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GHQ/SCAP Records (RG 331, National Archives and Records Service)

Description of contents

(1) Box no. 3008

(2) Folder title/number: (16)
Public Works - Roads

(3) Date: Mar. 1949 - Nov. 1949

(4) Subject:

| Classification | Type of record |
|---|---|
| 9640 | c, r, t |

(5) Item description and comment:

Yamaguchi

(6) Reproduction: (Yes) No

(7) Film no. Sheet no.

(Compiled by *National Diet Library*)

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

PEOPLES WISH TO COMPLETE, AS SOON AS POSSIBLE,

# "THE KANMON HIGHWAY TUNNEL"

## STORY OF THE CONSTRUCTION PROJECT; KANMON SUBAQUEOUS HIGHWAY TUNNEL

In 1939, Japanese Government set about the construction work of KANMON SUBAQUEOUS HIGHWAY TUNNEL with 17,000,000 (seventeen million) Yen budget on the schedule of 10 years. This was the best achievement of that Government which also started the regretful World War. While the War developed, most of the construction materials in Japan and Governmental budget were used up for the military purposes and the prices rose higher and higher. These bad condition put this construction project into difficulty. But the work advanced by the support of those who know the importance of it. *To connect two most important islands in Japan, KYUSHU and HONSHU, has been so fundamental desire of all Japanese since old times,* that the Government has invested, at any rate, the following money in this project till the end of War:

Table 1 Governmental Investment For The Fiscal Years Ending March 31

( 1939 - 1945 )

| Fiscal Year | Expence (Yen) | Remark |
|---|---|---|
| 1939 | 470,000 | |

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( 1939 - 1945 )

| Fiscal Year | Expence (Yen) | Remark |
|---|---|---|
| 1939 | 470,000 | two thirds of total sum by Central Goverament one third by Prefectural Government of Fukuoka and Yamaguchi |
| 1940 | 1,500,000 | |
| 1941 | 2,500,000 | |
| 1942 | 3,150,000 | |
| 1943 | 2,096,000 | |
| 1944 | 3,050,000 | |
| 1945 | 8,104,000 | |

The work has shown the following progress :

May 1942 ; Pilot tunnel of subaqueous part opened through.

June 1942 ; Both shaft on Moji and Shimonoseki side were completed.

December 1944 ; Pilot tunnel of land part opened through.

Thus, *the pilot tunnel had been opened through and was about to be enlarged to its full size,* at the beginning of the last year of War. By the military demand, May 1945, the Government adopted an emergency plan for this project. In accordance with it, the tunnel was to have the capacity for one way traffic only. Soon after it, fire caused by air-raid burn up all the office, the equipment, and the other installations on the ground.

After the end of War, the Government decided to continue this project and at first the necessary equipments and installations were restored, getting the following Governmental budget :

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Table 2 Governmental Investment For The Fiscal Years Ending March 31

( 1946 - 1949 )

| Fiscal Year | Expence (Yen) | Remark |
|---|---|---|
| 1946 | 27,980,000 | Two thirds of total sum by Central Government |
| 1947 | 33,321,000 | |
| 1948 | 77,000,000 | one third by Prefectural Government of Fukuoka and Yamaguchi |
| 1949 | 130,000,000 | |

Meanwhile, as you know, the prices rose terribly high. Therefore, most of the allocated budget was expended for the maintenance of unfinished tunnel, leaving few for the enlarging excavation.

One hundred and thirty million Yen budget of this fiscal year, 1949, is just enough to complete the enlarging excavation of subaqueous part for 600 ft long besides the maintenance work. If the work will proceed with such pace, it takes 40 years more to complete this tunnel. Now, 265 men of the working staffs, including 160 skilled labors, and 250 unskilled labors are concentrating their strength on the excavation of subaqueous part and maintenance work of unfinshed tunnel. Considering the working staff and equipments of Kanmon Highway Tunnel Construction Office, *which has the ability to finish this work in only 5 years,* if the necessary fund is secured, present state of work is very uneconomical, we suppose.

## LOCAL DESIRE TO THIS PROJECT

In Autumn 1946, when the Government was going to abandon this project by the reason of financial difficulty, thousands of people from ONODA, UBE, SHIMONOSEKI, MOJI, KOKURA, TOBATA, YAHATA, WAKAMATSU City and other parts of KYUSHU and CHUGOKU DISTRICTS met together to organize "THE PROMOTING LEAGUE FOR KANMON HIGHWAY TUNNEL PROJECT" And since then, that League worked in persuading the authorities to continune the project successfully.

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Nevertheless, as you know already, in recent years the project could not go ahead from the maintenance work. *Then all the people who eagerly expect the early completion of the tunnel, are so anxious that if the Government cannot properly do it, they are discussing to establish a private enterprise organization, in order to construct the tunnel as soon as possible.*

Now Yamaguchi and Fukuoka Prefectural Governments which are burdened with one third of the expence of this project, stated that they will not defray the fund unless the constructuon project go ahead under a decided program. This is a reasonable opinion, because the present poor financial condition of the Prefecture cannot bear the limitless financial burden. And besides, judging from the principle of present Japanese Road Law, it is doubtful if the part under water belongs to any prefecture. In this regard, Central Government should reconsider this matter.

Anyway, the cause of all troubles is that the construction work does not show any apparent progress.

## THE WAY TO THE COMPLETION

There arose the discussion about the project to continue or not, many times in the Government. And this project has not shown any remarkable progress in construction besides maintenance since Autumn 1946. Considering the increasing production of construction materials and the eager local desire, we think, it is the time, when this project restart the march

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from maintenance to construction.

This project require 5 million labor in total. To complete this in 5 years, daily labor requisition will be about 300 men. *Then this project can give jobes to the many unemployed in this area.* It is also one of the benefits of this project.

Here is also an emergency program which urgently complete only the subaqueous part and connect it with the road on ground with the elevator. According to this program, called "CHANNEL PROGRAM", final completion will be delayed till the time when the financial condition will be more greatly improved. The following table is the comparison of the CHANNEL PROGRAM to the Full Program:

Table 3 Full Program and CHANNEL PROGRAM

| | | Full Program | Channel Program |
|---|---|---|---|
| Construction Cost | | 3 Billion Yen | 1.5 Billion Yen |
| Traffic Capacity | | 2,000 vehicles/hr | 80 vehicles/hr |
| Length of Tunnel | | 3,450 meters | 780 meters |
| Installation in Tunnel | | full | just enough for traffic |
| Material Requirement | Steel | 17,070 ton | 5,270 ton |
| | Steel Goods | 830 ton | 337 ton |
| | Iron | 640 ton | 257 ton |
| | Cement | 65,000 ton | 18,027 ton |
| | Timber | 1,670,000 cu. ft. | 807 cu. ft. |
| | Coal | 3,900 ton | 1,790 ton |
| Labor | | 4,633,000 men | 2,295,000 men |

If the present policy of Government under occupation cannot proceed with this project as a Governmental, it should be done, without hesitation, as a form of either prefectural work or a private enterprise to satisfy the nation's desire.

The importance of this project is, no doubt, very great and this is absolutely.

Recently we heard that the Cabinet decided to restart the construction of this tunnel with 250 millon Yen budget in

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| | | | |
|---|---|---|---|
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The importance of this project is, no doubt, very great and this is absolutely.

Recently we heard that the Cabinet decided to restart the construction of this tunnel with 250 millon Yen budget in next fiscal year beginning April, 1950. But it can not satisfy the public desire. We wish the Government, at least, to establish a five year fiscal schedule for the completion. If the present state of Japan is too difficult to make such schedule, we want the Governemnt to adopt one of the following three ways to quicken the progress of the tunnel construction;

(1) To get all the fund to complete the subaqueous part from Central Government. And to try to utilize Aid Japan CountevPart Fund.

(2) In order to secure the starting fund, to get two thirds of it from Central Government and one third by raising construction loan, instead from Prefectural Government. This construction loan will be repaid with the passage fees.

(3) To establish private enterprise organization to execute the project. Central Government and Prefectural Government subsidize it smaller sum than before.

( cf. attached panphlets )

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工事計画

# THE KAMMON HIGHWAY TUNNEL
# UNDER
# THE STRAIT OF SHIMONOSEKI

October, 1949.

THE CONSTRUCTION MINISTRY
HIGHWAY TUNNEL CONSTRUCTION OFFICE
SHIMONOSEKI. JAPAN

MANUFACTURES AND INDUSTRY
FILE 7-2

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| C ----- Origin and Progrees of the Construction | 5 |

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(A) Purpose of the Tunnel Contruction:

The Strait of Shimonoseki which lies between Honshu and Kyushu separates the No. 2 National Highway that runs from Tokyo to Kagoshima. the transport of goods and etc. from Shimonoseki to Moji and vice versa is performed by two railway tunnels and by boat. Plans came up for discussion in the years from 1932 to 1934 in order to connect these two cities by a highway and investigations were made. Two plans-one, to connect the two cities by a bridge, and the other by a tunnel were compared and examined, and as the result of this two cities have been brought following good results:

1. According to the invetigation made by the Home Government in 1940. the annual transportation within the sphere of 258miles(100km) from shimonoseki and its vicinities amounted to 4.170,000 tons of freight and 5.080,000 passengers. The censue of September, 1946 shows that the passengers of the boats were 6.500 a day and the freight amounted to 40.300 tons a month. These have to be loaded and unloaded, and besides have to depend upon steamers' and trains which require longer hours fro transportation, so. that the capacity of taansportation declined greatly. It is apparent that the above stated and condition the progress of the commercial and industrial districts. Kammon and its vicinities which are fovored with conditions. This weak point of trarsportation is removed by constracting a tunnel. Besides, the transportation of a short distance of about 258 miles(100km.) radius and so is considered to be operated by automobile.

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2. Damage done to goods by loading and unloading, and also to fisb and vegetables for their transportation being delayed shall be eliminated.

3. Need not to be considreed of the sailing of boats being cancelled from ten to twenty times a year on account of the bad weather.

4. Decreasing the number of boats engaged in crossing the Strait, give every facility to the boats which pass through the Strait.

5. Can use for other purposes the boats of 1.700 000 tons which are operated at present for transportation between Moji and Shimonoseki.

6. Material and immaterial influence the connection of the cities by the highway tunnel gives to the people.

The economical value of the tunnel after its opening shall be stated later.

(The unit of the weight is shown in metric measure.)

(1 metric ton = 1.102 Amer. Tons)

(B) Outline of the Tunnel Construction:

(1) Location: From Shimonoseki to Moji

(2) Length:

| Item | | |
|---|---|---|
| | Total length | 38,261 ft. (11.662 m.) |
| | Tunnel | 11.319 ft. ( 3.450 m.) |
| | Approach road | 26.942 ft. ( 8.212 m.) |
| | (incidental tunnel | 1,805 ft. ( 550 m.) |

(3) Details of construction:

(a) Tunnel

Grade: max. longitudinal grade 4%

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Effective width:

Sea section:-

| | |
|---|---|
| roadway | 24'7.1/8" (7.50 m.) |
| footwalks and bicycles | 13'1.3/8" (4.00 m.) |

Land section:-

| | |
|---|---|
| roadway | 24'7.1/8" (7.50 m.) |

pedestrians and bicycles ascend and descend by the elevators of the shaft of the shaft of both shores.

Effective height:

14'9.1/8" (4,50 m.) above the roadsurface.

Curve: Min. degree of ourve 5 49' (radius 1,640'-500m.)

Sectional shape:

sea section - two storey

Land section - semi circle

Lining: Primary lining -

| | |
|---|---|
| soft ground - placing concrete | 23.5/8" (60cm) |
| others - " " | 15.3/4" (40cm) |

Secondary lining - Placing concrete 11.7/8" (30cm)

Road surface: concrete pavement

Minnmum rock cover (sea-bed): 66ft. (20.12 m.)

Maximum water depth : 93ft. (28.31 m.)

Geological property:

The Kyushu side chiefly consist of diorite, whereas Honshu side of porphyrite.

Many faults are found on this Honshu side and the sea-section of the Honshu side, 984 ft. (300 m.) is fauit zone.

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(b) Approach road (Chofu-Shimonoseki portal)

| | | | |
|---|---|---|---|
| Total width | : | 49'2.1/2" | -15.0 m. |
| (roadway | : | 29'6.1/4" | - 9.0 m.) |
| (footwalks | : each | 9'10.1/8" | - 3.0 m.) |
| Chofu tunnel | | | |
| width | : | 32'9.3/4" | -10.00 m. |
| (roadway | : | 24'7.1/8" | - 7.50 m.) |
| (footwalks | : each | 4'1.5/16" | - 1.25 m.) |

Maximum longitudinal grade:

Curve: max. degree of curve 330' (radius 984'-300m)

(C) Ventilation shaft

| Place | Height | Size (rectangular) |
|---|---|---|
| Shimonoseki | 266 ft (81.0 m.) | 82 ft. x 59 ft. (25 m. x 18 m.) |
| Moji | 296 " (90.0 m.) | " " ( " " ) |
| Mukuno | 291 " (88.5 m.) | 46 ft. x 43 ft. (14.cm. x 13.1 m) |
| Kojo | 302 " (92.0 m.) | " " ( " " ) |

4) Incidental eguipment

(a) Tunnel ventilation

system : upward transverse system

traffic : 2000 auto per hour (to both direction)

ventilation shaft: 4

fan : propeller fan

allowable CO contents: 0.04 % for peak of traffic

(b) Others

Illumination, drainage, fire hydrant, fire-signal, elevator, signal for traffic and etc.

(5) Method of tunnel execution

oridinal excavation (grouting)

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(6) Cost of construction
¥ 2,047,350,000 (estimated at the end of Mar. 1948)

(7) The work will be completed:
March, 1954.

(8) Materials used to be:

| | | | |
|---|---|---|---|
| Steel | 19,730 | Amer. tons | (17,900 metr. tons) |
| Cement | 71,550 | " " | (65,000 " " ) |
| Wood | 60,360 | cub. y'd. | (167,000 koku ) |
| | | | ( 46,430 cub. m. ) |
| | | | (643,500 l. ) |

(C) Origin and progress of the construction

(1) Outline

Set to work in May, 1937 in order to investigate and examine the geological property which plays a most important part in deciding the position of the route of the tunnel. In April, 1939 the test pilot tunnel of the strait was completed, and also cofe borings on the land respectively. Thus the possibility of the constructive work of the tunnel was confirmed and the whereabouts of the tunnel route was decided.

The tunnel works were started in April, 1939. and sole attention was given first to the top heading under the strait. and then to the sea shafts of the both shores and the excavation of the bottom heading of the land side. After this, sectional enlargement has been done.

Important procedure of the constructive work is as follows:

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| | |
|---|---|
| May. 1937 | Set about investigating work. |
| June, 1937 | Started work on test shaft(Moji) |
| February. 1938 | Began construction work on pilot tunnel. |
| April, 1933 | Construction work on tunnel under the sea. |
| April. 26, 1939 | Pilot tunnelwas penetrated. |
| June, 1940 | Began excavation work on top heading of the sea section. |
| August, 1941 | Began excavation workon the Moji shaft. |
| January, 1942 | Began excavation work on the Shimonoseki shaft. |
| May 31, 1942 | Top heading of the sea section was penetrated. |
| June, 1944 | Excavation of the shaft at Moji was completed. |
| Dec, 30, 1944 | Bottom beading of the land was penetrated. |

(2) Main construction wark in the past.

| | |
|---|---|
| Pilot tunnel (drain tunnel) | 3,307ft. (1.008m.) |
| Two drain shaft (Shimonoseki, Moji) | 408.8ft. (124.6m.) |
| Top heading of the sea section | 2.559ft. (780 m.) |
| Partial enlartement at the sea section | 236 ft. ( 75m.) |
| Bottom heading at the land site | 8.760ft. (2.670m.) |
| (Honshu site | 4.505 ft. (1,373 m.) |
| (Kyushu site | 4.255 ft. (1.297m.) |
| Shaft excavation | |
| (Shimonoseki | 75% |
| (Moji | 100% |
| Drift of the shaft | |
| (Mukuno | 94% |
| (Kojo | 100% |

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(3) Work and expenditure until 1948 fiscal year (until March. 1948)

| Kind of work | Cost |
|---|---|
| Tunnel | 22,229,500 |
| Shaft | 9928.800 |
| Road | 5.947.500 |
| Machine operation | 5.945200 |
| Miscellaneous work | 28.833.100 |
| Machinery | 34,655.700 |
| Building affairs | 20536.300 |
| Expropriation of land, supplied | 756.400 |
| Surveying | 352.100 |
| Porsonal, sundries | 23.075.700 |
| Total | 158.599.700 |

(4) Materials roquired until 1948 fiscal year (until March 1949.)

| | |
|---|---|
| Steel | 2,465 Amer, tons |
| Cement | 8,043 " " |
| Wood | 45,240 cub. y'd. |

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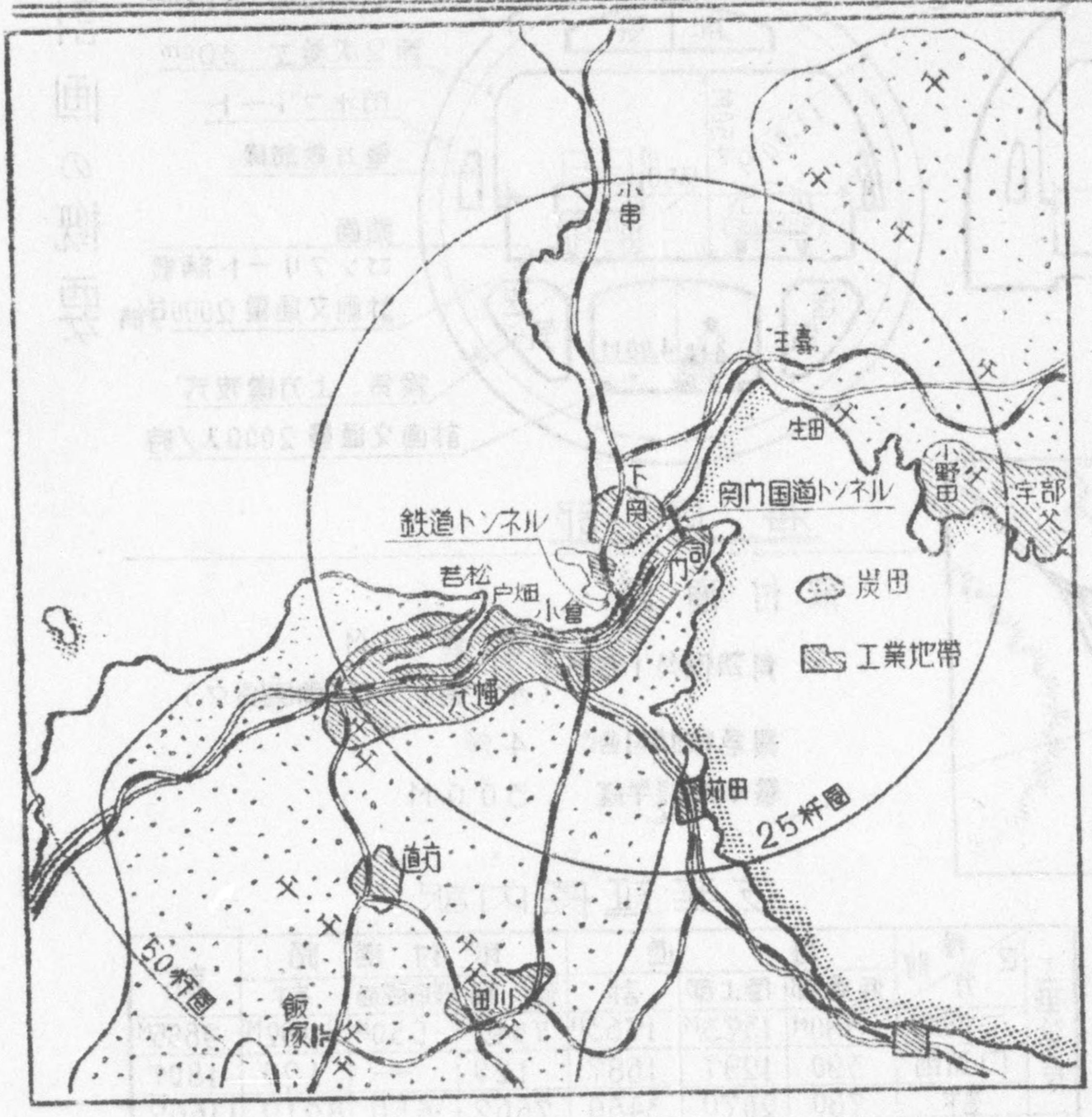
# 関門国道トンネル




## 一、関門国道トンネルの生い立ち

本州と九州とを分断してゐる関門海峡は、その昔、平家の水軍を浮べて以来、関門港への労船、入船繁く、名にし負う急流岩を噛み、西に東に流れてゐる。此の西日本の玄関である関門港を抱く下関、門司両市を直接道路によつて連絡出来ればどんなに好都合であろうか？

そもく北九州工業地域と山口県西南部とは互恵関係にあり、之を結ぶ関門の輸送に自動車による陸運体系を横成すれば、両地域は一体化し本州と九州は二号国道によつて直結され、完全な経済開発を促進させることが出来る。

この目的を達するため、両市を国道で結ぶ種々の案が検討された結果、水深は深いが、門司の和布刈の岬がぐつと下関の鼻え浦に突き岩し、僅か七〇〇米弱の水を距て、望む海峡の最短部に隧道を穿つ案が採り上げられ、昭和十二、三両年度に亘る試掘隧道の掘鑿、其他により、隧道連絡の可能性が立証されたので、愈々昭和十四年度より着工し今日に至つたのである。

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# 関門国道トンネルの生い立ち

## 三、どの位工事が進んだか

右の計画のもとに十ヶ年継続工事として、昭和十四年度より着工したのである。先づ海底部は調査隧道より横に連絡坑を設け、その連絡坑より各々頂設、底設の導坑を掘鑿し始めた、此の頂設導坑は下関側の断層破砕地帯を残してゐる。、底設導坑は下関側は昭和十七年に貫通したが陸上部は底設導坑を掘進し門司側は昭和十九年度、下関側も同年暮には各々貫通を見た。

其の後、戦後経済の悪條件の下に維持を続けながら工事再開に備え、海底部隧道の上部丸型の切抗と覆工をなし、竪坑は下関、門司両竪坑の掘鑿を了えたので工事用昇降施設の一部を完了した。

| 掘鑿量 | | | | | | |
|---|---|---|---|---|---|---|
| 名稱 | | 計画高 | 出来高 | 進捗率 | | |
| 海底部 | | 八一、一二〇 (m³) | 一八、二四三 (m³) | 二二、四 (%) | | |
| 隧道 | 陸上部 | 一一四、五七六 | 一三、一二二 | 一一、四 | | |
| | 下関側 | 一〇八、一九一 | 二五、三一八 | 二三、四 | | |
| 竪坑 | 下関竪坑 | 三〇、〇五〇 | 三〇、〇五〇 | 一〇〇 | | |
| | 門司〃 | 三四、九九七 | 三四、九九七 | 一〇〇 | | |
| | 稼野〃 | 一五、二〇〇 | 五三 | 三、五 | | |
| | 古城山〃 | 一五、八〇〇 | 一、五四九 | 九、五 | | |

## 四、トンネルが完成したら

此のトンネルが出来上れば、どんな便益があたらされるか、仮りに関門を中心に八〇粁圏内の物を対照にその流れを推定すると通過量は

| 種別 | 単位 | 本州↓九州 | 九州↓本州 | 合計 |
|---|---|---|---|---|
| 輸送噸数 | 屯 | 三二一、八三六 | 二八七、〇三七 | 六〇八、八七三 |
| 輸送旅客 | 人 | 一、一五八、八五三 | 一、五六三、五一八 | 二、七二二、三七一 |

となり直接には

(イ)貨物積卸費の節約年間……一三三、九五二、〇六〇円
(ロ)包装費の節約年間……二一三、一〇五、五五〇〃
(ハ)貨物損傷防止年間……一五五、二六二、六一五〃
(ニ)交通杜絶による損害防止……一、六〇八、五四〇〃
合計約……五〇九、〇〇〇、〇〇〇円

又間接には海峡横断に就いてある船を他に転用することが出来ると共に通峡船にとっては安全交通となり併せて関門港の行詰りとなってある船溜りの問題も解消する、尚この地域の自動車の活動範囲の倍加は自動車の保有台数の飛躍であるとも結論される、その他現に年間二十余日に及ぶ暴風雨、濃霧等による欠航による損害は消滅し物資の流動は時間的速度を持ち文化的経済的発展に益する処計り知れないものがある。

