.0t in total weight

① Case study I (general cargo)

Target cargo: Cargo within width 2.5m/length 12.0m/height 4.1m/total weight 25.0t

Freight volume/frequency: 10,382 loads

Section	Category	Details			Notes
Port	Unloading area	Nonoda District	Nagahama & Yamaguchi District		
	Unloading method	Mobile crane	Mobile crane		
	Port facility	No measures required	No measures required		
	Port to storage location	Public road transport	Transport within port		
	Import customs clearance	Needed			For overseas cargo
Storage location	Storage entry operations	Unloading from the vehicle			
	Storage method	Mobile crane/overhead crane/forklift			
	Storage location	Outdoors/indoors			
	Storage amount	188,931 units			
	Leaving depot operations	Loading onto vehicle			
	Operations method	Mobile crane/overhead crane/forklift			
Roads	Transport vehicle	10t truck/15t truck			
	Transportation route	A	B	C	
	Road width	No measures required	No measures required	No measures required	
	Road features	No measures required	No measures required	No measures required	
	Transport time	1.9hrs*	1.4hrs*	1.5hrs*	
	Transport conditions	24hrs	24hrs	24hrs	

*Average speed is estimated based on records from logistics companies (general roads 30km/h, Sanriku Coastal Road 60km/h)

Optimal operations method

- I Port: Nagahama & Yamaguchi District (for transportation within the port area to the storage location)
- II Storage location: Distribution hub (Nagahama & Yamaguchi District)
- III Roads: Routes A, B and C (can be selected by delivery destination)

Issues to address

- I There will be large volumes of general cargo so an improvement in transport efficiency is necessary.

② Case study II (45ft containers)

Target cargo: Cryomodule (45ft container)

Freight volume/frequency: 906 loads

Section	Category	Details			Notes
Port	Unloading area	Nonoda District	Nagahama & Yamaguchi District		
	Unloading method	Harbor crane	Mobile crane		
	Port facility	No measures required	No measures required		
	Port to storage location	Public road transport	Transport within port		
	Import customs clearance	Needed			For overseas cargo
Storage location	Storage entry operations	Unloading from the vehicle			
	Storage method	Mobile crane/overhead crane			
	Storage location	Indoors			
	Storage amount	906 units			
	Leaving depot operations	Loading onto vehicle			
	Operations method	Mobile crane/overhead crane			
Roads	Transport vehicle	Chassis for 45ft containers			Vehicles fitted with devices for safe transportation
	Transportation route	A	B	C	
	Road width	Measures required	No measures required	No measures required	
	Road features	No measures required	No measures required	No measures required	
	Transport time	2.2hrs*	1.7hrs*	1.8hrs*	
	Transport conditions	24hrs	24hrs	24hrs	

*Average speed is estimated based on records from logistics companies (general roads 25km/h, Sanriku Coastal Road 50km/h)

Optimal route

- I Port: Nonoda District (because of its permanent harbor crane)
- II Storage location: Distribution hub (Nagahama & Yamaguchi District)
- III Roads: Route B or C (can be selected depending on the delivery destination)

Issues to address

- I The handling volume of 45ft containers is low in Japan and chassis for 45ft containers are scarce so detailed process management for providing suitable vehicles and their operation is required.
- II There is a 5.5m wide section of road on the Esashi Murone Road (Prefectural Highway 10) along Route A, so widening of the road will be necessary to pass along it.

③ Case study III (wide items)

Target cargo: Solenoid (L7.6 × W7.6 × H2.5(m), 57t)

Freight volume/frequency: 6 loads

Section	Category	Details			Notes
Port	Unloading area	Nonoda District	Nagahama & Yamaguchi District		
	Unloading method	Mobile crane	Mobile crane		
	Port facility	Temporary measures required	Temporary measures required		Distribution of load's contact pressure
	Port to storage location	Public road transport	Transport within port		Public transport measures required
	Import customs clearance	Needed			For overseas cargo
Storage location	Storage entry operations	Unloading from the vehicle			
	Storage method	Mobile crane/overhead crane			
	Storage location	Outdoors/indoors			
	Storage amount	6 units			
	Leaving depot operations	Loading onto vehicle			
	Operations method	Mobile crane/overhead crane			
Roads	Transport vehicle	6-axle multi-trailer			
	Transportation route	A	B	C	
	Road width	Measures required	Measures required	Measures required	
	Road features	Measures required	Measures required	Measures required	Proposed loading width 7.6m
	Transport time	—	—	—	Depends on road conditions
	Transport conditions	9:00pm-6:00am	9:00pm-6:00am	9:00pm-6:00am	Depends on road administrators