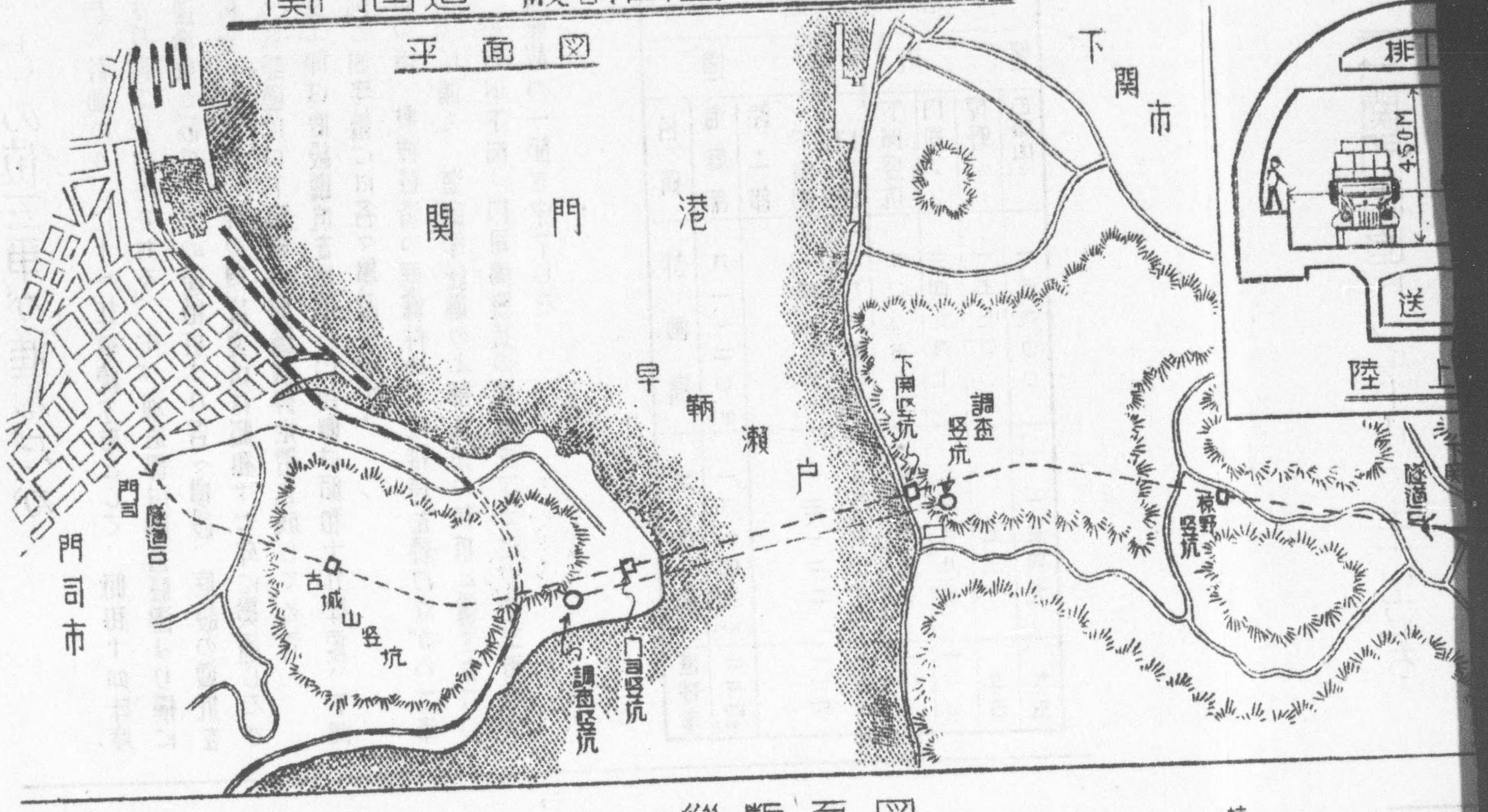
西日本の文化経済の中心として明日を待つこの地域に缺くことの出来ない大動脈と云はなければならない。

昭和二十五年四月一日　下関市旧壇之浦町
関門国道工事事務所

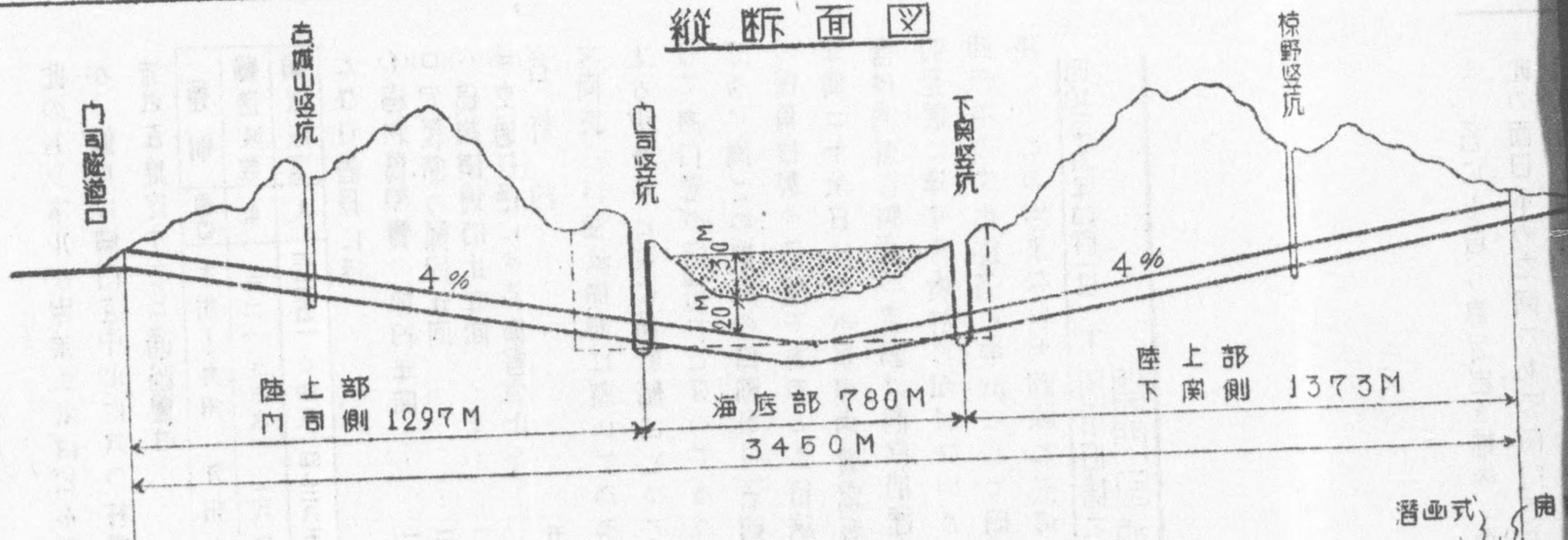
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

# 関門国道一般計画図　1：20,000

## 平面図




## 縦断面図



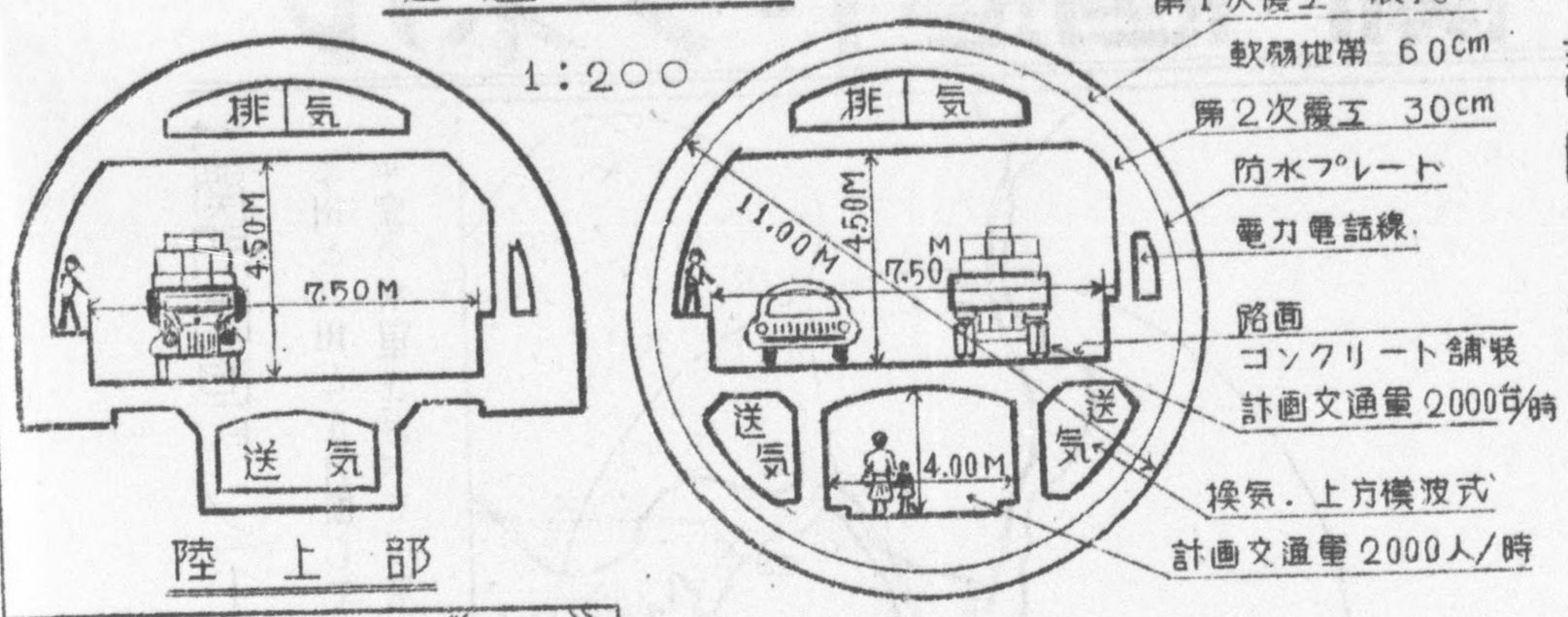

| | | 古城山竪坑 | 門司竪坑 | 下関竪坑 | 椋野竪坑 |
|---|---|---|---|---|---|
| 竪坑 | 断面 | 18.1M × 13.5M | 25.0M × 18.0M | 25.0M × 18.0M | 18.1M × 13.5M |
| | 深サ | 72.3M | 70.0M | 61.0M | 68.5M |
| | 設備 | プロペラファン6台.エレベーター1台 | 〃 6台. 〃 3台 | 〃 6台. 3台 | 〃 6台. 〃 1台 |

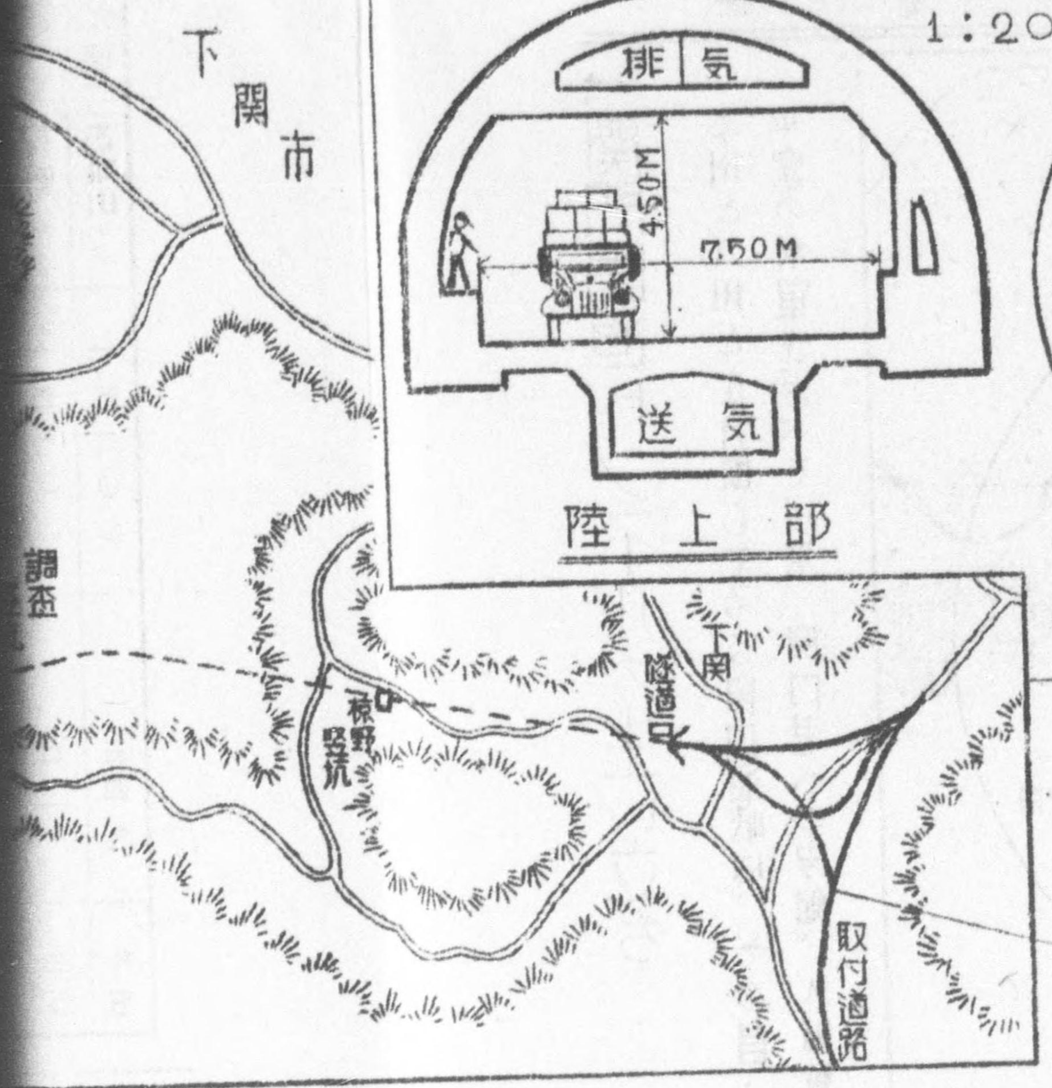
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

# 二、計画の概要

## 隧道断面図

1:200




### 取付道路

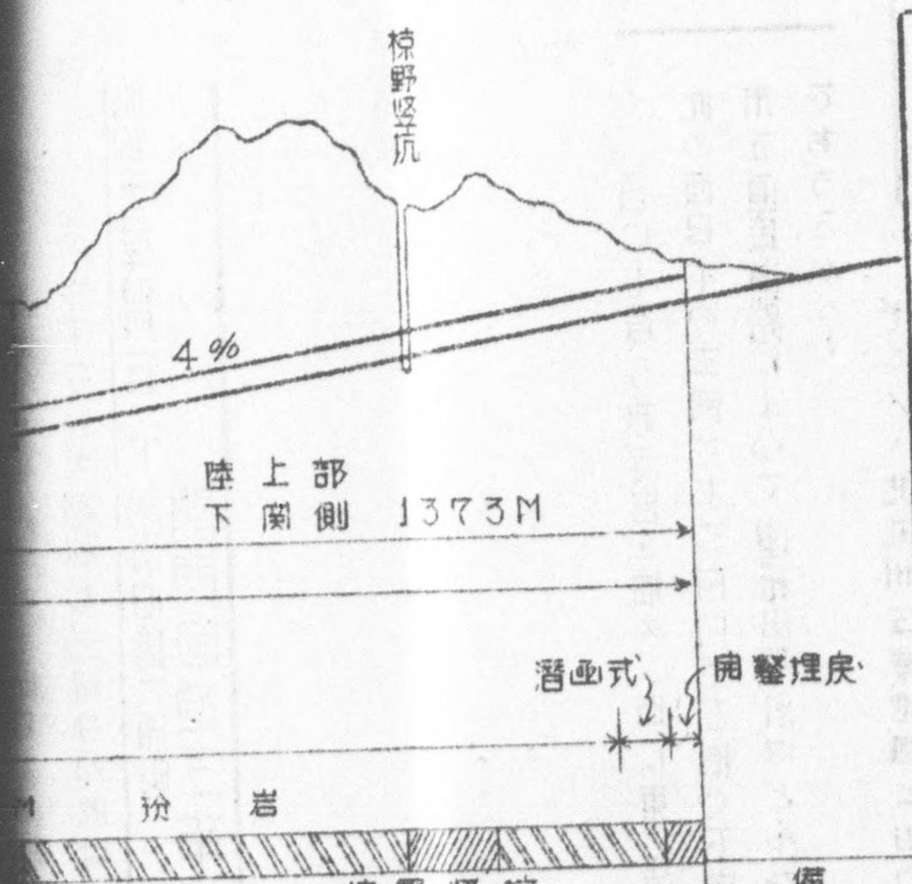
有効幅員15M { 車道 9M / 歩道 3M(両側各々)

最急縦断勾配 4%

最小曲線半径 300M

### 工事延長内訳

| 区分 | 種別 | 隧道 海底部 | 隧道 陸上部 | 隧道 計 | 取付道路 道路 | 取付道路 長府隧道 | 取付道路 計 | 計 |
|---|---|---|---|---|---|---|---|---|
| 工事延長 | 下関側 | 390M | 1373M | 1763M | 7542M | 550M | 8.092M | 9855M |
| | 門司側 | 390 | 1297 | 1687 | 120 | — | 120 | 1807 |
| | 計 | 780 | 2670 | 3450 | 7662 | 550 | 8.212 | 11662 |
| 資材 | 品種 | 鋼材 | セメント | 木材 | 油類 | 備考 | | |
| | 24年度迄 | 3.280T | 8.618T | 48.800石 | 415KL | | | |
| | 今後 | 14.620 | 57.390 | 118.200 | 740 | | | |
| | 計 | 17.900 | 66.000 | 167.000 | 1155 | | | |
| 豫算 | 24年度迄 | | | | 286.883.000円 | | | |
| | 今後 | | | | 3.000.000.000円 | | | |
| | 計 | | | | 3.286.883.000円 | | | |




| 竪坑 | 椋野竪坑 | 備考 |
|---|---|---|
| 18.0M | 18.1M×13.5M | 人及自転車は下関門司両竪坑より岩入し海底部のみを交通する. |
| 0M | 68.5M | |
| 3台 | 〃 6台. 〃 1台 | |

### 隧道内設備

照明設備．交通信号．
排水設備．その他．
消火栓．
火災報知機．

### 長府隧道

有効幅員 { 車道 7.0M / 歩道 1.25M (両側各々)

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

山発第五九號

昭和二十四年三月十一日

山口土木出張所長 鴨井義夫

山口渉外局長殿

交通禁止について

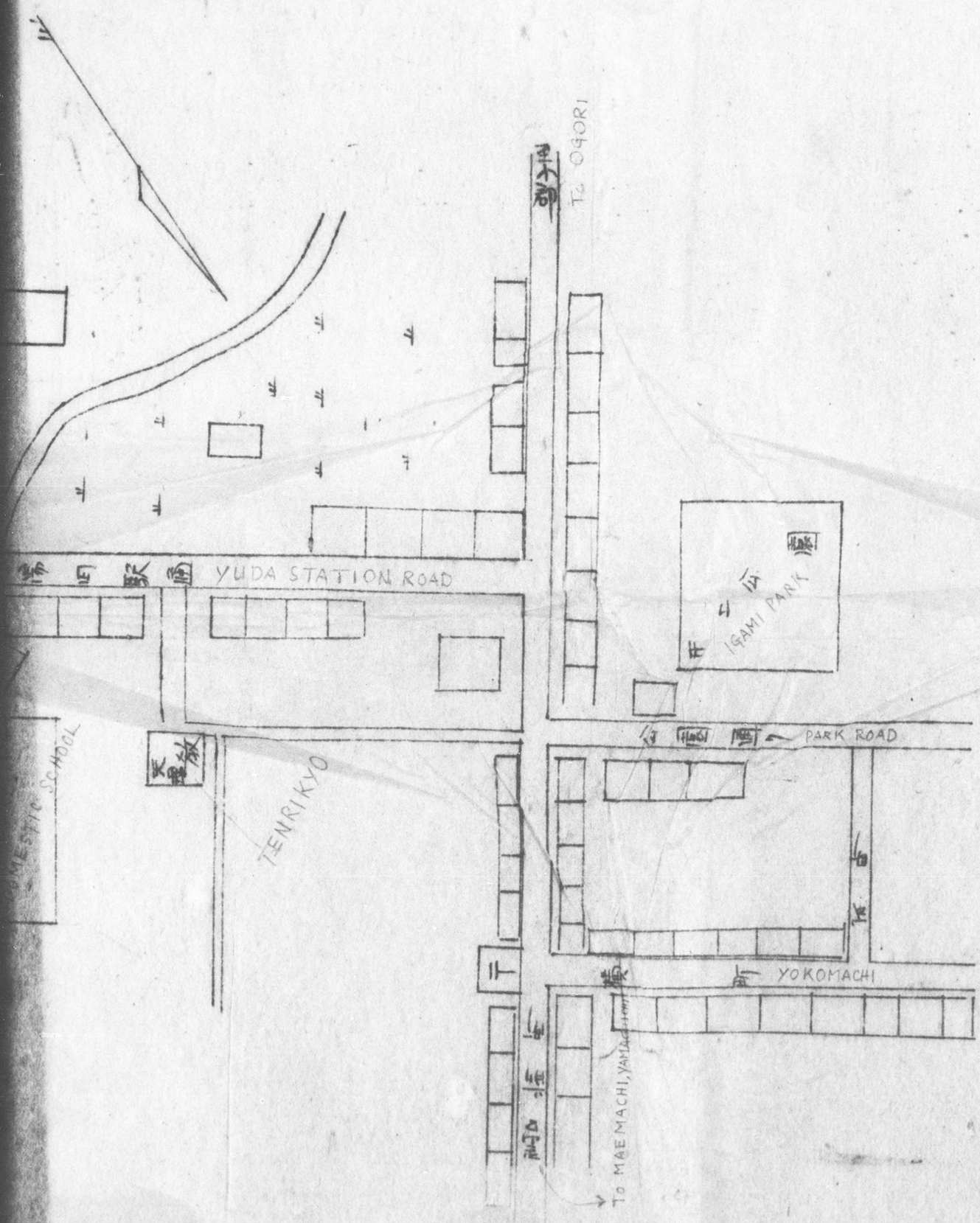
管内湯田停車場線山口市大歳地内に架設しある下田屋橋及今井橋は橋台及桁石の破損甚だしく人馬の交通に多大の支障を来たし居りますので此れが修繕工事を自二月十日至三月二十日六日間に施行致し度ニ市産居ますので御許可相成り事様通路法第十八條により此の事について御願ひ致します。

山口縣

山口縣 第67號 受付 24 3 12

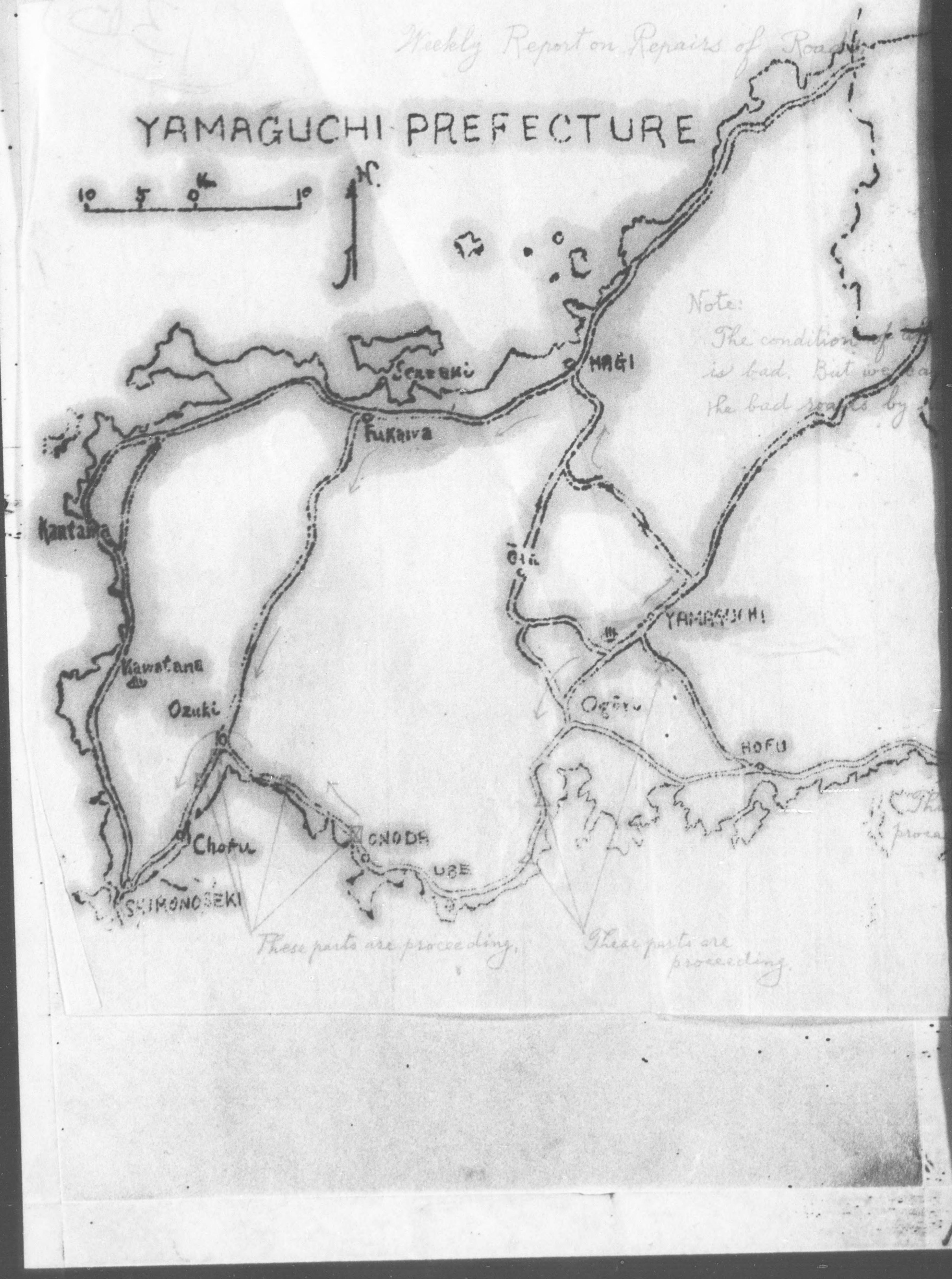
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78-0

Weekly Report on Repairs of Roads




Note:
The condition of ... is bad. But we ... the bad roads by ...

These parts are proceeding.

These parts are proceeding.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

rt on Repairs of Roads

No. 22

Date: Jan. 10.