Optimal route

- I Port: Nagahama & Yamaguchi District (because it needs transporting within the port to the storage area)
- II Storage area: Distribution hub (Nagahama & Yamaguchi District)

- III Roads: For all routes, it will be necessary to consult with road administrators (as measures for road widening and road structures are required) and the police in cases where traffic regulations are involved.

Issues to address

- I Special 6-axle multi-trailers are scarce compared with standard trailers so detailed process management for providing suitable vehicles and their operation is required.
- II Traffic restrictions may be required as the width exceeds the standard limits.
- III On all routes, road widening and improvements to road structures as well as removal or movement of roadside works will be required in some cases. (National Highway 107 and the Shiraishi Tunnel are not wide enough in places etc.)

④ Case study IV (long items)

Target cargo: Medium pressure tank (L23.0 × W4.0 × H4.3(m), 70t)

Freight volume/frequency: 42 loads

Section	Category	Details			Notes
Port	Unloading area	Nonoda District	Nagahama & Yamaguchi District		
	Unloading method	Mobile crane	Mobile crane		
	Port facility	Temporary measures required	Temporary measures required		Distribution of load's contact pressure
	Port to storage location	Public road transport	Transport within port		Public transport measures required
	Import customs clearance	Needed			For overseas cargo
Storage location	Storage entry operations	Unloading from the vehicle			
	Storage method	Mobile crane/overhead crane			
	Storage location	Outdoors/indoors			
	Storage amount	42 units			
	Leaving depot operations	Loading onto vehicle			
	Operations method	Mobile crane/overhead crane			
Roads	Transport vehicle	6-axle multi-trailer			
	Transportation route	A	B	C	
	Road width	Measures required	Measures required	Measures required	
	Road features	Measures required	Measures required	Measures required	Proposed loading height of 5.3m
	Transport time	—	—	—	Depends on road conditions
	Transport conditions	9:00pm-6:00am	9:00pm-6:00am	9:00pm-6:00am	Depends on road administrators

Optimal route

- I Port: Nagahama & Yamaguchi District (because it needs transporting within the port to the storage area)
- II Storage area: Distribution hub (Nagahama & Yamaguchi District)
- III Roads: For all routes, it will be necessary to consult with road administrators (as measures for road widening and road structures are required) and the police in cases where traffic regulations are involved.

Issues to address

- I Special 6-axle multi-trailers are scarce compared with standard trailers so detailed process management for providing suitable vehicles and their operation is required.
- II Traffic restrictions may be required as the width exceeds the standard limits.
- III On all routes, road widening and improvements to road structures as well as removal or movement of roadside works will be required in some cases. (Problems with alignment at the intersection of National Highway 45 and the Prefecture Government Office in Ofunato etc.)

⑤ Case study V (tall items)

Target cargo: Cooling tower (helium cobbling water equipment) (L6.2 × W3.5 × H4.5(m), 6.4t)

Freight volume/frequency: 36 loads

Section	Category	Details			Notes
Port	Unloading area	Nonoda District	Nagahama & Yamaguchi District		
	Unloading method	Mobile crane	Mobile crane		
	Port facility	Temporary measures required	Temporary measures required		Distribution of load's contact pressure
	Port to storage location	Public road transport	Transport within port		
	Import customs clearance	Needed			For overseas cargo
Storage location	Storage entry operations	Unloading from the vehicle			
	Storage method	Mobile crane/overhead crane			
	Storage location	Outdoors/indoors			
	Storage amount	36 units			
	Leaving depot operations	Loading onto vehicle			
	Operations method	Mobile crane/overhead crane			
Roads	Transport vehicle	Low platform trailer			
	Transportation route	A	B	C	
	Road width	Measures required	No measures required	No measures required	
	Road features	Measures required	Measures required	Measures required	Proposed loading height of 5.1m
	Transport time	—	—	—	Depends on road conditions
	Transport conditions	9:00pm-6:00am	9:00pm-6:00am	9:00pm-6:00am	Depends on road administrators

Optimal route

- I Port: Nagahama & Yamaguchi District (because it needs transporting within the port to the storage area)
- II Storage area: Distribution hub (Nagahama & Yamaguchi District)
- III Roads: For all routes, it will be necessary to consult with road administrators (as measures for road widening and road structures are required) and the police in cases where traffic regulations are involved.

Issues to address

- I Traffic restrictions may be required as the width exceeds the standard limits.
- II There are many places along all the routes where it is not possible to pass along due to the current height of road structures including tunnels and overpasses so measures will be required for passage along these sections. (The minimum height is too low at places on National Highway 45, the Iwate Development Railway Overpass and the Sasazaki Pedestrian Bridge)

⑥ Case study VI (heavy items)

Target cargo: Cold box (L17.0 × W4.4 × H4.7(m), 80t)

Freight volume/frequency: 10 loads

Section	Category	Details			Notes
Port	Unloading area	Nonoda District	Nagahama & Yamaguchi District		
	Unloading method	Mobile crane	Mobile crane		
	Port facility	Temporary measures required	Temporary measures required		Distribution of load's contact pressure
	Port to storage location	Public road transport	Transport within port		Public transport measures required
	Import customs clearance	Needed			For overseas cargo
Storage location	Storage entry operations	Unloading from the vehicle			
	Storage method	Mobile crane/overhead crane			
	Storage location	Outdoors/indoors			
	Storage amount	10units			
	Leaving depot operations	Loading onto vehicle			
	Operations method	Mobile crane/overhead crane			
Roads	Transport vehicle	6-axle multi-trailer			
	Transportation route	A	B	C	
	Road width	Measures required	Measures required	Measures required	
	Road features	Measures required	Measures required	Measures required	Proposed loading height of 5.7m
	Transport time	—	—	—	Depends on road conditions
	Transport conditions	9:00pm-6:00am	9:00pm-6:00am	9:00pm-6:00am	Depends on road administrators

Optimal route

- I Port: Nagahama & Yamaguchi District (because it needs transporting within the port to the storage area)
- II Storage area: Distribution hub (Nagahama & Yamaguchi District)
- III Roads: For all routes, it will be necessary to consult with road administrators (as measures for road widening and road structures are required) and the police in cases where traffic regulations are involved.

Issues to address

- I Special 6-axle multi-trailers are scarce compared with standard trailers so detailed process management for providing suitable vehicles and their operation is required.
- II Traffic restrictions may be required as the width exceeds the standard limits.
- III Stress calculations will need to be done to carry heavy items over the bridges on route. However, there are many places to test so finding an efficient method is a challenge. Furthermore, based on these testing results, traffic regulations and strengthening of bridges will be necessary.

(4) Analysis of results

① Analysis of the results of the port survey

Unloading environment of each district

A Nagahama & Yamaguchi District

Both container and bulk cargo can be unloaded here as there is sufficient water depth.

B Nonoda District

Both container and bulk cargo can be unloaded here as there is sufficient water depth. However, it will be necessary to coordinate with the company here for use of the facilities as they are already being used.

This district is more suitable than the other districts for container cargo as there are already self-propelled harbor cranes stationed here.

C Chayamae District

Both container and bulk cargo can be unloaded here as there is sufficient water depth. However, it will be necessary to coordinate with the company here for use of the facilities as it is a landing site for bulk cargo (coal etc.).

The use of the facilities here is prioritized lower as there is a lack of free space compared with the other districts.

② Analysis of the results of the storage areas survey

I Proposed construction site for the distribution hub

The Nagahama & Yamaguchi District industrial site is the most desirable site for the construction of the distribution hub for the following reasons.