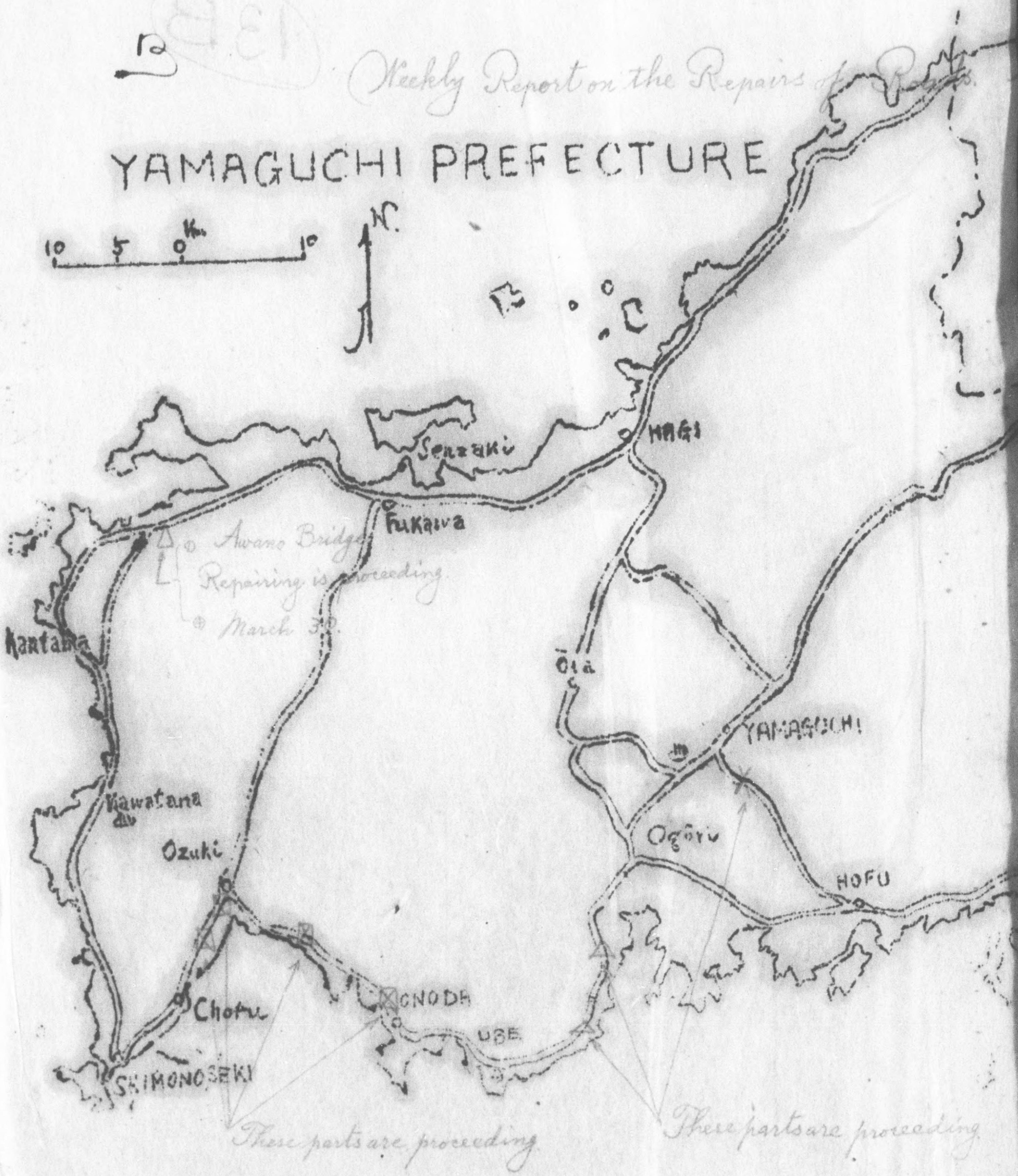
Iwao Nanjo
Chief of Road Section
Yamaguchi prefecture

Note:
The condition of the roads generally is bad. But we can't repair and maintain the bad roads by reason of no fund.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

12

Weekly Report on the Repairs of Roads.

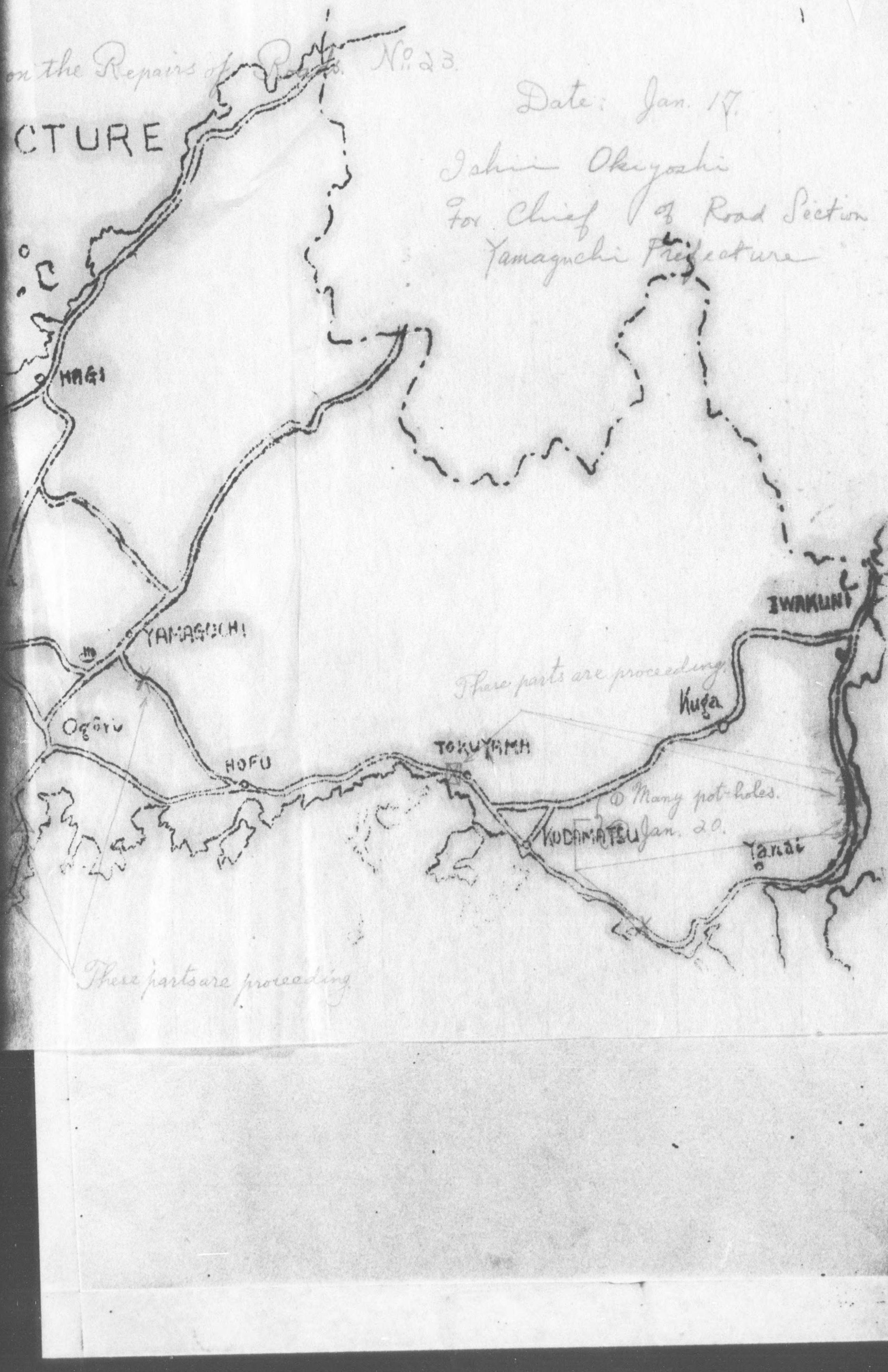


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78019

on the Repairs of Roads. No. 23.

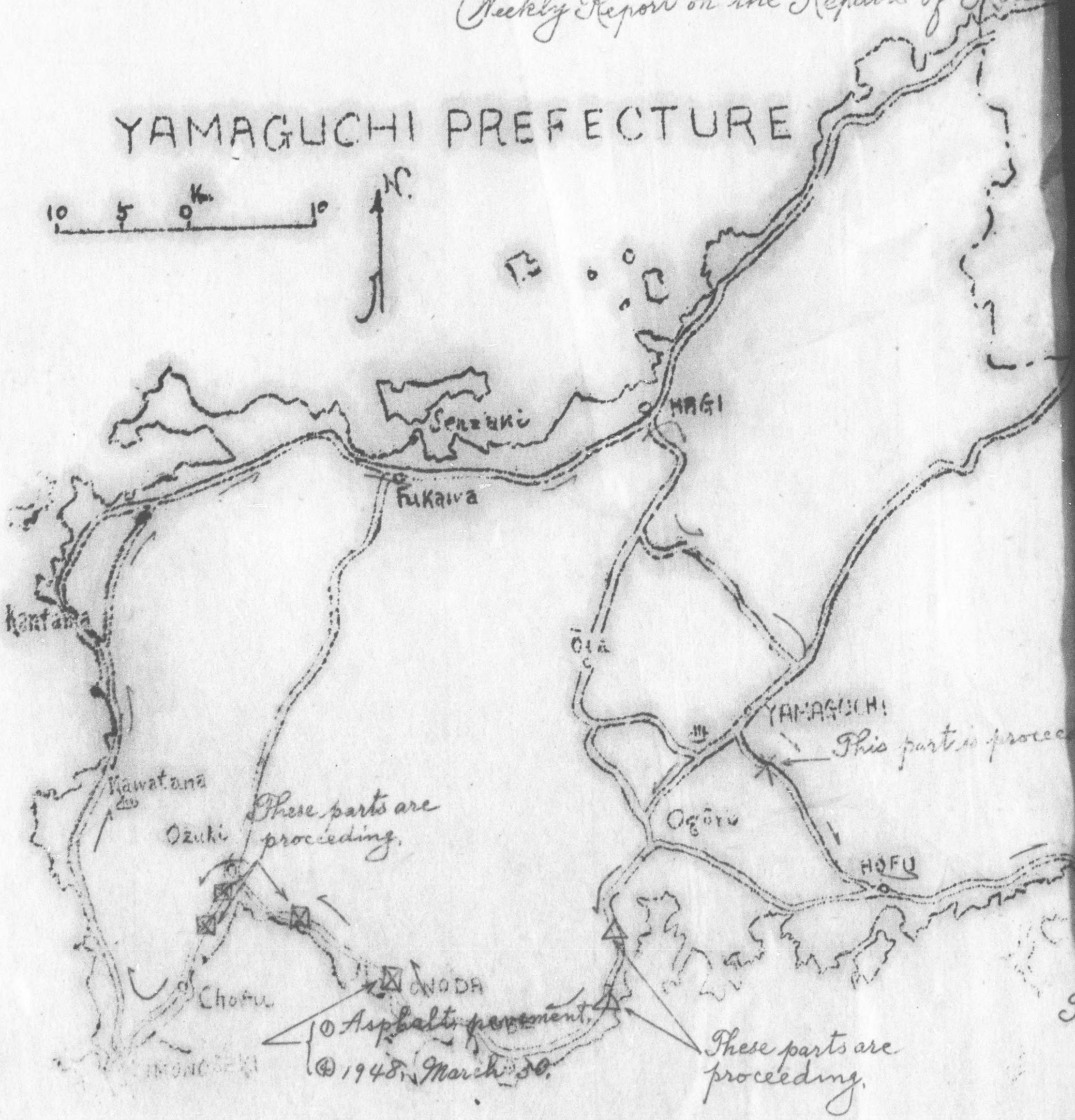
Date: Jan. 17.

Ishii Okuyoshi
For Chief of Road Section
Yamaguchi Prefecture



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

Weekly Report on the Repairs of Road



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

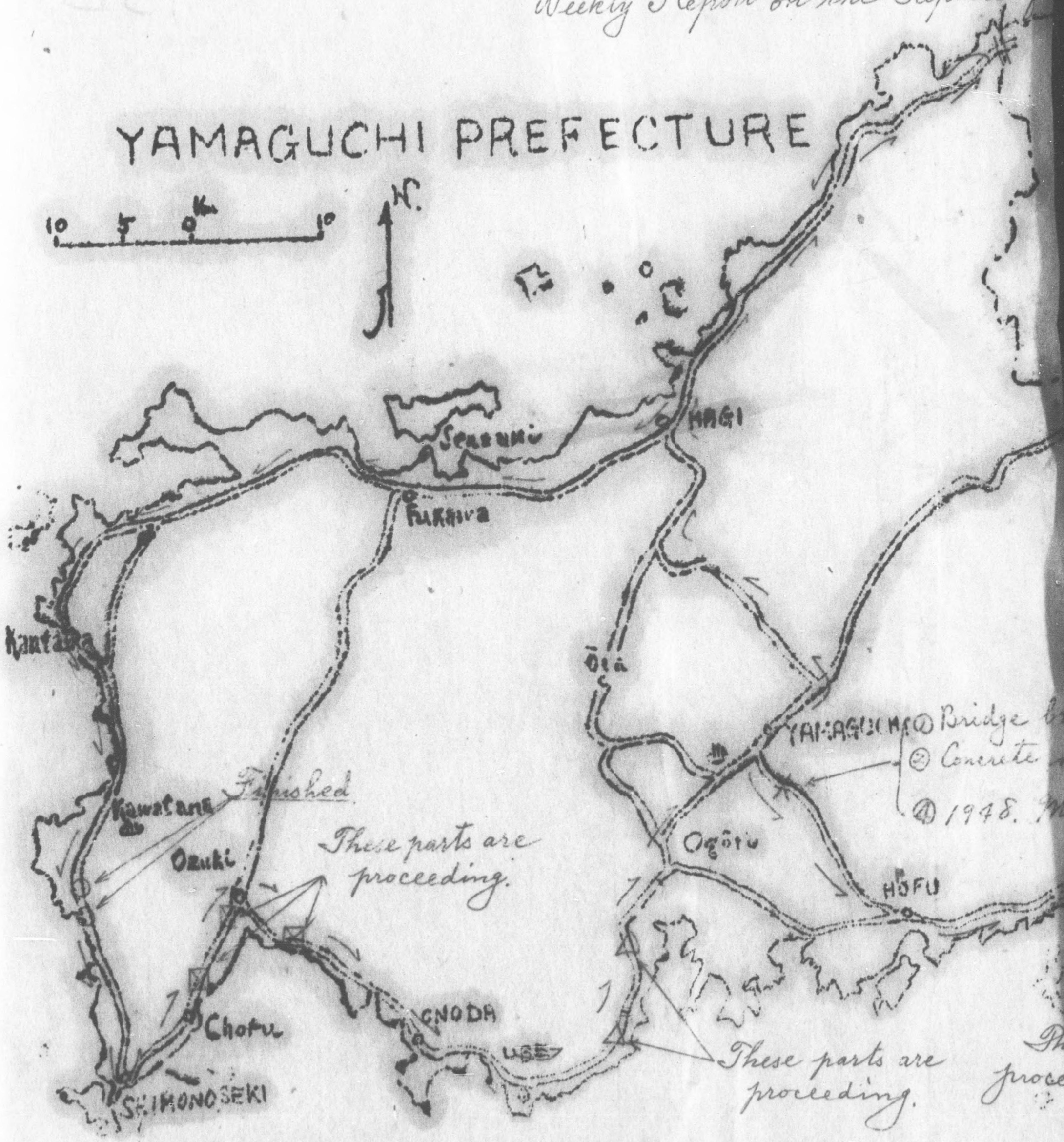
Report on the Repairs of Roads. No. 1.

Date: Dec. 27.

Iwao Nampo
Chief of Road section
Y. P. C. E.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77013

Weekly Report on the Repairs of

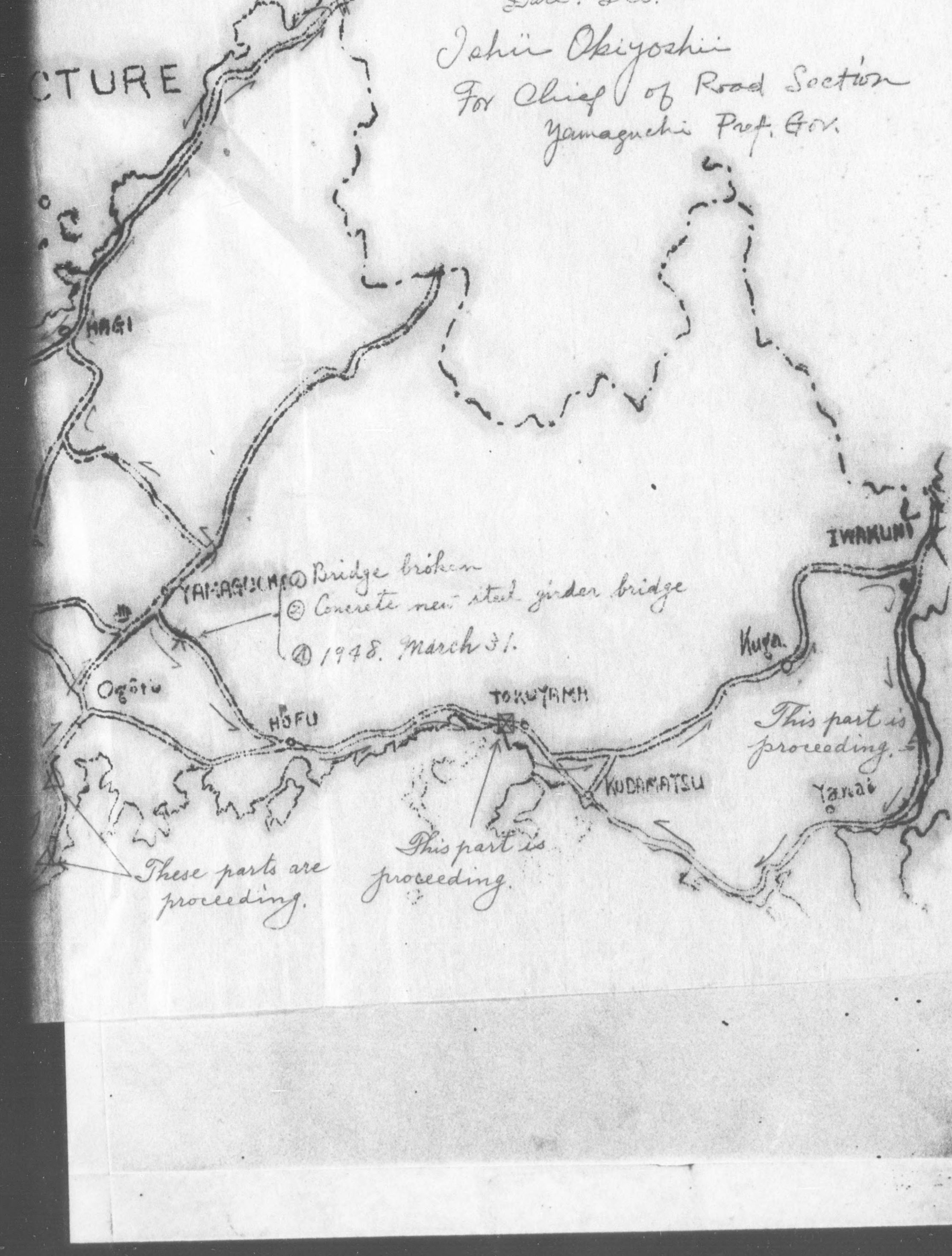


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

Report on the Repairs of Roads. No. 20.

Date: Dec. 21

Ishii Okiyoshii
For Chief of Road Section
Yamaguchi Pref. Gov.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77012

Weekly Report on the Repairs o

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 79-3

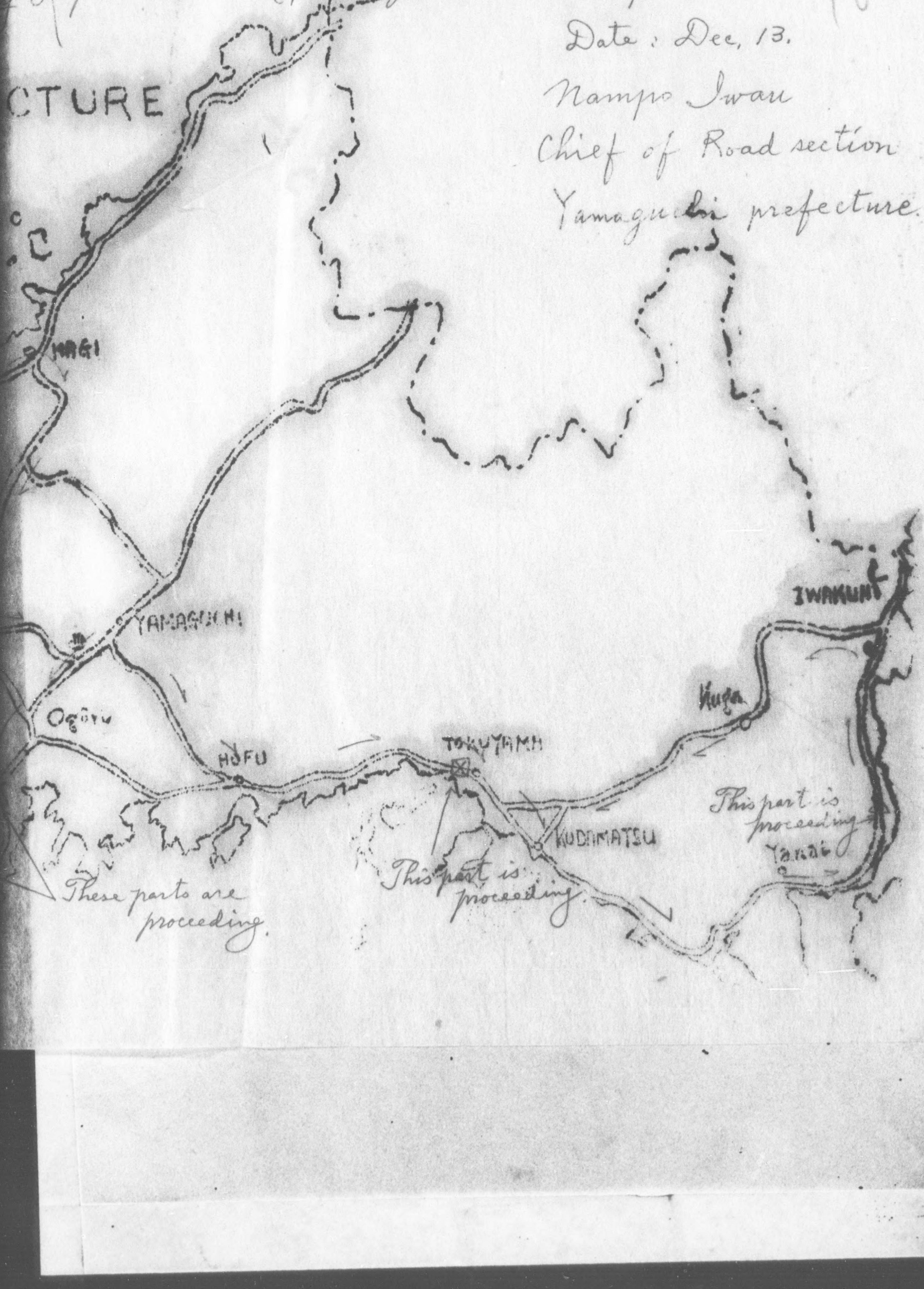
Report on the Repairs of Roads, No. 17.

Date : Dec, 13.

Nampo Iwau

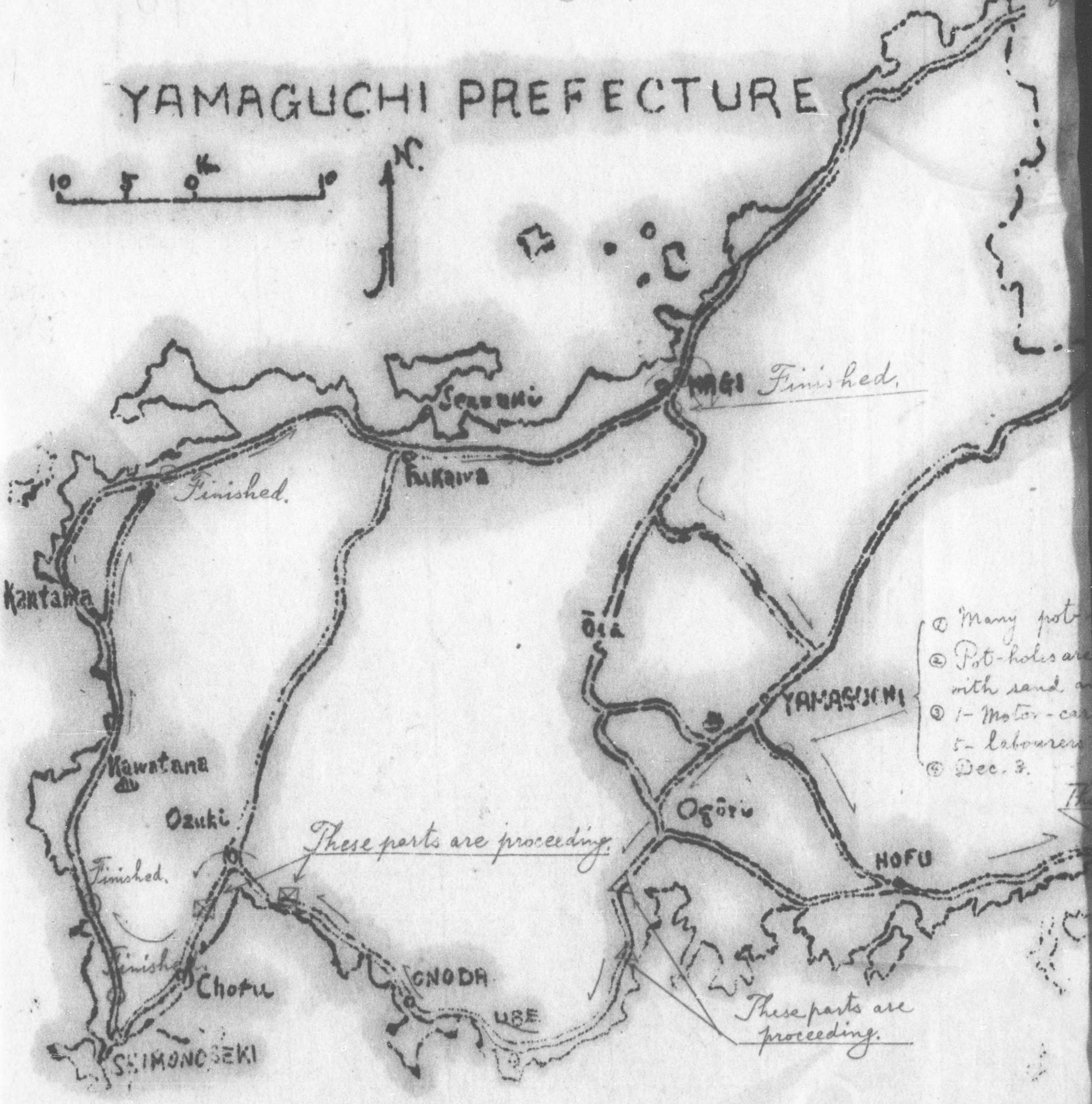
Chief of Road section

Yamaguchi prefecture.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77012

Weekly Report on the Repairs of

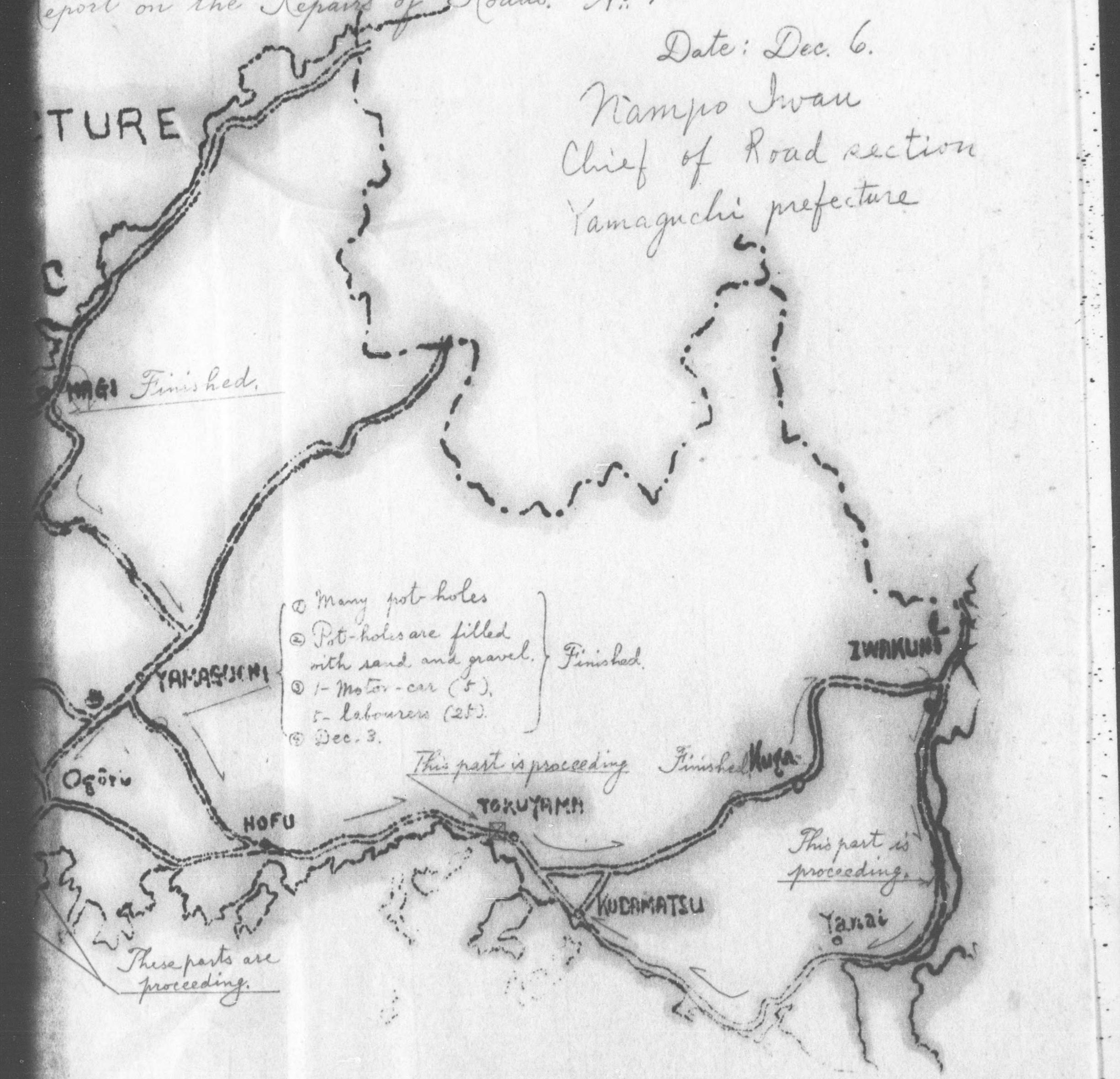


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

Report on the Repairs of Roads. No. 18

Date: Dec. 6.

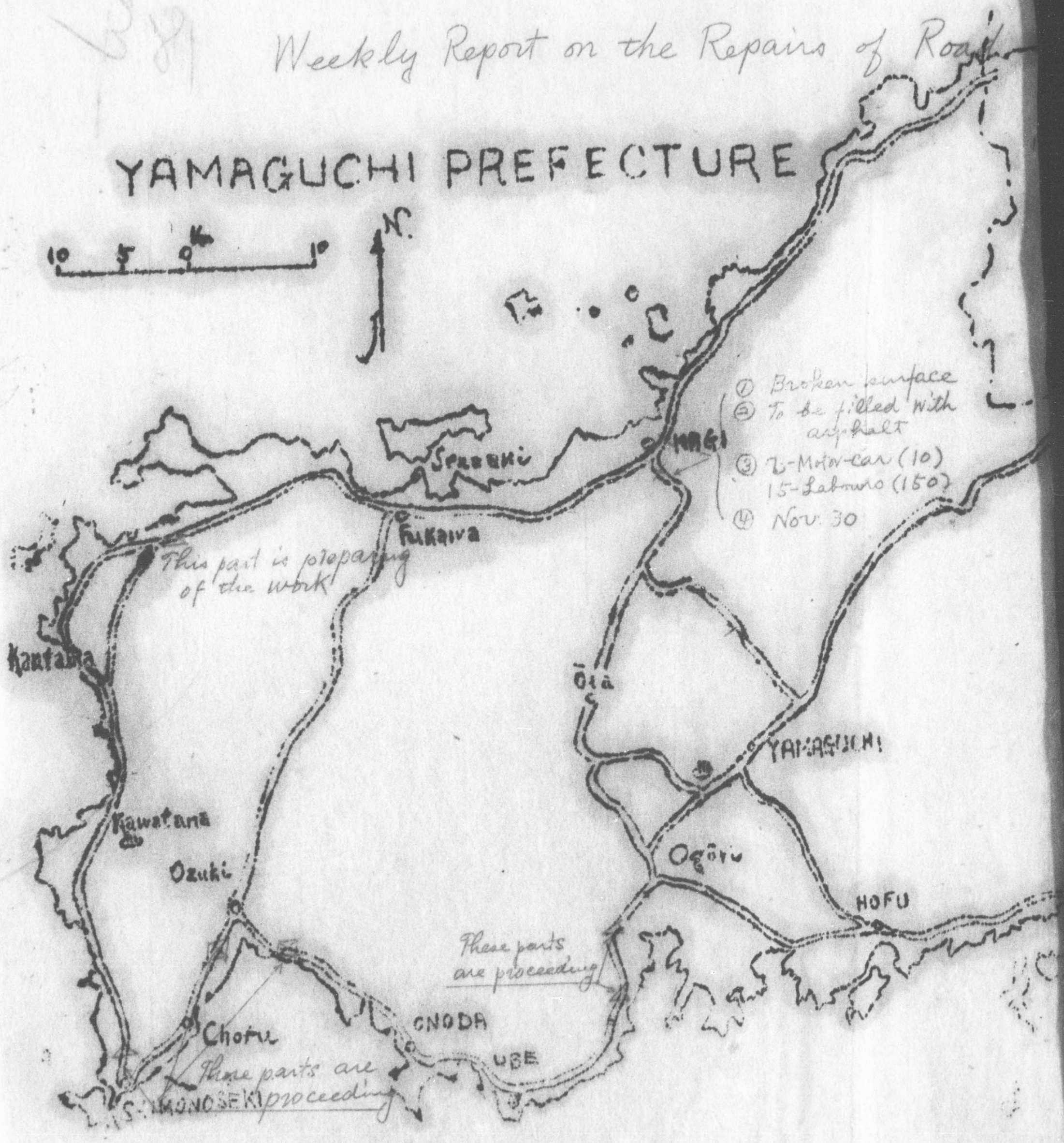
Nampo Iwau
Chief of Road section
Yamaguchi prefecture



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

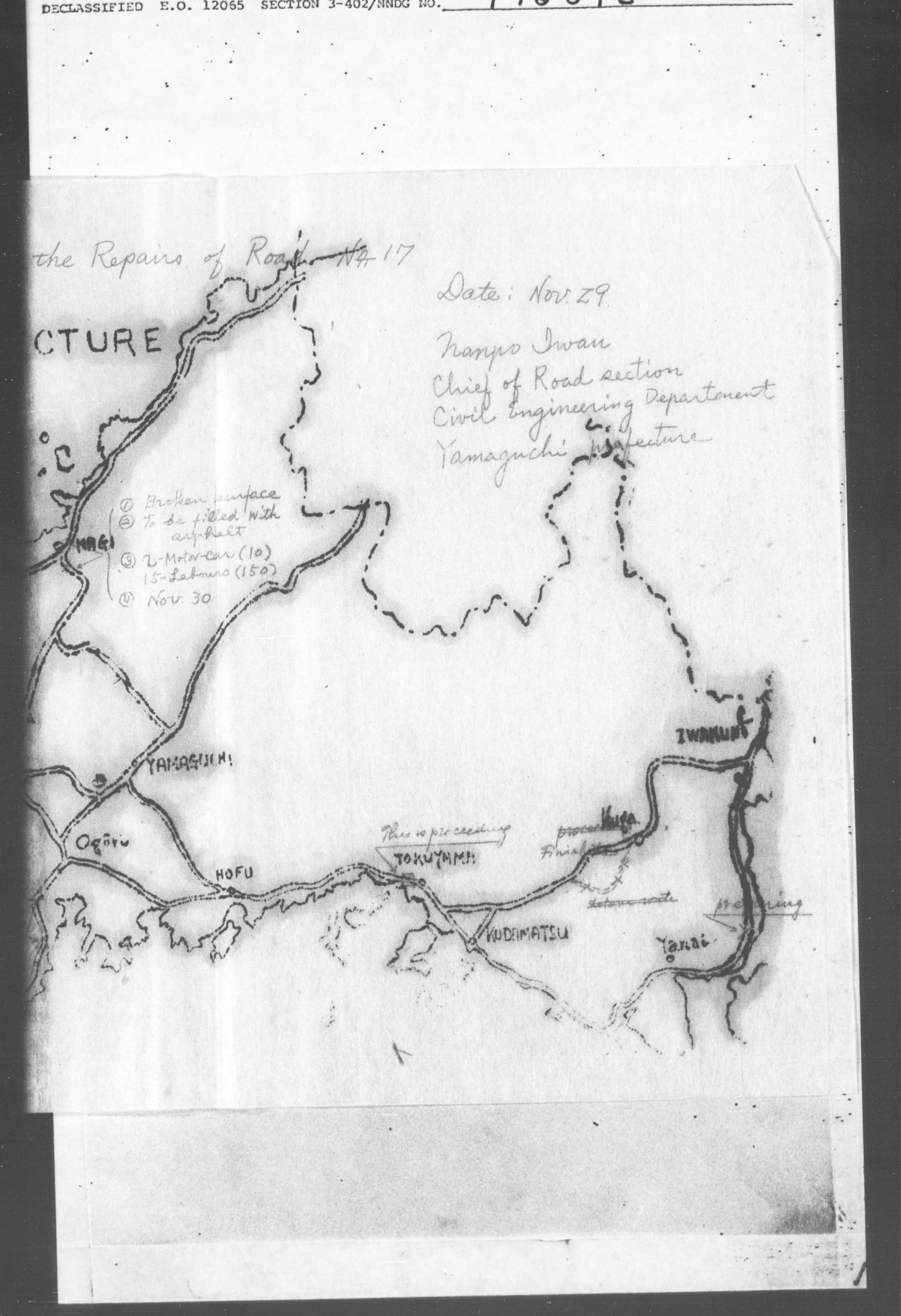
389

Weekly Report on the Repairs of Roads



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

the Repairs of Road No 17

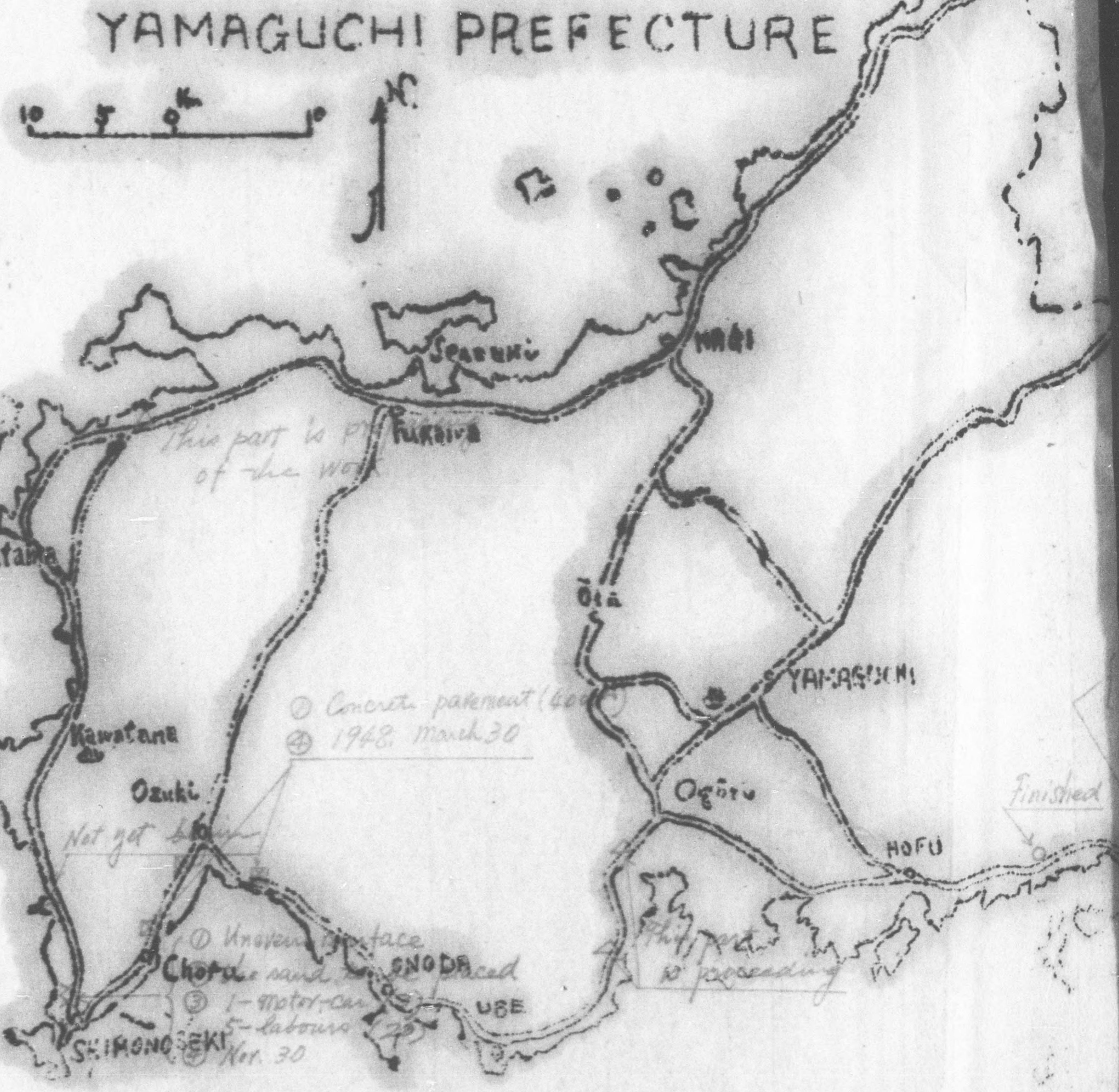



Date: Nov. 29

Nampo Iwao
Chief of Road section
Civil Engineering Departament
Yamaguchi Prefecture

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 178018

Weekly Report on the Repairs of R

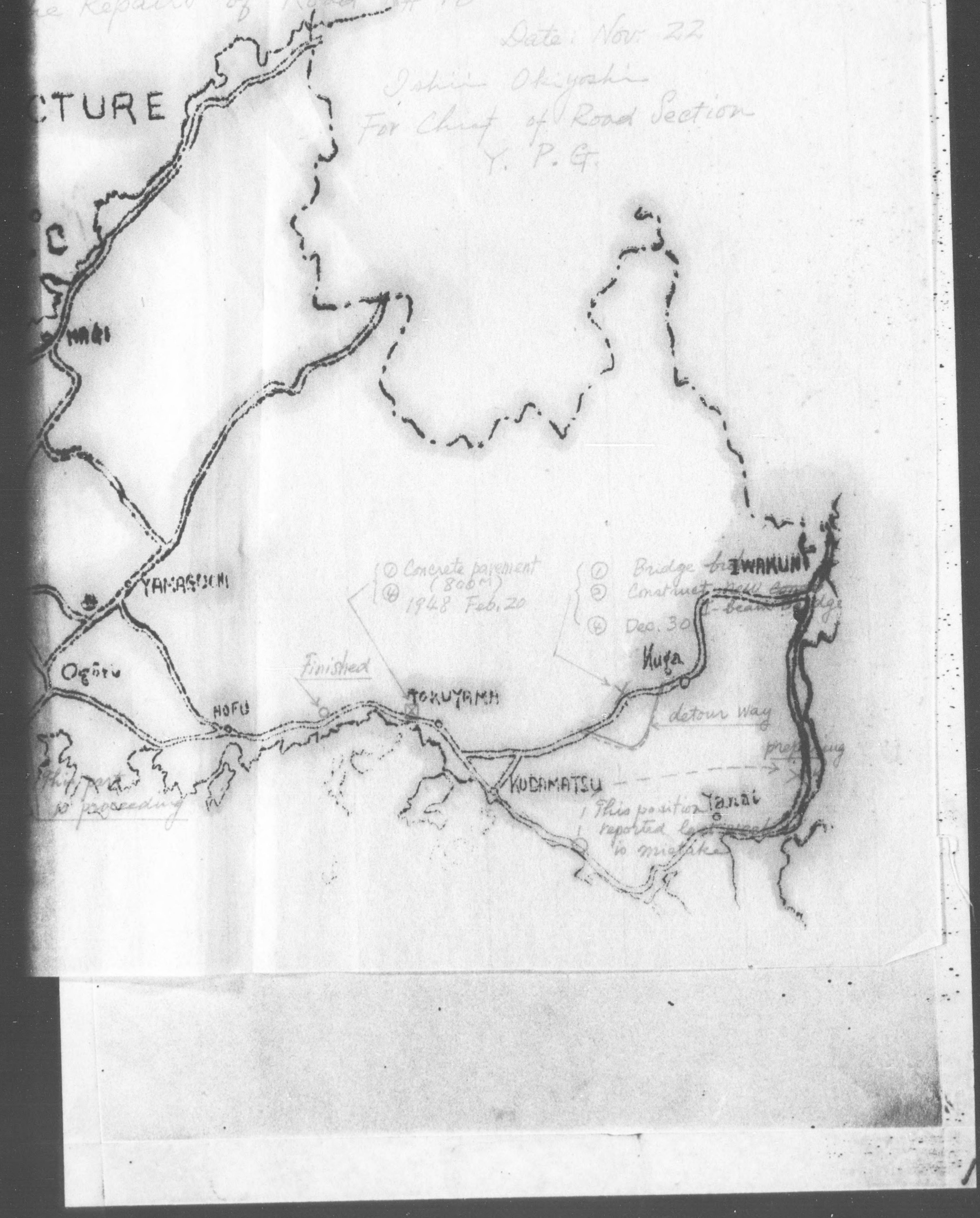


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 76013

Re Repairs of Road No 16

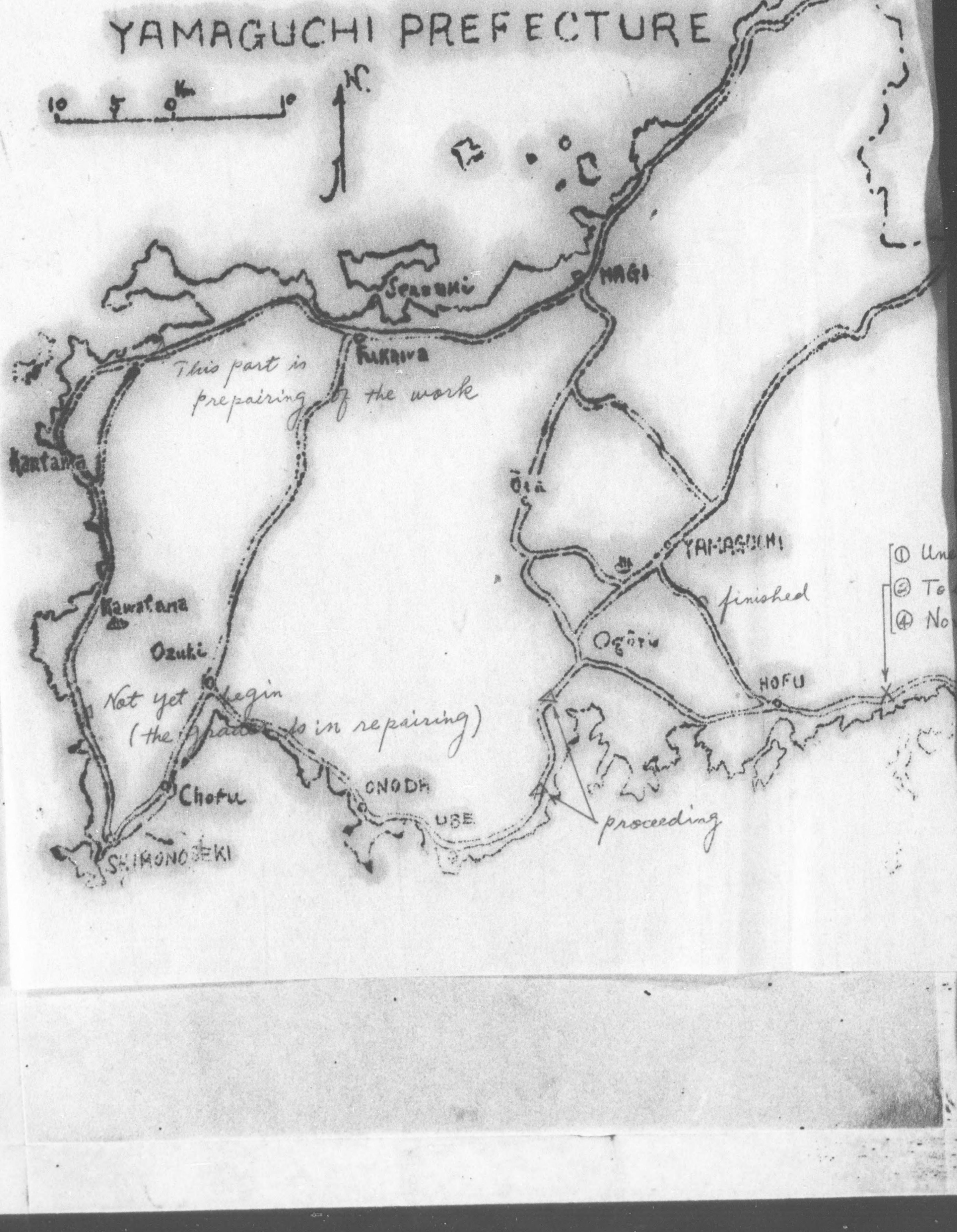
Date: Nov 22

Ishii Okiyoshi
For Chief of Road Section
Y. P. G.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 76019