II Reasons

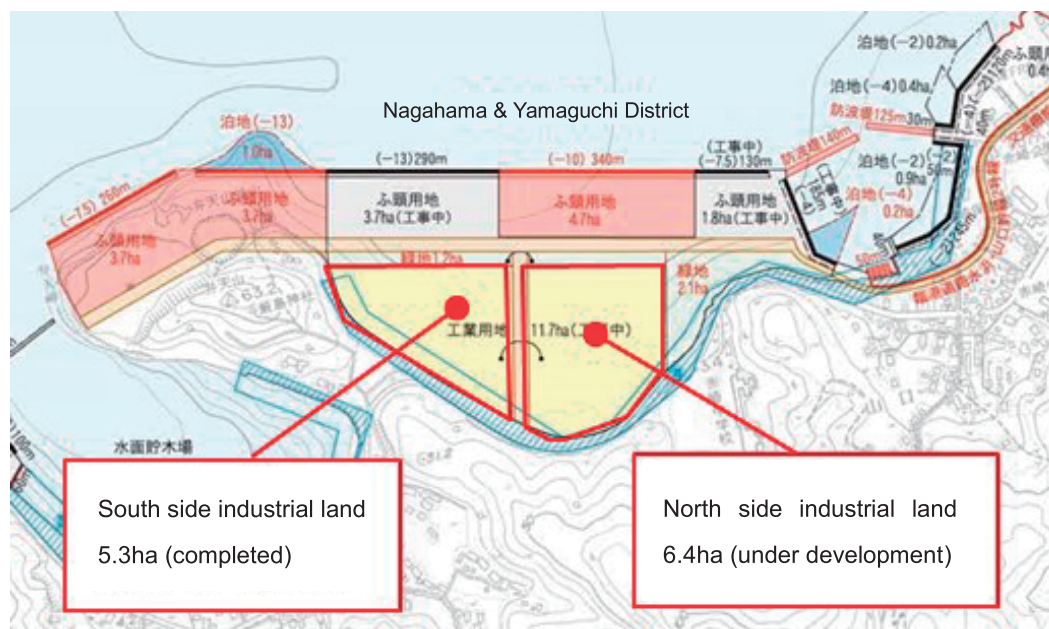
A There is sufficient land for construction of a distribution hub on the 11.7ha of industrial land that lies behind the Nagahama & Yamaguchi District quay (5.3ha on the south side (completed) and 6.4ha on the north side (under development)).

B It is connected to a quay where oceangoing vessels can enter.

C The area is behind a seawall with measures for protection from tsunamis.

D Cryomodules can be transported to the proposed ILC construction site within 2 hours (when using routes B and C).

Analysis of the results of the port survey



*Created from the ground plan in the Ofunato Port Project (Feb. 2017)

Summary of Nagahama & Yamaguchi District's industrial site (Reference)

Area of industrial site	11.7ha
Area designation	Harbor area
Port facilities	Connected to -13m public quay
Electrical power	6.6kv (0.1km from the Akasaki Line)
Water supply	Water supply maintenance planned
Drainage	Public sewer maintenance planned
Transport access	
Roads	7.4km from Ofunato IC on the Sanriku Coastal Road 4.8km from National Highway 45
Rail	68km from Mizusawa-Esashi Station on the JR Tohoku Shinkansen Line 3.9km from Ofunato Station on the JR Ofunato Line (BRT)
Air	83km from Iwate Hanamaki Airport
Port	Connected to Ofunato Port

③ **Analysis of the roads' survey results**

- I The transportation distance for the 3 routes is between 45km and 55km so transportation within 2 hours is possible for general cargo. This enables JIT (Just-in-Time; delivery at the required time of only what is needed) delivery to be done tailored to the product delivery destination.
- II Transportation of cryomodules requiring chassis for 45ft containers is possible along routes B and C. Improvements along Esashi Murone Road (Prefectural Highway 10) are required to use route A. Additionally, since the cargo is subject to special vehicle passage permission, application for and permission from the road administrators is required.
- III For cargo that exceeds the standard restrictions of the highway rules, it will be necessary to consult with road administrators and the police in cases where traffic regulations are involved.
- VI There are sections of road along all the routes where it will be difficult for some wide, long or tall items to be transported along due to the road alignment of some current intersections and cross-sectional shapes of some tunnels and overpasses. Road improvements enabling these items to be transported along the routes as is or subdividing the equipment to be transported into specifications of a size that can be transported along current roads is necessary.
- V Traffic restrictions and strengthening of bridges will be necessary for transportation of some heavy items when crossing over bridges.
- VI Chassis for transporting 45ft containers and 6-axle multi-trailers are scarce so detailed process management for providing suitable vehicles and their operation is required.