Weekly Report on the Repairs of R



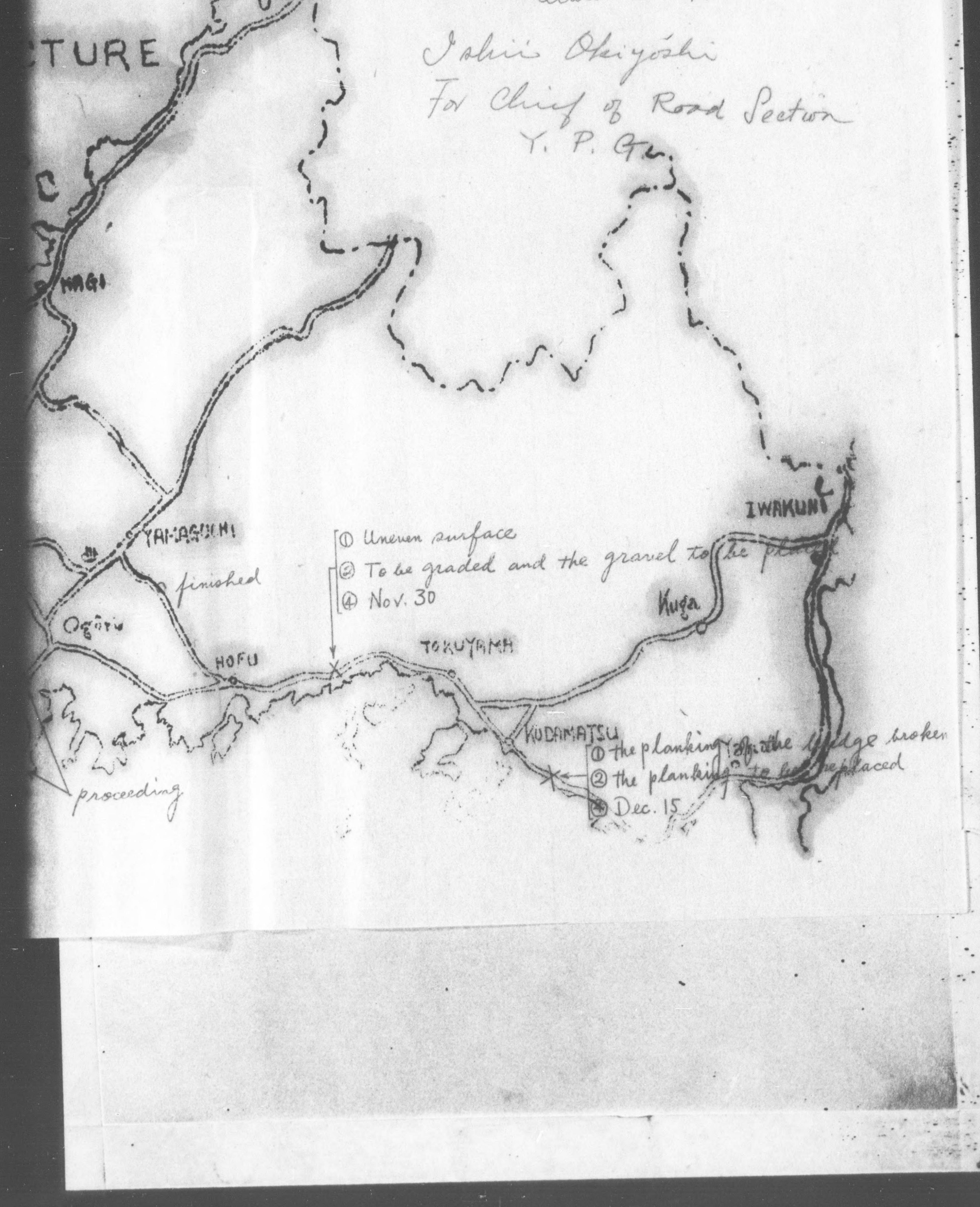
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 76018

the Repairs of Roads

No. 15

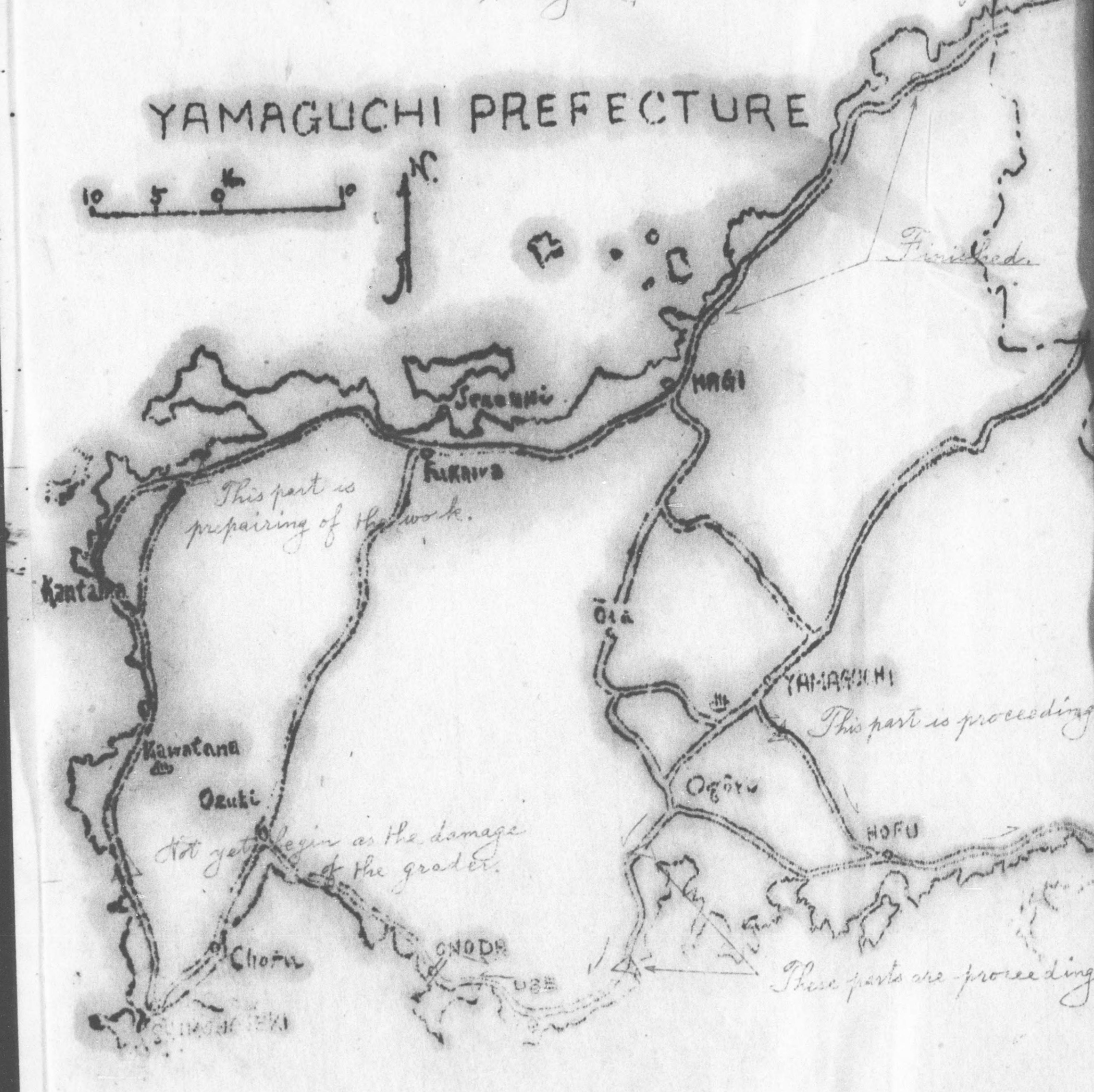
Date Nov. 14

Ishii Okiyoshi
For Chief of Road Section
Y. P. G.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 76018

Weekly Report on the Repairs of Roads



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 71803

Report on the Repairs of Roads No 14.

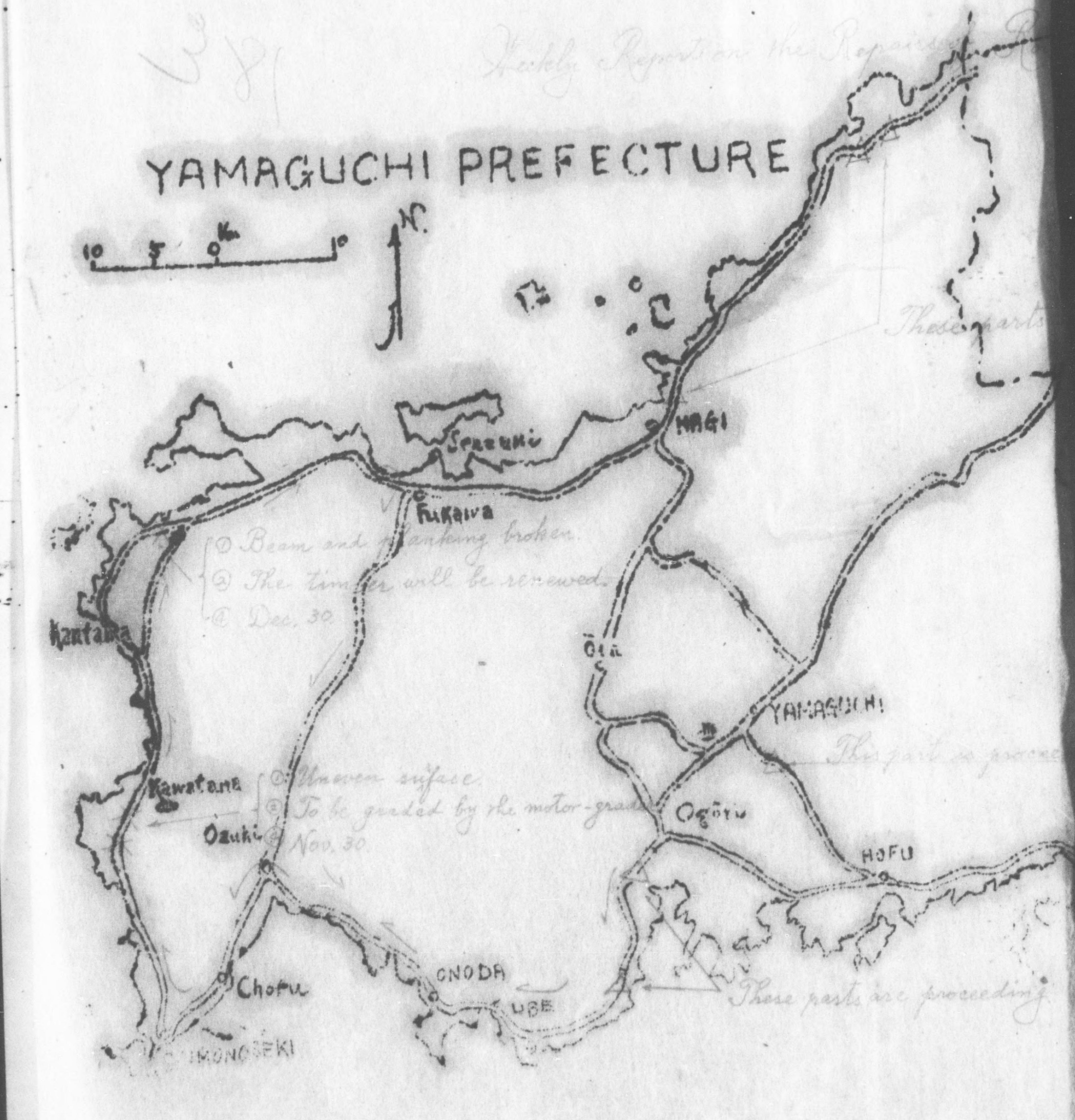
Date: November 8.

Ishii Okuyama

For Chief 3 Road Section

Y. P. G.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

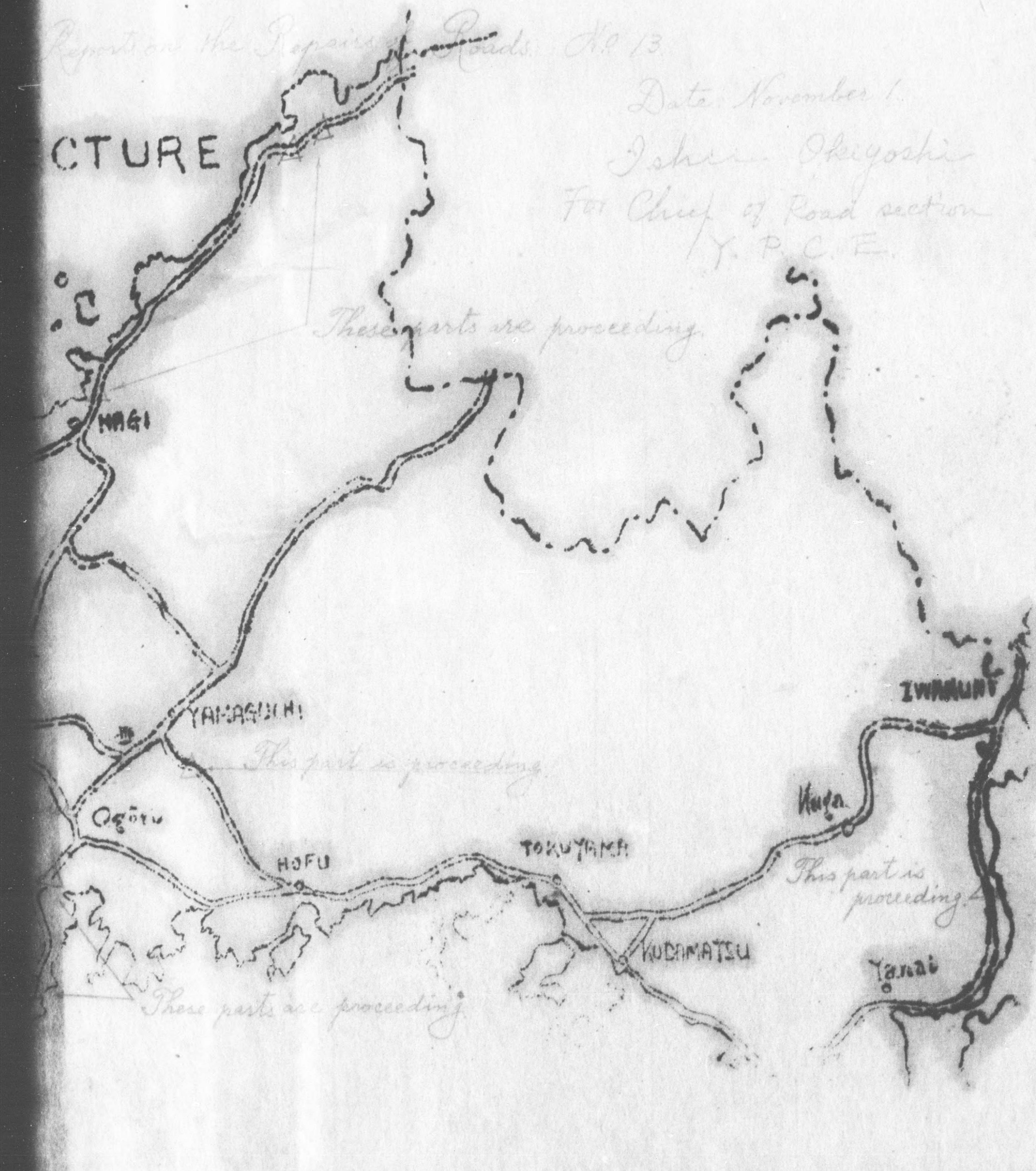


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78019

Report on the Repairing of Roads. No 13.

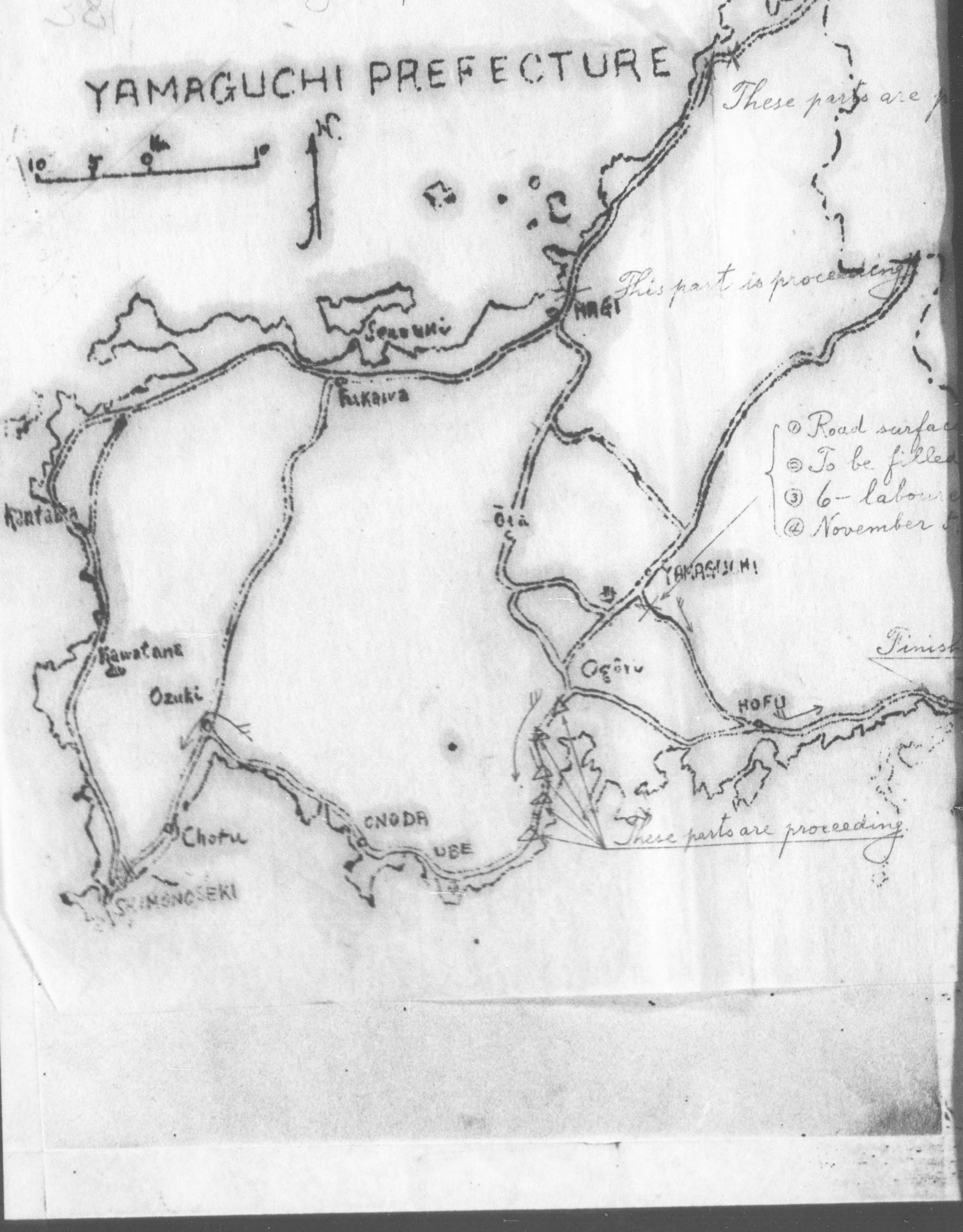
Date: November 1.

Ishii Okiyoshi
For Chief of Road section
Y. P. C. E.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

# Weekly Report on the Repairs of Roads

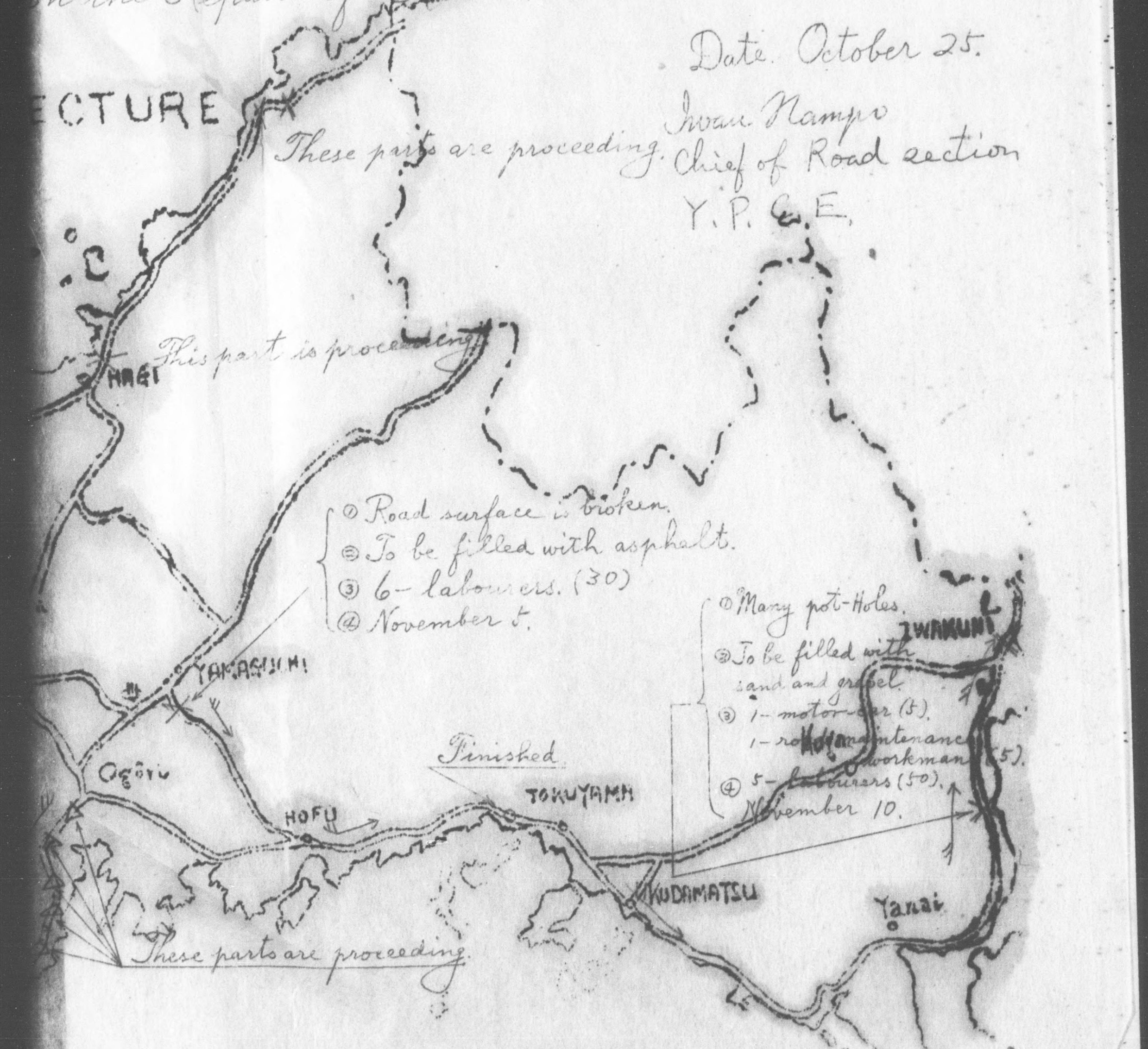


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77803

on the Repairs of Roads. No. 12.

Date. October 25.

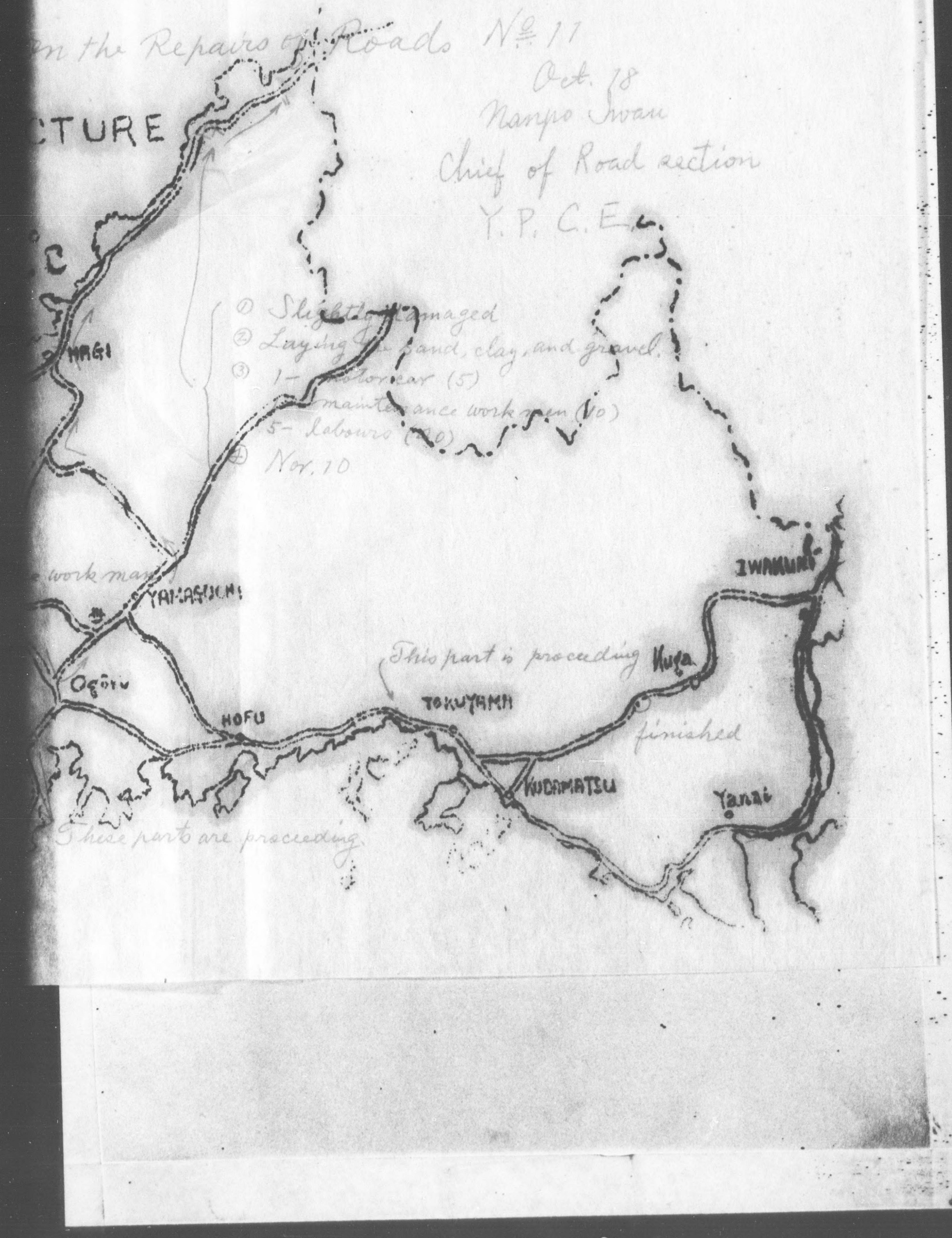
Iwao Nampo
Chief of Road section
Y. P. C. E.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 178018