4 Ripple effects of the ILC on Ofunato (related to logistics)

As shown below, the ripple effect of ILC product transportation for Case I of (1), which covers all cargo in the transportation product list, a primary ripple effect totaling 23 billion yen is expected including port-related costs of 7.2 billion yen, distribution-related costs of 14.4 billion yen (including construction costs) and road-related costs of 1.4 billion yen.

Also, analysis of the results of the aforementioned case study confirmed that it was possible to unload and store general cargo that can be transported within the standard restrictions of the highway rules and cryomodules that are transported in 45ft containers in the transportation products list at Ofunato Port and then transport to the proposed ILC construction site. In the case of this general cargo and cryomodules being transported as in Case II of (2), a primary ripple effect totaling 10.5 billion yen is expected including port-related costs of 3.1 billion yen, distribution-related costs of 6.6 billion yen (including construction costs) and road-related costs of 800 million yen.

(1) Case I

- ① All cargo on the transportation products list will be unloaded and stored at Ofunato Port and then transported to the proposed ILC construction site.
- ② A distribution hub will be constructed at Ofunato Port (construction period: 2 years).
- ③ The transportation period will be 9 years.



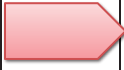

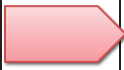








Section	Breakdown	Main Expenses	Business Impact
Port (unloading)	Cargo handling	Unloading costs, heavy equipment costs etc.	¥6.2 billion
	Accommodation related	Harbor worker accommodation fees	¥800 million
	Food & drink related	Food & drink expenses for harbor workers	¥200 million
Port (unloading)		Sub total	¥7.2 billion
Distribution (storage)	Construction related	Construction costs (excluding land rent, inspection and assembly equipment costs)	¥7.0 billion
	Accommodation (construction) related	Construction worker accommodation fees	¥300 million
	Food & drink related	Food & drink expenses for construction workers	¥100 million
	Storage related	Entry/exit, heavy equipment costs, storage costs etc.	¥6.0 billion
	Accommodation (storage) related	Storage worker accommodation fees	¥800 million
	Food & drink (storage) related	Food & drink expenses for storage workers	¥200 million
Distribution (storage)		Sub total	¥14.4 billion
Roads (transport)	Transportation related	Transportation vehicle costs, guided vehicle costs	¥1.0 billion
	Fuel related	Fuel costs	¥100 million
	Accommodation related	Transportation worker accommodation fees	¥200 million
	Food & drink related	Food & drink expenses for transportation workers	¥100 million
Roads (transport)		Sub total	¥1.4 billion
Total			¥23.0 billion








(2) Case II



- ① Products from the transportation products list that are classed as general cargo that can be transported within the standard restrictions of the highway rules and cryomodules that can be transported in 45ft containers will be unloaded and stored at Ofunato Port and then transported to the proposed ILC construction site.
- ② A distribution hub will be constructed at Ofunato Port (construction period: 2 years).
- ③ The transportation period will be 9 years.

Section	Breakdown	Main Expenses	Business Impact
Port (unloading)	Cargo handling	Unloading costs, heavy equipment costs etc.	¥2.1 billion
	Accommodation related	Harbor worker accommodation fees	¥800 million
	Food & drink related	Food & drink expenses for harbor workers	¥200 million
Port (unloading)		Sub total	¥3.1 billion
Distribution (storage)	Construction related	Construction costs (excluding land rent, inspection and assembly equipment costs)	¥3.3 billion
	Accommodation (construction) related	Construction worker accommodation fees	¥300 million
	Food & drink related	Food & drink expenses for construction workers	¥100 million
	Storage related	Entry/exit, heavy equipment costs, storage costs etc.	¥1.9 billion
	Accommodation (storage) related	Storage worker accommodation fees	¥800 million
	Food & drink (storage) related	Food & drink expenses for storage workers	¥200 million
Distribution (storage)		Sub total	¥6.6 billion
Roads (transport)	Transportation related	Transportation vehicle costs, guided vehicle costs	¥500 million
	Fuel related	Fuel costs	¥50 million
	Accommodation related	Transportation worker accommodation fees	¥200 million
	Food & drink related	Food & drink expenses for transportation workers	¥50 million
Roads (transport)		Sub total	¥800 million
Total			¥10.5 billion