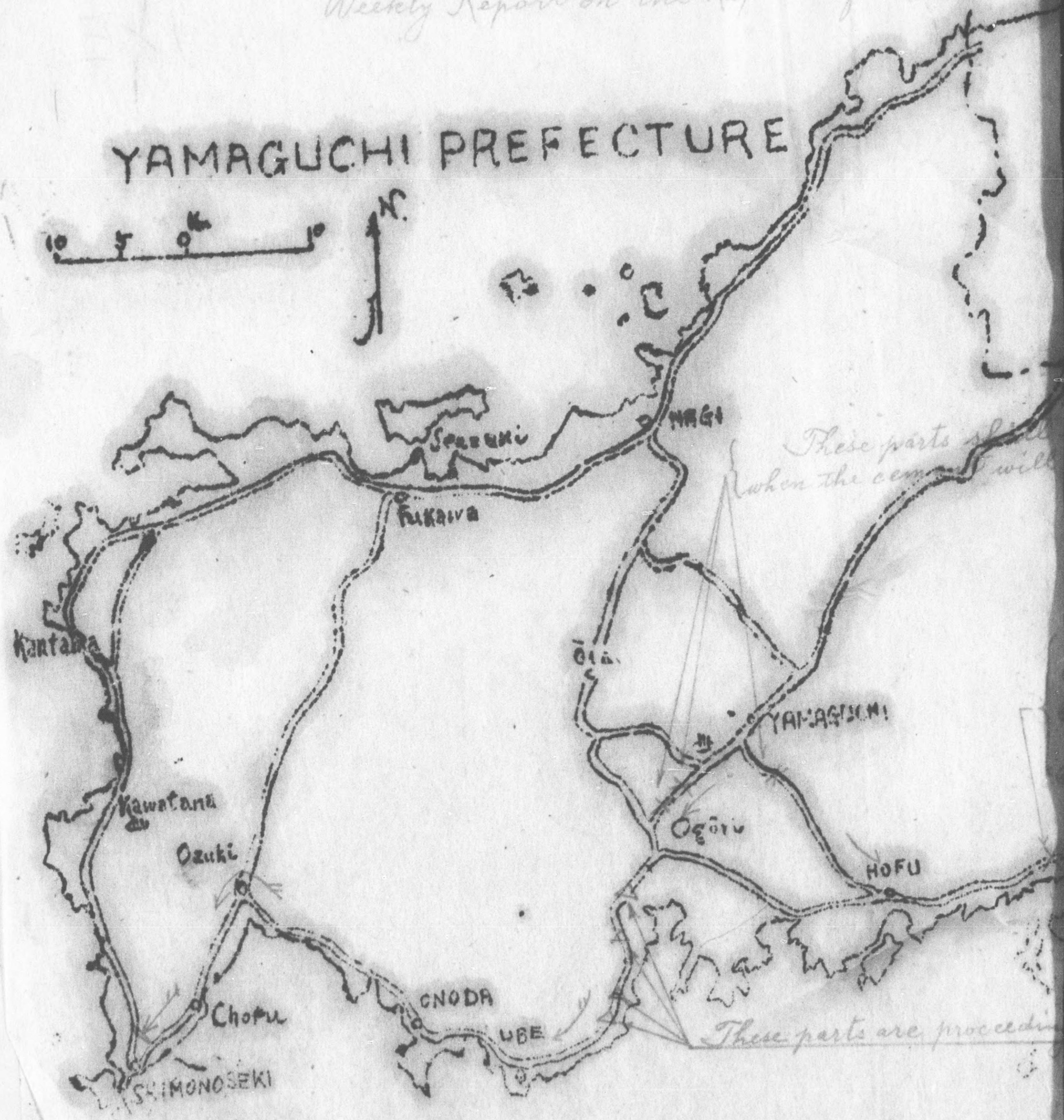
Weekly Report on the Repairs of Re

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 76018



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

Weekly Report on the Repairs of Roads N



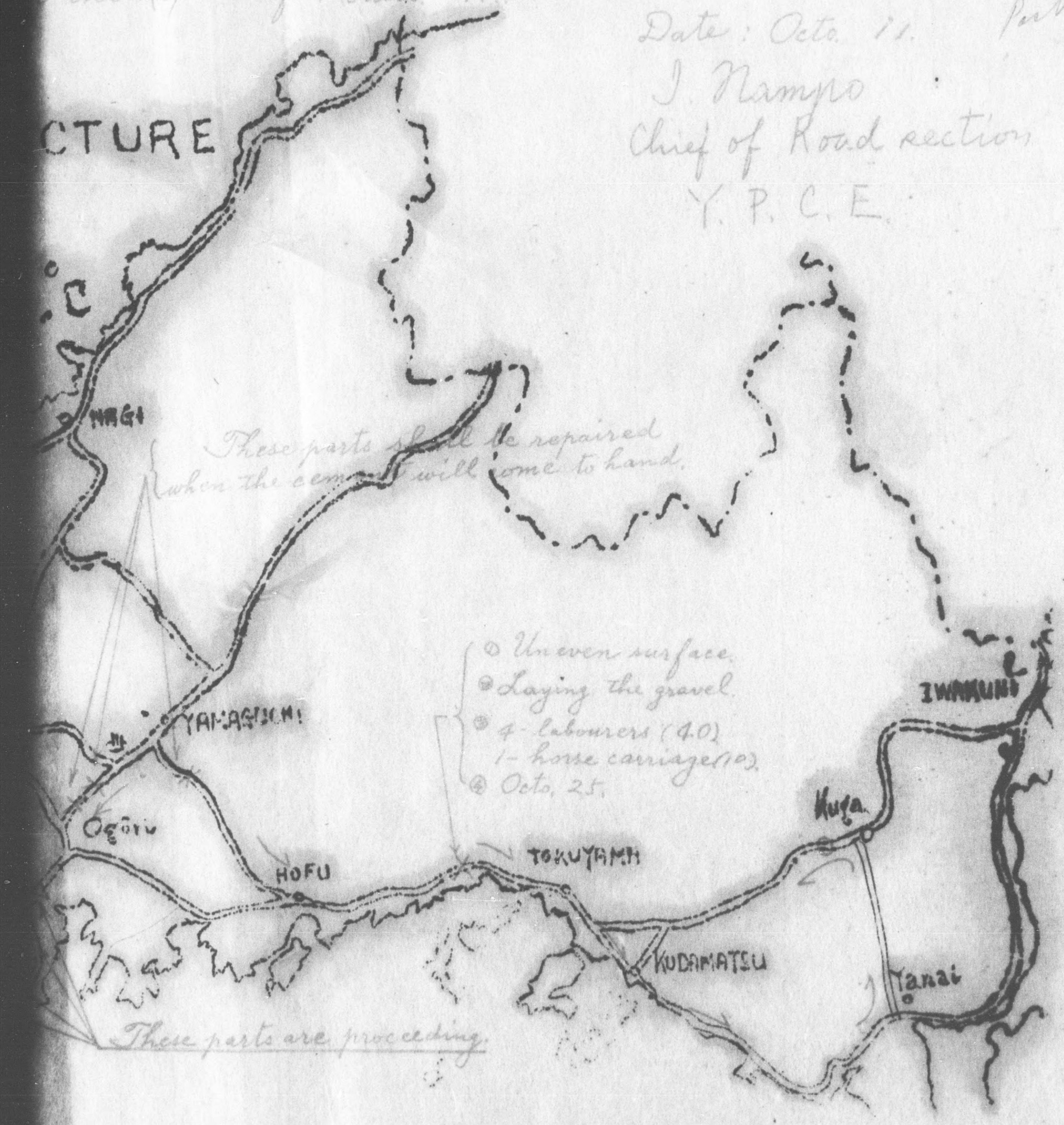
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 76013

the Repairs of Roads No 10.

Bay to Port

Date: Octo. 11.

I. Nampo
Chief of Road section
Y. P. C. E.



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

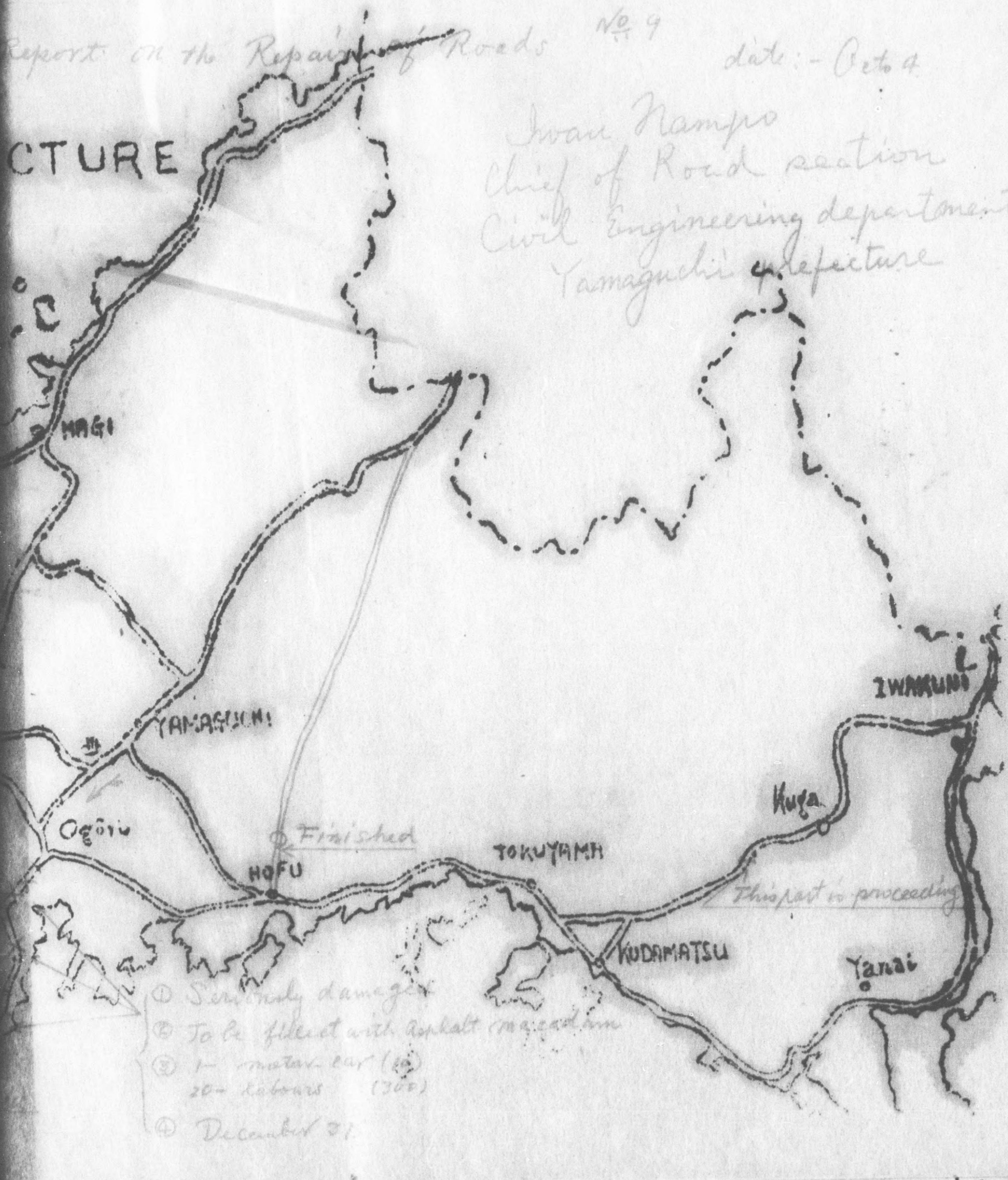
Weekly Report on the Repair

# YAMAGUCHI PREFECTURE

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 79-3

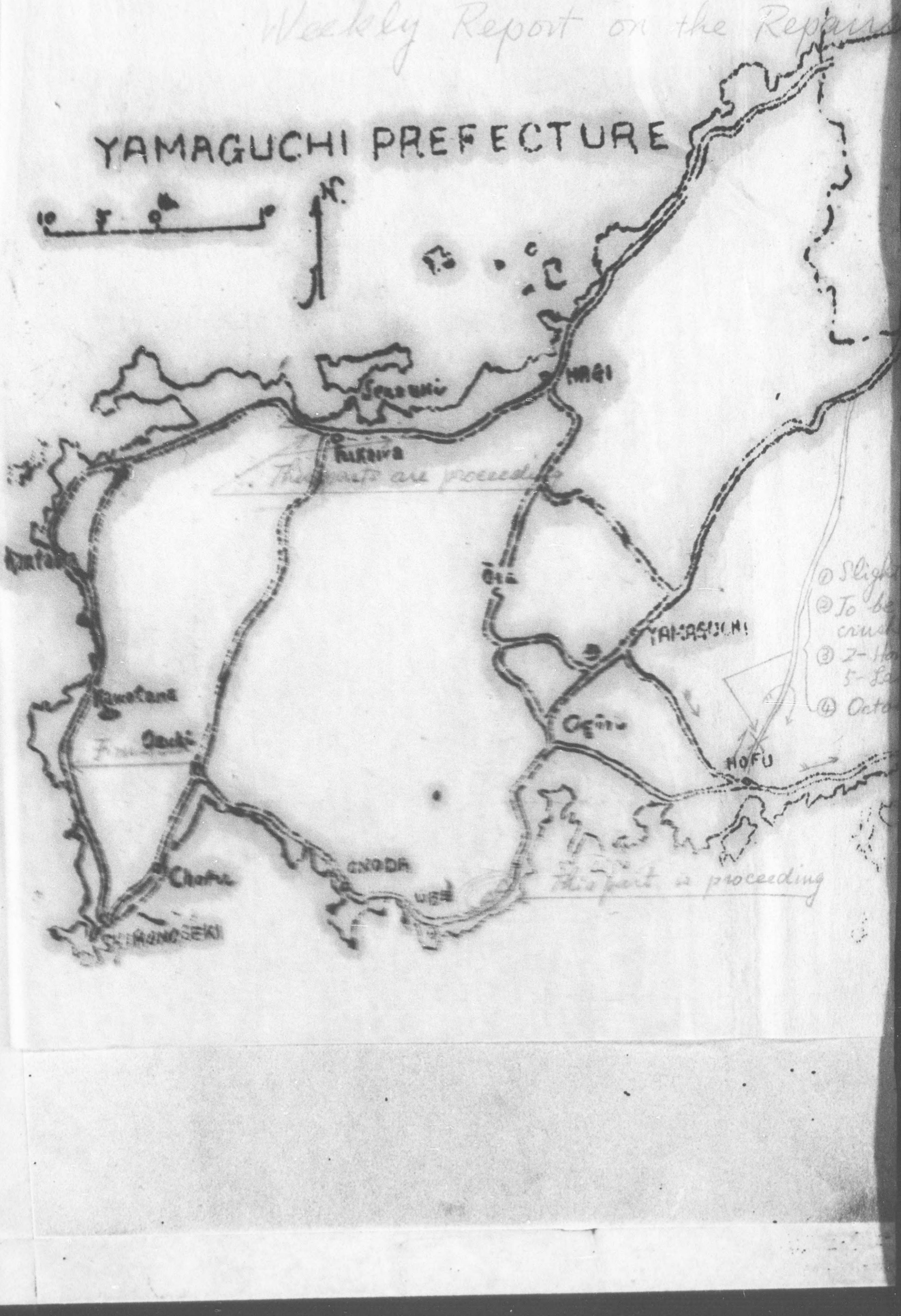
Report on the Repair of Roads No 9 date:- Oct 4

Iwao Nampo
Chief of Road section
Civil Engineering department
Yamaguchi prefecture



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

Weekly Report on the Repair



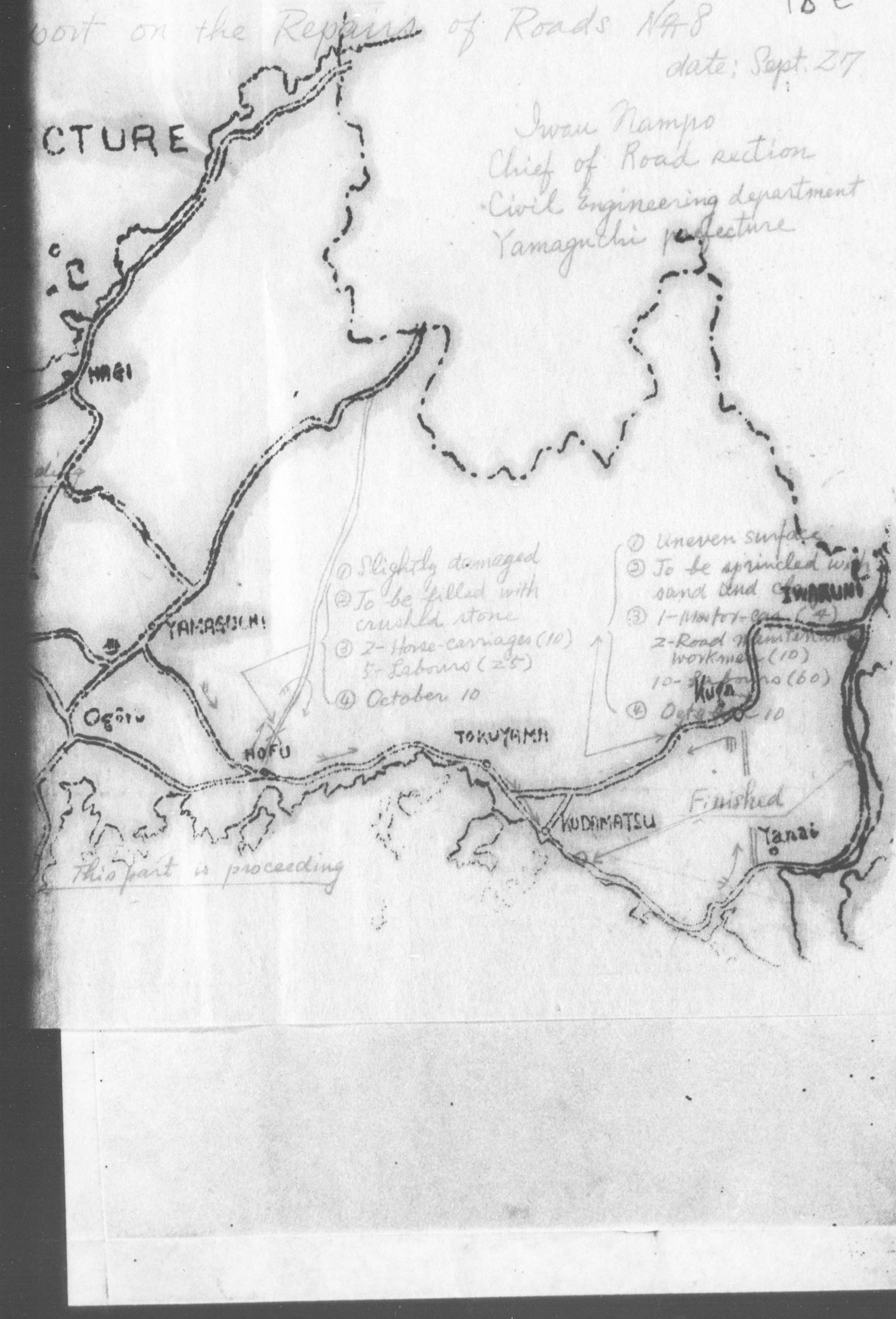
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

18 E

Report on the Repairs of Roads No 8

date: Sept. 27

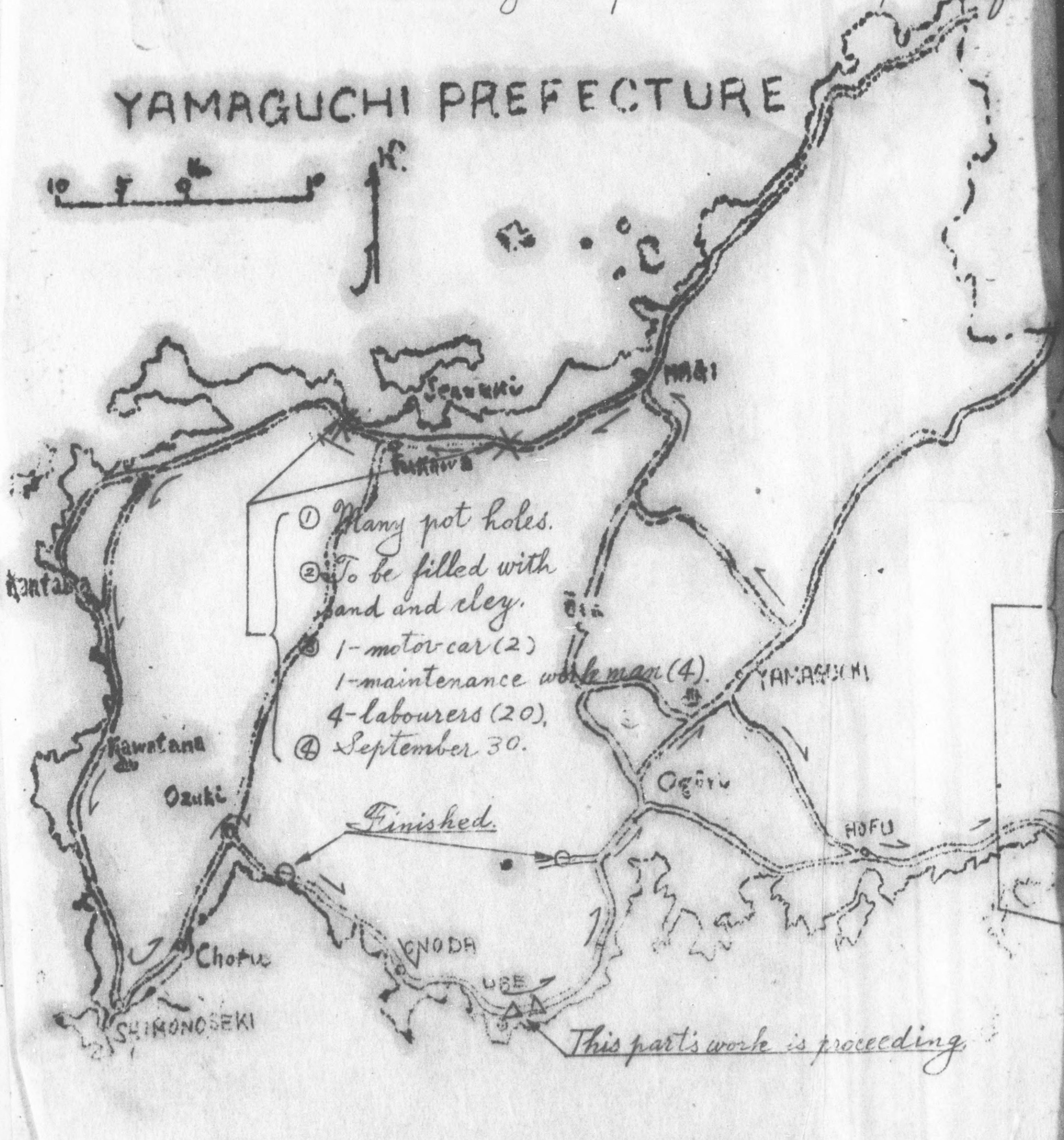
Iwao Nampo
Chief of Road section
Civil Engineering department
Yamaguchi prefecture



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

Major Robertson

Weekly Report on the Repairs of

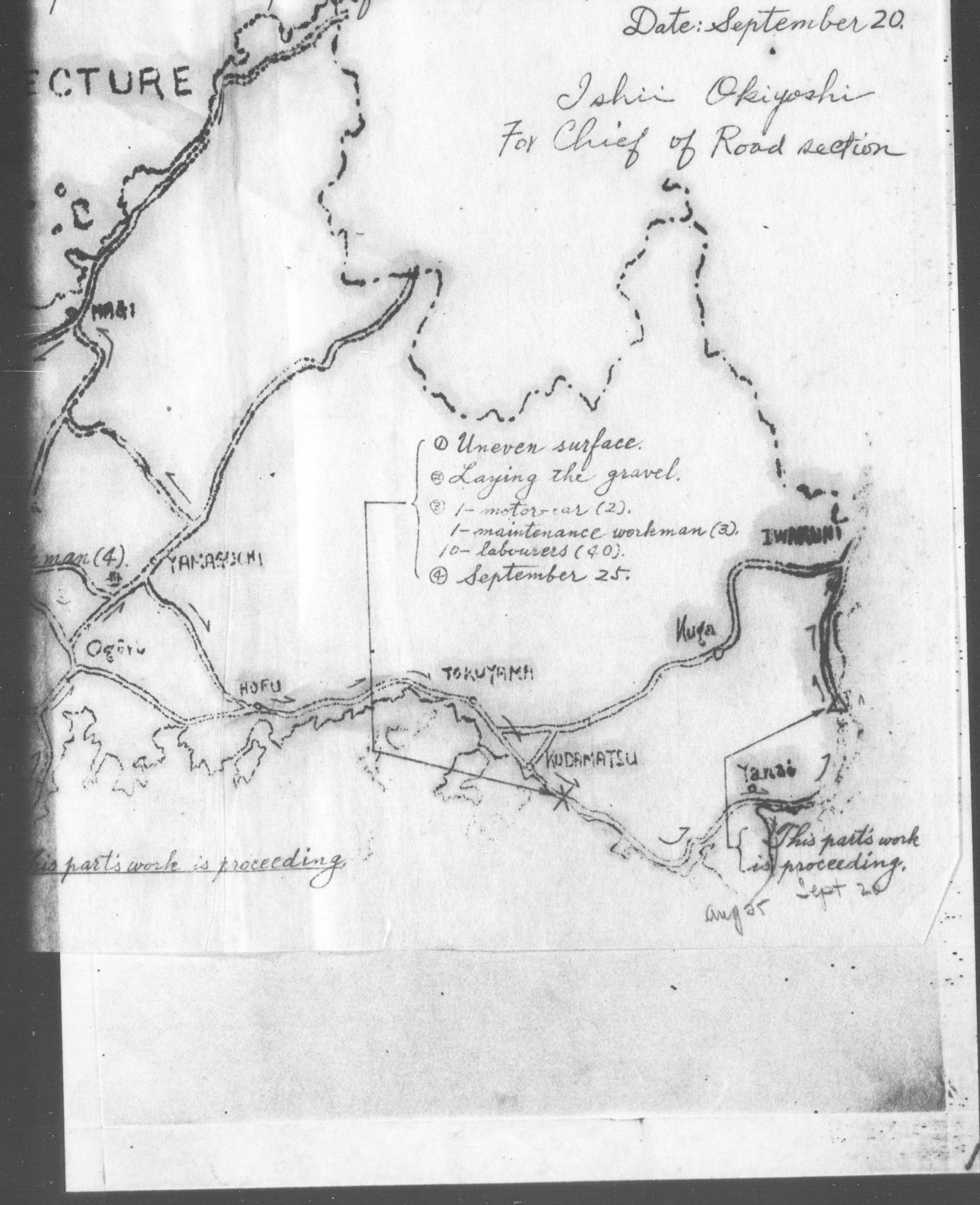


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

Report on the Repairs of Road. No. 7.