5 Action plan

№	Project Name	Project Summary (specific initiatives)	Imple- menting body	Initiation Period		
				Preparation Phase 2019-2022	Construction Phase 2023-2031	Operation and Maturation Phase 2032-2051
Future image 1 Utilization of the best port facilities in the prefecture as a multifunctional distribution hub (enhancement of port facilities and installation of a distribution hub)						
(1) Creation of a landing site for ILC-related materials and equipment						
1	Port Development Business Contribution Project for Ofunato Port (cont.)	Contribution project for port development (breakwater maintenance and port road improvements etc.) implemented by Iwate Prefecture	City			
2	Port Facilities Improvements and Requested Development Activities Project for Ofunato Port (cont.)	Requested activities for the prefecture to promote improvements and development of the port facilities in the Nagahama & Yamaguchi District of Ofunato Port	City Private			
3	Port Sales Promotion Project (cont.)	Visit activities for ILC-related bodies such as the Tohoku ILC Promotion Council and companies to promote the unloading of ILC materials and equipment and the construction of a distribution hub	City Private			
(2) Formation of distribution hub						
3	Port Sales Promotion Project (repost)	Visit activities for ILC-related bodies such as the Tohoku ILC Promotion Council and companies to promote the unloading of ILC materials and equipment and the construction of a distribution hub	City Private			
4	Formation of Logistics Hub Project (new)	Research and investigation related to the possibility of operations and development of inspection, assembly and storage facilities aimed at formation of a distribution hub	Prefecture City Private			
5	Operational Management of Terminal for Shared-use Containers Project (cont.)	Maintenance of facilities related to warehouses installed as temporary storage areas for container freight	City			
Future image 2 Initiatives to optimize transportation routes (optimization of road networks)						
(1) Optimization of the entire transportation route						
6	National Highway Improvements and Requested Development Activities Project (cont.)	Requested activities for the national government to promote improvements and development related to nationally controlled roads, bridges, tunnels etc.	2 cities 1 town Private			

№	Project Name	Project Summary (specific initiatives)	Implementing body	Initiation Period		
				Preparation Phase 2019-2022	Construction Phase 2023-2031	Operation and Maturation Phase 2032-2051
7	Prefectural Highway Improvements and Requested Development Activities Project (cont.)	Requested activities for the prefectural government to promote improvements and development related to prefecturally controlled roads, bridges, tunnels etc.	2 cities 1 town Private			
8	Improvement and Development of City Roads Project (cont.)	Improvement and development of city controlled roads, bridges, tunnels etc.	City Private			
Future image 3 Effective use of the distribution hub in the future						
(1) Formation of a multidisciplinary and diversified distribution hub through port sales						
3	Port Sales Promotion Project (repost)	Visit activities for ILC-related bodies such as the Tohoku ILC Promotion Council and companies to promote the unloading of ILC materials and equipment and the construction of a distribution hub	City Private			
(2) Sustainable and effective utilization through shifting to a base with research and development functions						
9	Utilization and Promotion of Distribution Hub Project (new)	Research and examination related to utilization of incubation facilities for research and development in the distribution hub facilities	Prefecture City Private			

 : Initiation period
 : Initiation continued depending on circumstances

6 Conclusion

Making the ILC a reality will contribute not only to the improvement of logistics functions and acceleration of the development of infrastructure such as roads in Ofunato City, but it will also revitalize the economy of Iwate Prefecture and the entire Tohoku region to contribute to the construction in the aftermath of the Great East Japan Earthquake. Furthermore, the distribution hub is expected to contribute to the further development of the city's economy through sustainable, effective utilization of the city during the operation and maturation phases of the project following the construction phase, as it is shifted to a base for research and development.

Through the formulation of this plan it was possible to reconfirm that in addition to Ofunato Port being the closest important port to the proposed construction site it also has sufficient size of industrial land behind the wharf where unloading is done and in the neighboring areas. Furthermore, it is also possible to consider the type and size of the cargo, as well as to transport the required quantity at the required time by using multiple routes including the Sanriku Coastal Road and national highways 397, 343 and 284.

From here on, in order to make the ILC a reality in Iwate, we will proactively provide information on the potential Ofunato City and the port have to the national and prefectural governments and international organizations related to ILC, and also promote initiatives for public and private sectors to work together to take measures related to the development of the facilities of the distribution hub in addition to port facilities and roads. We would like to ask of all the residents of the city as well as port, commerce and industry related groups and organizations for their cooperation in this project.