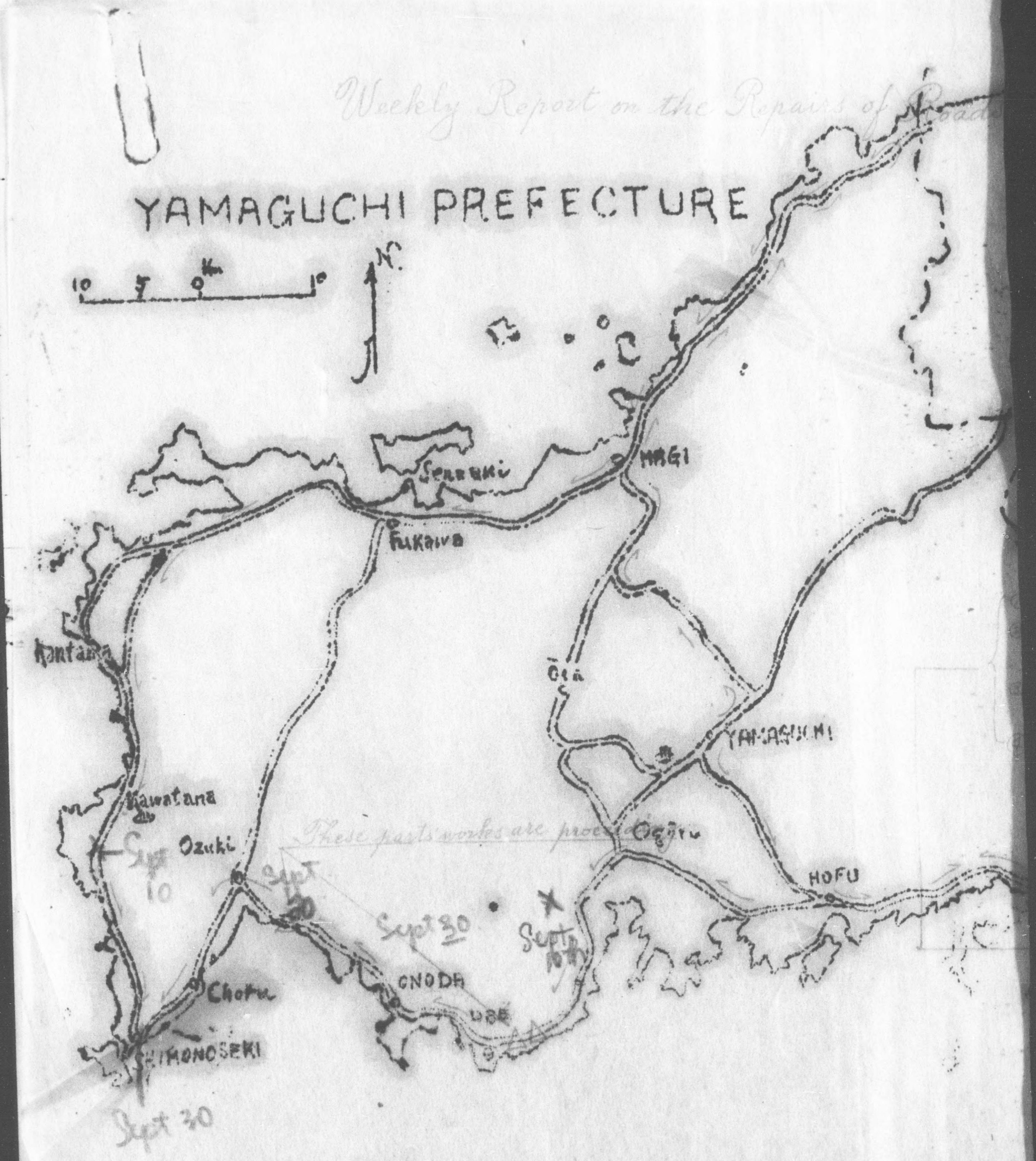
Date: September 20.

Ishii Okiyoshi
For Chief of Road section



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

Weekly Report on the Repairs of Roads

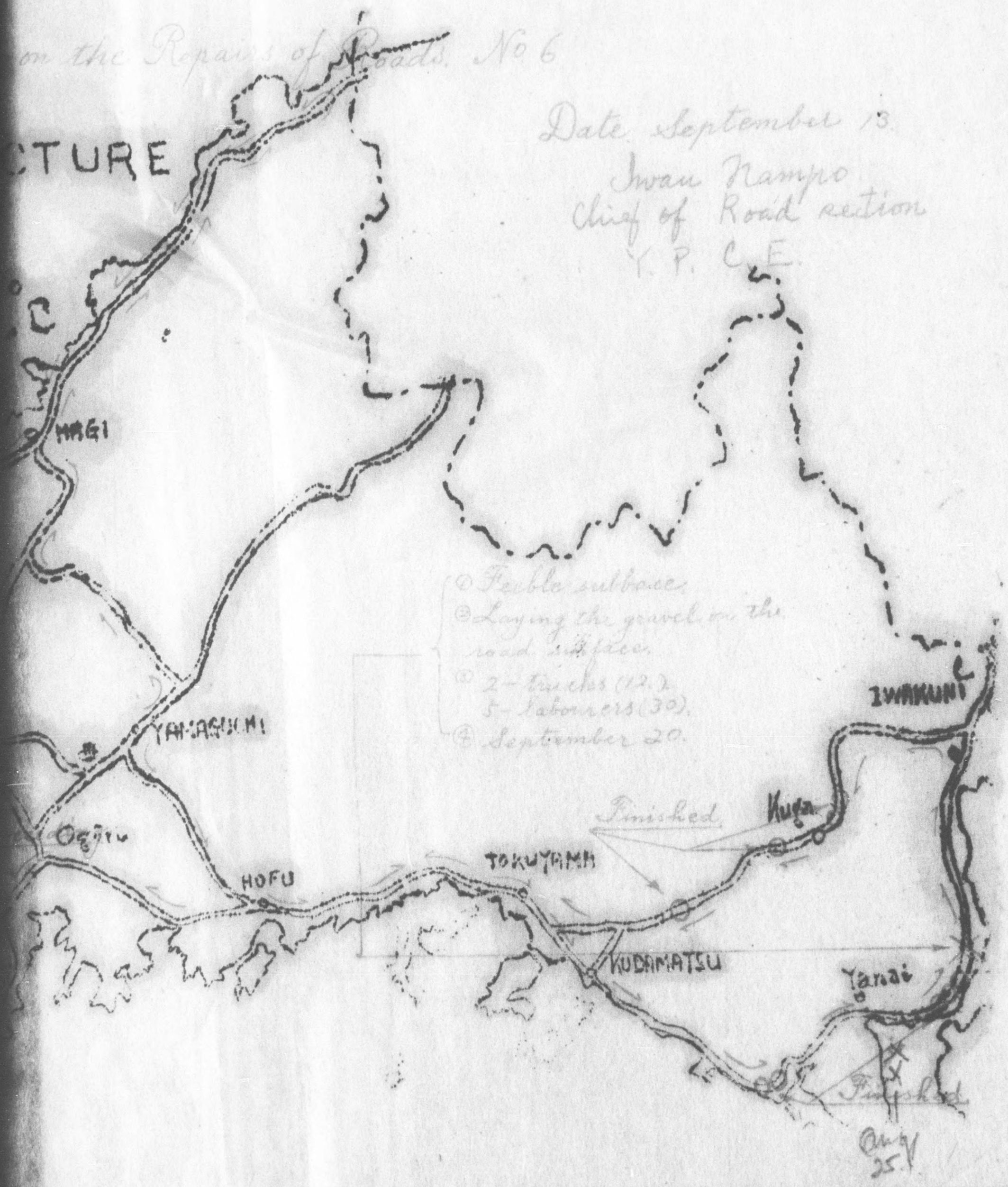



These past works are proceeding

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

on the Repairs of Roads. No 6

Date. September 13.
Iwao Nampo
Chief of Road section
Y. P. C. E.




① Feeble subbase.
② Laying the gravel on the road surface.
③ 2 – Trucks (12.)
5 – Laborers (30).
④ September 20.

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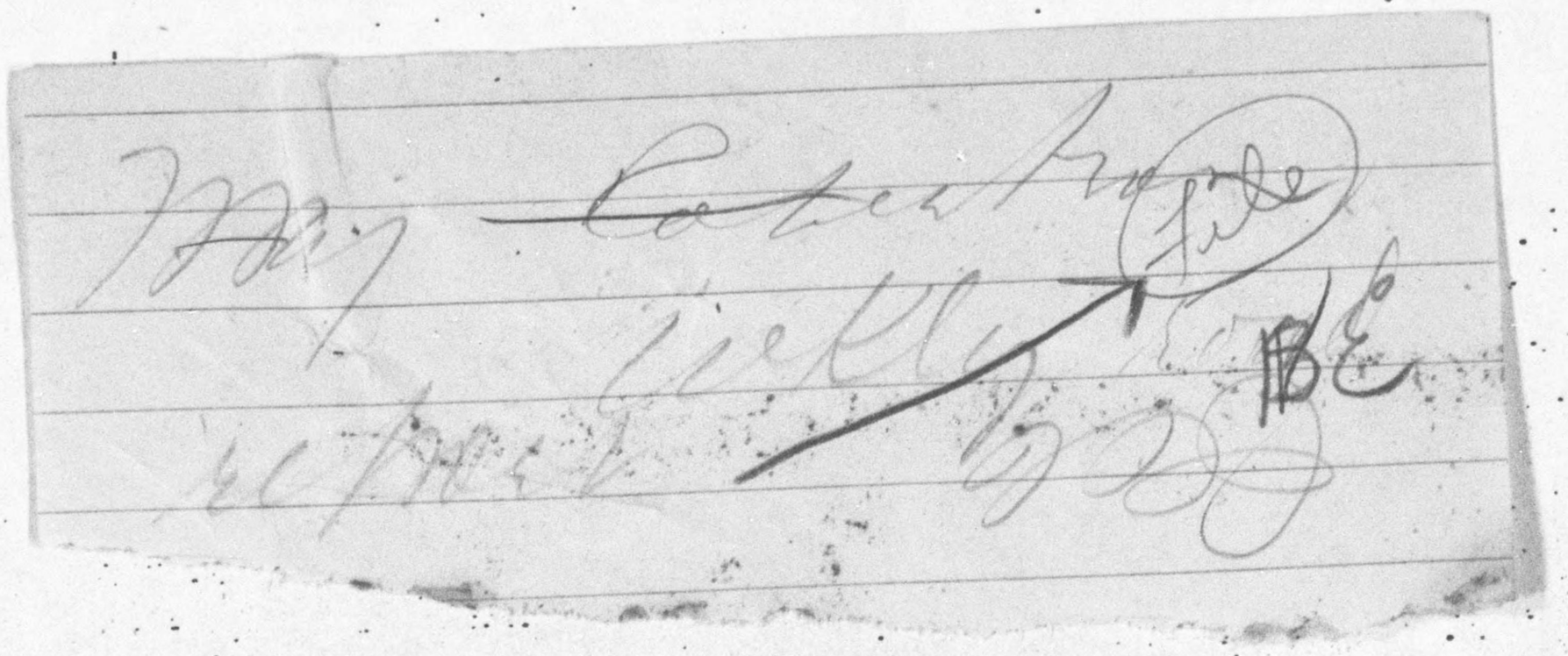

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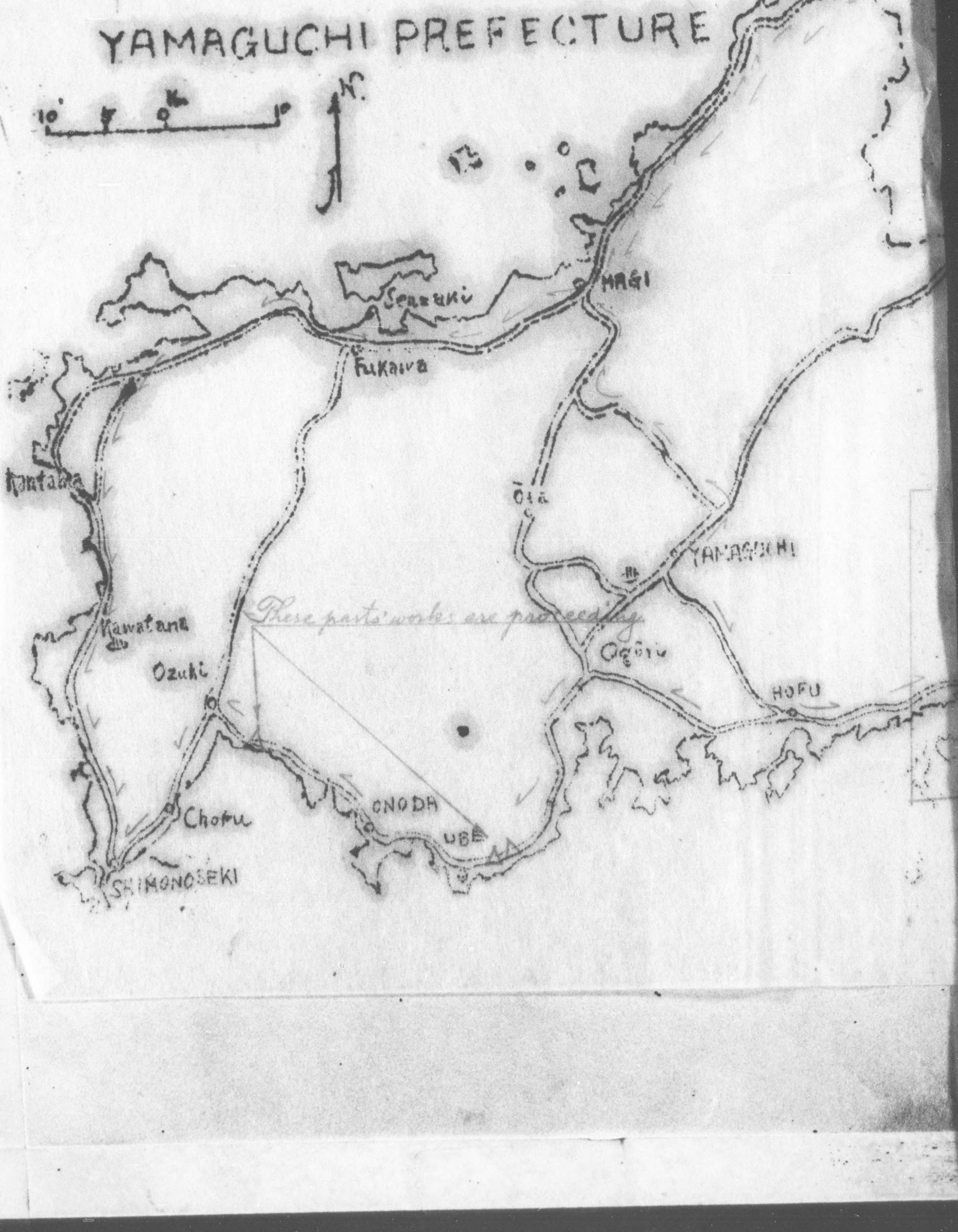
Weekly Report on the Repairs of Roads.



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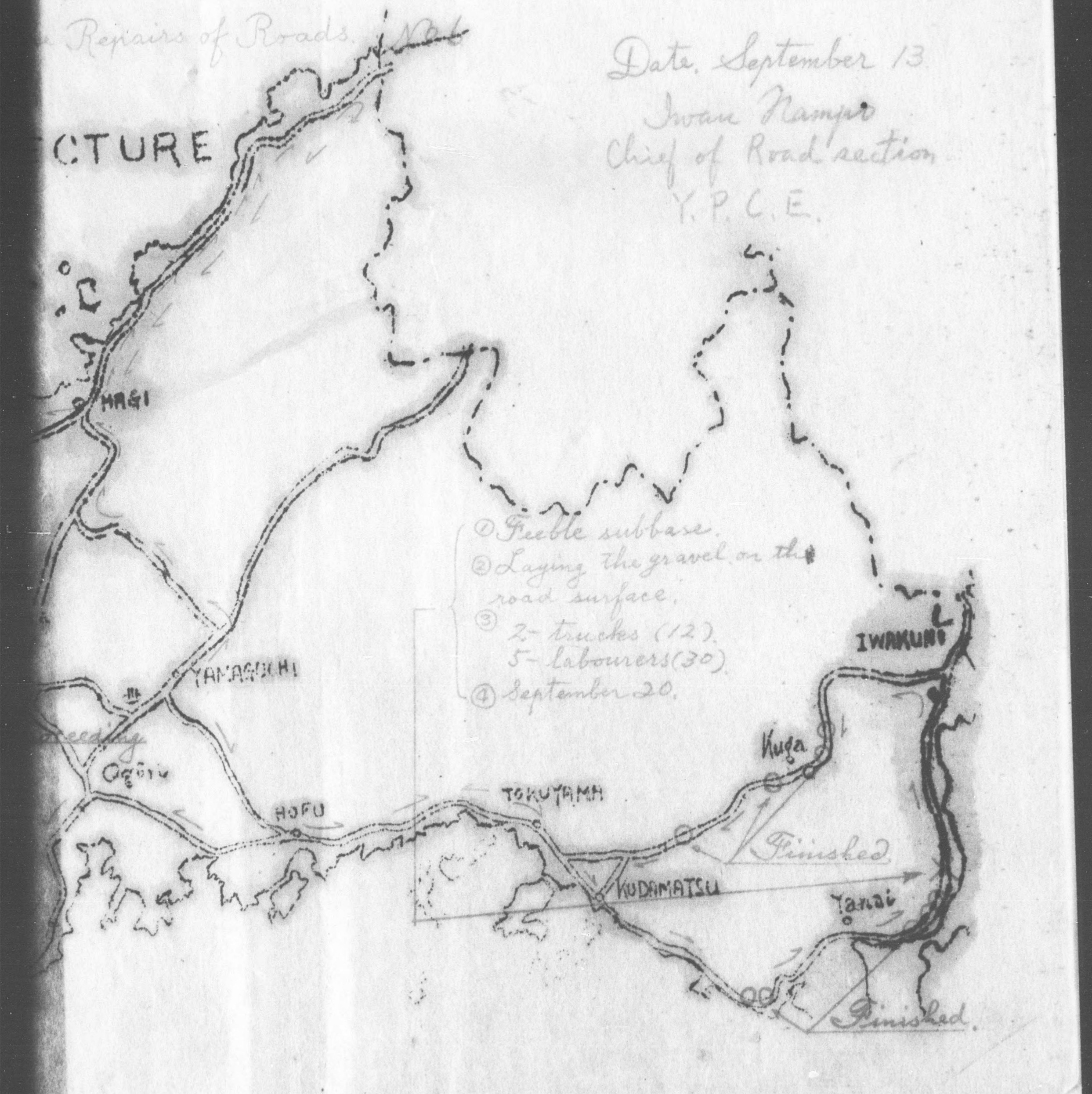
Repairs of Roads. No 6

Date. September 13.
Iwan Ramps
Chief of Road section
Y.P.C.E.




① Feeble subbase.
② Laying the gravel on the road surface.
③ 2- trucks (12).
5- labourers (30).
④ September 20.

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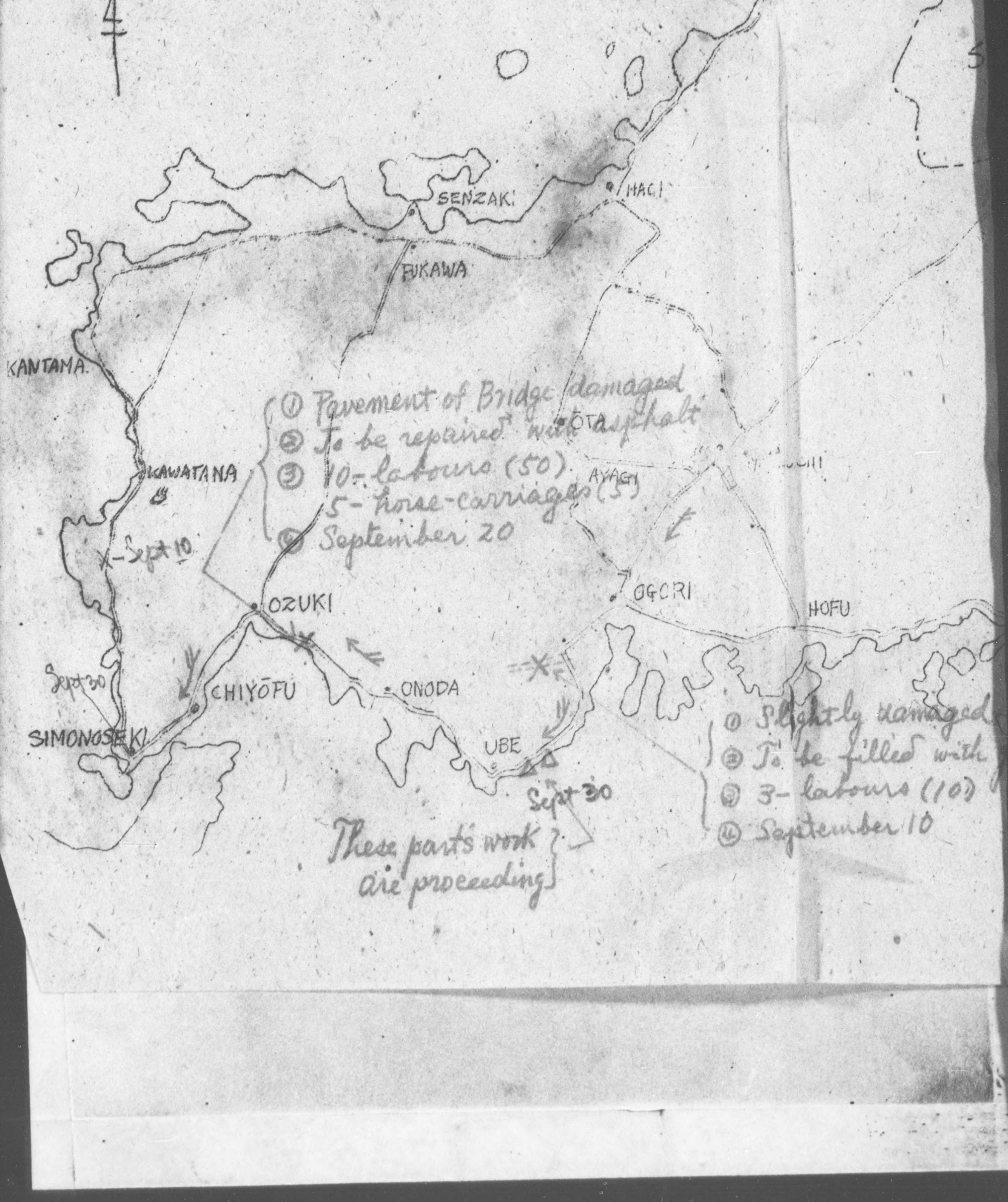
# Weekly Report on the Repairs of Roads

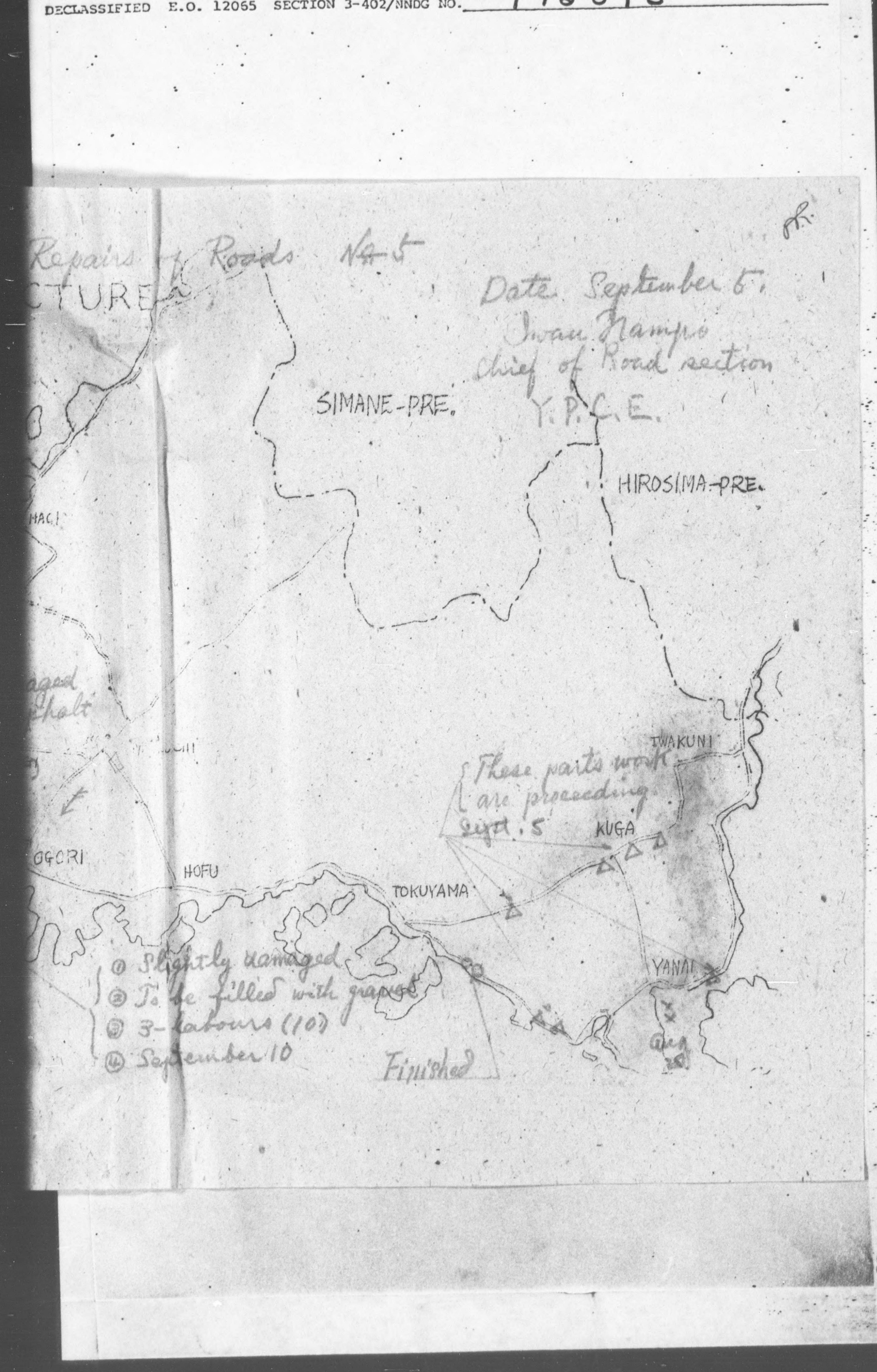


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78019

Repairs to Roads No 4

Date September 6.

Iwan Hampe
Chief of Road section
Y.P.C.E.



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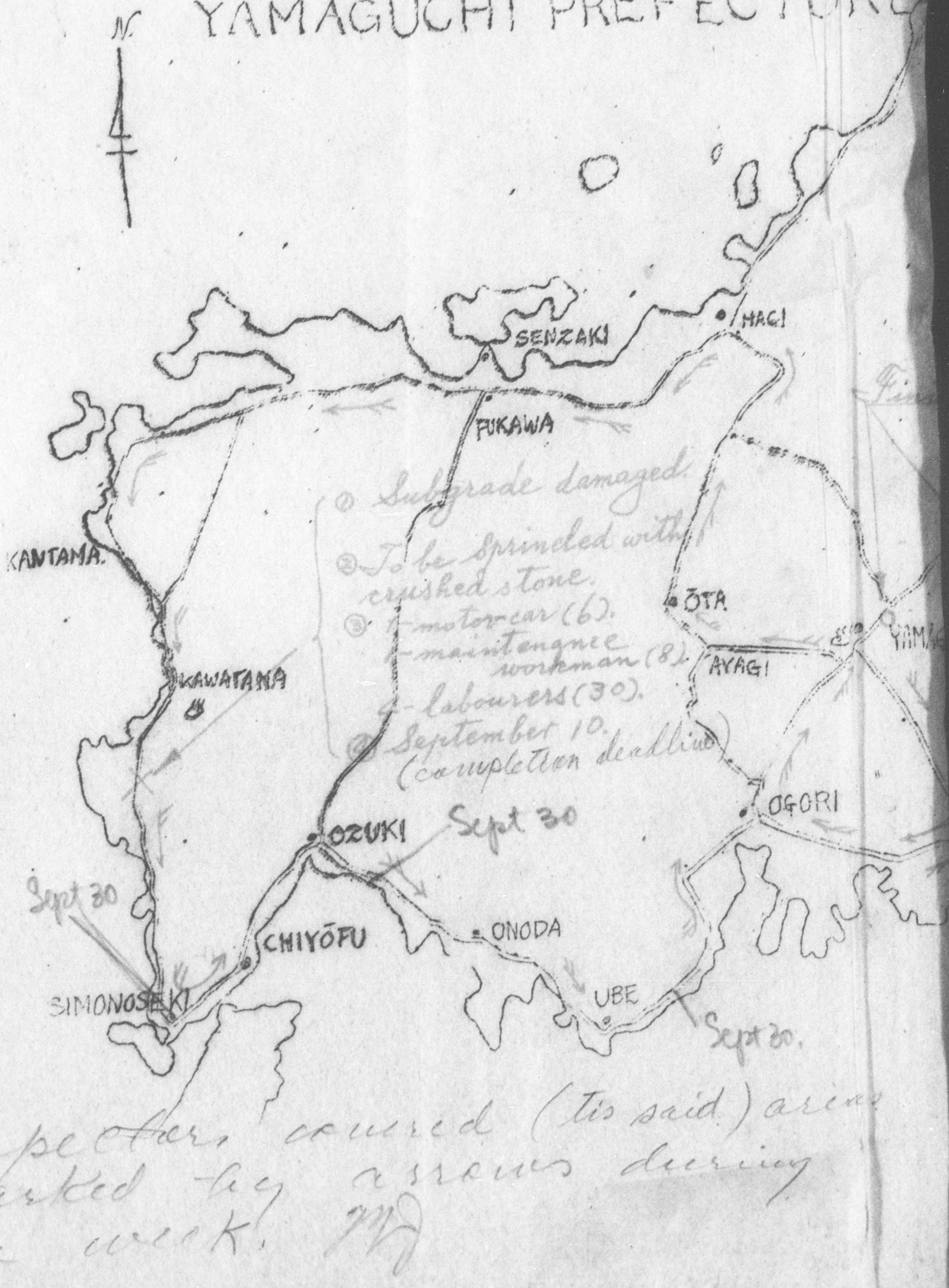
Weekly Report on the Repair



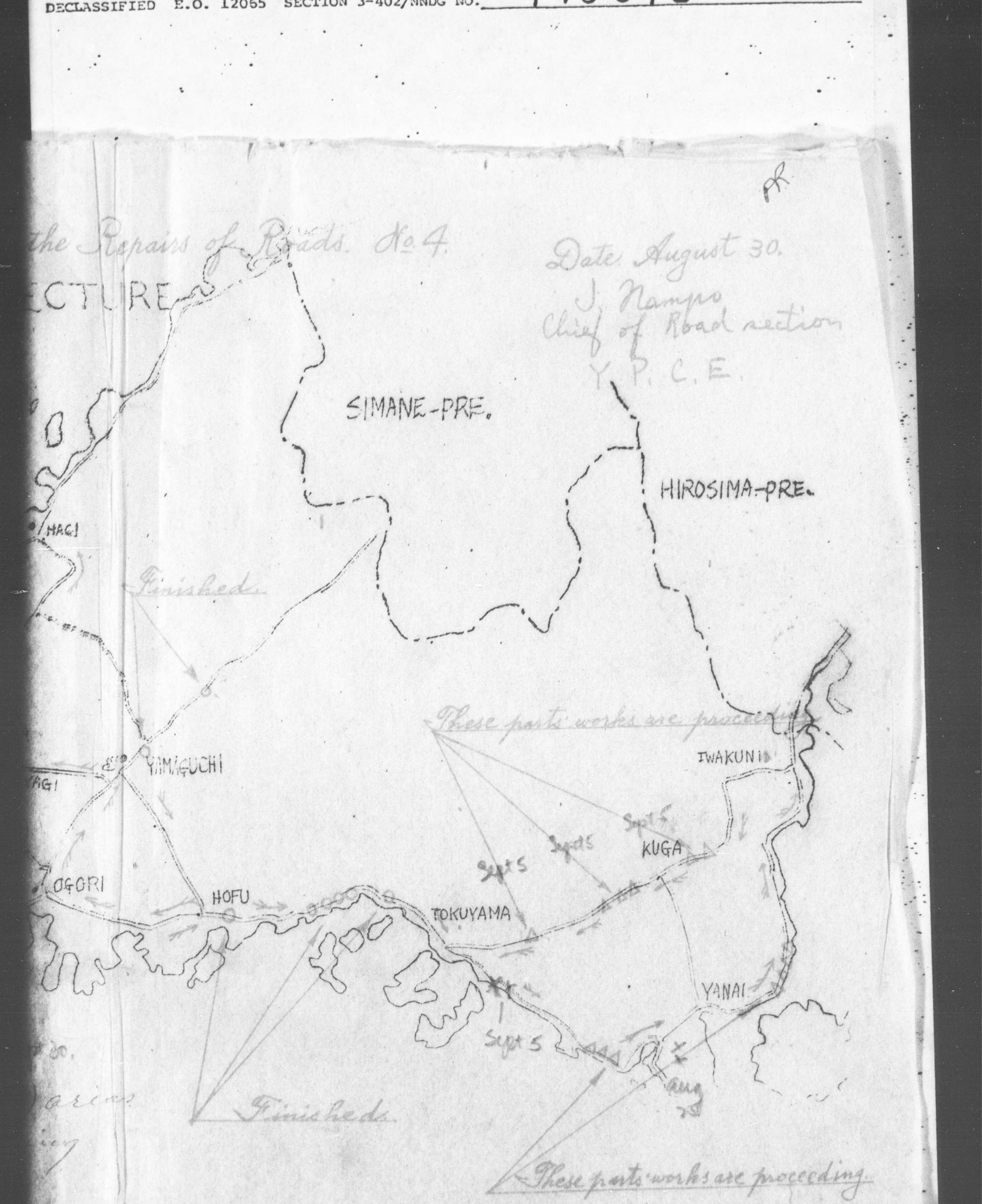

Inspectors covered (as said) areas marked by arrows during the week. WD

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

the Repairs of Roads. No 4.

Date. August 30.

J. Nampo
Chief of Road section
Y. P. C. E.



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Major Robertson Weekly Report on the Repatri

YAMAGUCHI PREFECTURE

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78019

Reports of Roads No 3

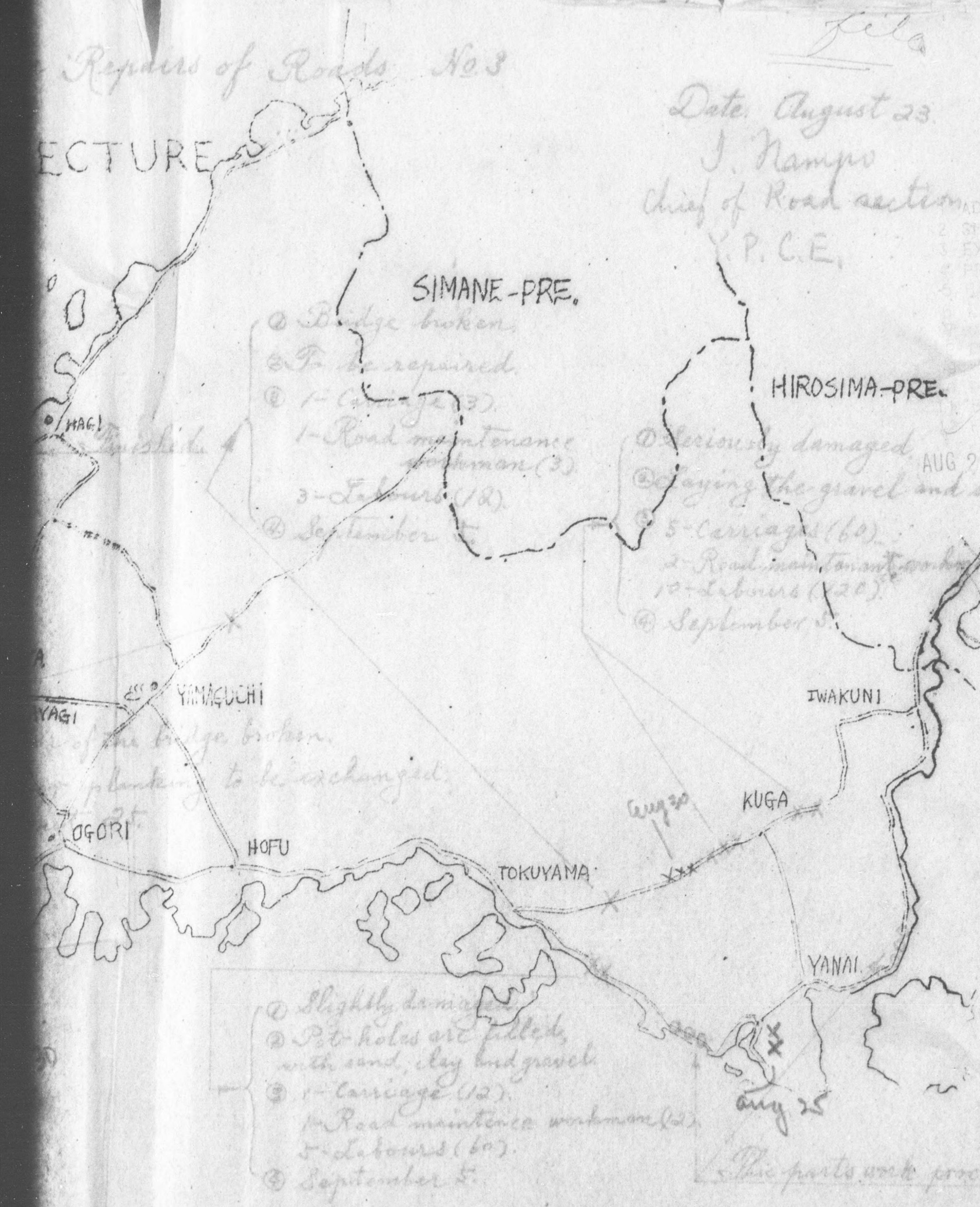
Fela

Date. August 23.

T. Nampo

Chief of Road section

Y. P. C. E.




① Bridge broken.
② To be repaired.
③ 1-Carriage (2).
1-Road maintenance workman (2).
3-Labours (12).
④ September 5.

① Seriously damaged.
② Laying the gravel and sand.
③ 5-Carriages (60).
2-Road maintenance workmen (12).
10-Labours (120).
④ September 5.

① Slightly damaged.
② Pot-holes are filled with sand, clay and gravels.
③ 1-Carriage (12).
1-Road maintence workmen (2).
5-Labours (60).
④ September 5.

① Bridge broken.
② To be repaired.
③ 1-Carriage (12).
1-Road maintenance workman (2).
3-Labours (12).
④ September 5.

AUG 26 1947

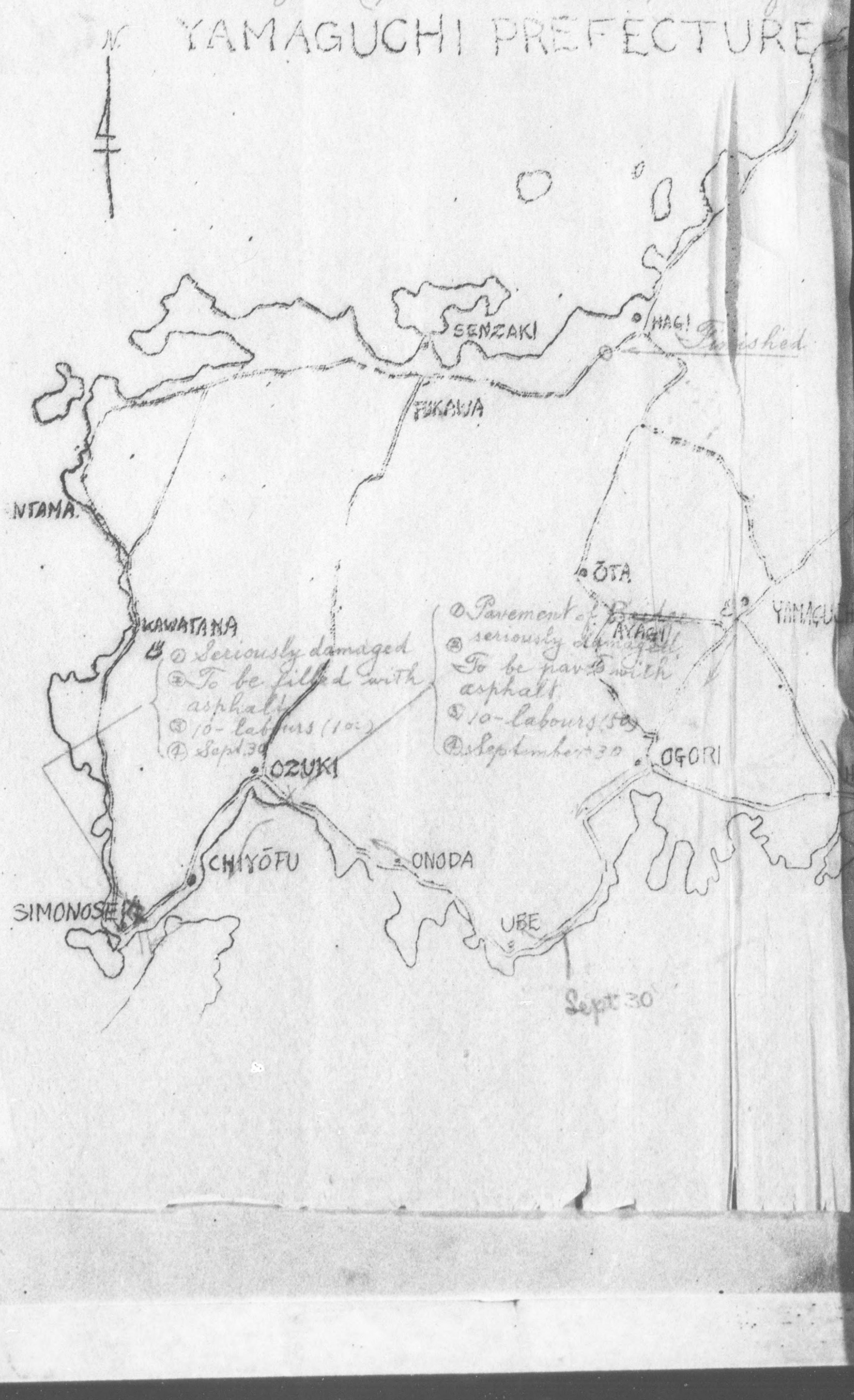
ADJ
2 SHGD
3 EXEC
4 PROD

aug 25

5 Pic parts work proceeding

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

Weekly Report on the Repairs of R



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

Repairs of Roads

CTURE

Date August 16. 47.

I. Ramos

Chief of Road Section

Y.P.C.E.

SIMANE-PRE.

HIROSIMA-PRE.

MAGI Finished

YAMAGUCHI

This part finished

IWAKUNI

OGORI

HOFU

TOKUYAMA

Aug 30 KUGA

YANAI

① Slightly damaged

② To be filled with sand, clay and gravel

① 2- carriages (10)
1- road maintenance workman (4)
5- labours (25)

② August 25

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

Mr Stradley
For your info

# THE KAMMON HIGHWAY TUNNEL

# UNDER

# THE STRAIT OF SHIMONOSEKI

November, 1949

THE CONSTRUCTION MINISTRY
HIGHWAY TUNNEL CONSTRUCTION OFFICE,
SHIMONOSEKI, JAPAN.

4-18-1

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

# C O N T E N T S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B.....Outline of the Tunnel Construction ... 3

C.....Origin and Progress of the Construction..6

Direct economic effects as may be brought on the completion of Kammon Highway Tunnel.....9

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(A) Purpose of the Tunnel Construction:

The Strait of Shimonoseki which lies between Honshu and Kyushu separates the No.2 National Highway that runs from Tokyo to Kagoshima. The transport of goods and etc. from Shimonoseki to Moji and vice versa is performed by two railway tunnels and by boat. Plans came up for discussion in the years from 1932 to 1934 in order to connect these two cities by a highway and investigations were made. Two plans - one, to connect the two cities by a bridge, and the other by a tunnel were compared and examined, and as the result of this, the tunnel plan was chosen. The highway tunnel between two cities have been brought following good results:

1. According to the investigation made by the Home Government in 1940, the annual transportation within the sphere of 258 miles(100 km.) from Shimonoseki and its vicinities amounted to 4,170,000 tons of freight and 5,080,000 passengers. The census of September, 1946 shows that the passengers of the boats were 6,500 a day and the freight amounted to 40,300 tons a month. These have to be loaded and unloaded, and besides have to depend upon steamers and trains which require longer hours for transportation, so that the capacity of transportation declined greatly. It is apparent that the above stated condition hinders the progress of the commercial and industrial districts, Kammon and its vicinities which are favored with conditions. This weak point of transportation is removed by constructing a tunnel. Besides, the transportation of a short distance of about 258 miles(100 km.) radius and so is considered to be operated by automobile.

2. Damage done to goods by loading and unloading, and also to fish and vegetables for their transportation being delayed shall be eliminated.

3. Need not to be considered of the sailing of boats being cancelled from ten to twenty times a year on account of the bad weather.

4. Decreasing the number of boats engaged in crossing the Strait, give every facility to the boats which pass through the Strait.

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5. Can use for other purposes the boats of 1,700,000 tons which are operated at present for transportation between Moji and Shimonoseki.

6. Material and immaterial influence the connection of the cities by the highway tunnel gives to the people.

The economical value of the tunnel after its opening shall be stated later.
(The unit of the weight is shown in metric measure.)
(1 metric ton = 1.102 Amer. Tons)

(B) Outline of the Tunnel Construction:

(1) Location: From Shimonoseki to Moji

(2) Length : Item

| | | | |
|---|---|---|---|
| Total length | 38,261 ft. | (11,662 m.) |
| Tunnel | 11,319 ft. | ( 3,450 m.) |
| Approach road | 26,942 ft. | ( 8,212 m.) |
| (incidental tunnel | 1,805 ft. | ( 550 m.) |

(3) Details of construction:

(a) Tunnel

Grade: max. longitudinal grade 4 %
Effective width:
Sea section:-
roadway 24'7.1/8"(7.50 m.)
footwalks and bicycles 13'1.3/8"(4.00 m.)
Land section:-
roadway 24'7.1/8"(7.50 m.)
pedestrians and bicycles ascend and descend by the elevators of the shaft of both shores.
Effective height:
14'9.1/8"(4.50 m.) above the roadsurface.
Curve: Min. degree of curve 5 49'(radius 1,640'-500m.)
Sectional shape:
Sea section - two storey
Land section - semi circle
Lining: Primary lining -
soft ground - placing concrete 23.5/8"(60cm.)
others - " " 15.3/4"(40cm.)
Secondary lining - placing concrete 11.7/8"(30cm.)

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Road surface: concrete pavement
Minimum rock cover (sea-bed): 66 ft.(20.12 m.)
Maximum water depth : 93 ft.(28.31 m.)

Geological property:
The Kyushu side chiefly consist of diorite, whereas Honshu side of porphyrite.
Many faults are found on this Honshu side and the sea-section of the Honshu side, 984 ft.(300 m.) is fault zone.

(b) Approach road (Chofu - Shimonoseki portal)

| | | |
|---|---|---|
| Total width | : | 49'2.1/2" - 15.0 m.) |
| (roadway | : | 29'6.1/4" - 9.0 m.) |
| (footwalks | : | each 9'10.1/8" - 3.0 m.) |
| Chofu tunnel width | : | 32'9.3/4" - 10.00m.) |
| (roadway | : | 24'7.1/8" - 7.50m.) |
| (footwalks | : | each 4'1.5/16" - 1.25m.) |

Maximum longitudinal grade:
Curve: max. degree of curve 3 30'(radius 984'-300m.)

(c) Ventilation shaft

| Place | Height | size(rectangular) |
|---|---|---|
| S'seki | 266 ft.(81.0 m.) | 82 ft.X 59 ft.(25m.X 18m.) |
| Moji | 296 ft.(90.0 m.) | |
| Mukumo | 291 ft.(88.5 m.) | 46 ft.X 43 ft.(14.0m.X 13.1m.) |
| Kojo | 302 ft.(92.0 m.) | |

(4) Incidental equipment

(a) Tunnel ventilation

system : upward transverse system
traffic : 2,000 auto per hour (to both direction)
ventilation shaft: 4
fan : propeller fan
allowable CO contents: 0.04 % for peak of traffic

(b) Others

Illumination, drainage, fire hydrant, fire-signal, elevator, signal for traffic and etc.

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(5) Method of tunnel execution

Ordinal excavation (grouting)

(6) Cost of construction

¥ 2,047,350,000 (estimated at the end of Mar.'48)

(7) The work will be completed:

March, 1954.

(8) Materials used to be:

| | | | |
|---|---|---|---|
| Steel | 19,730 | Amer.tons | -( 17,900 metr.tons ) |
| Cement | 71,550 | " " | -( 65,000 " " ) |
| Wood | 60,360 | cub. y'd. | -(167,000 koku ) |
| | | | ( 46,430 cub.m. ) |
| Mineral oil | 170,000 | gal. | -(643,500 l. ) |

(c) Origin and progress of the construction

(1) Outline

Set to work in May, 1937 in order to investigate and examine the geological property which plays a most important part in deciding the position of the route of the tunnel. In April, 1939 the test pilot tunnel of the Strait was completed, and also core borings on the land respectively. Thus the possibility of the constructive work of the tunnel was confirmed and the whereabouts of the tunnel route was decided.

The tunnel works were started in April, 1939, and sole attention was given first to the top heading under the Strait, and then to the sea shafts of the both shores and the excavation of the bottom heading of the land side. After this, sectional enlargement has been done. Important procedure of the constructive work is as follows:

| | |
|---|---|
| May, 1937 | Set about investigating work. |
| June, 1937 | Started work on test shaft (Moji) |
| Feb., 1938 | Began construction work on pilot tunnel. |
| Apr., 1939 | Construction work on tunnel under the sea. |
| Apr.26, '39 | Pilot tunnel was penetrated. |
| June, 1940 | Began excavation work on top heading of the sea section. |
| Aug., 1941 | Began excavation work on the Moji shaft. |

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| | |
|---|---|
| Jan. 1942 | Began excavation work on the Shimonoseki shaft. |
| May 31,'42 | Top heading of the sea section was penetrated. |
| June.1944 | Excavation of the shaft at Moji was completed. |
| Dec.30,'44 | Bottom heading of the land was penetrated. |

(2) Main construction work in the past

| | |
|---|---|
| Pilot tunnel (drain tunnel) | 3,307ft.(1,008m.) |
| Two drain shaft (Shimonoseki, Moji) | 408.8ft(124.6m) |
| Top heading of the sea section | 2,559ft.( 780m.) |
| Partial enlargement at the sea section | 236ft.( 75m.) |
| Bottom heading at the land site | 8,760ft.(2,670m.) |
| (Honshu site | 4,505ft.(1,373m.) |
| (Kyushu site | 4,255ft.(1,297m.) |
| Shaft excavation | |
| (Shimonoseki | 75 % |
| (Moji | 100 % |
| Drift of the shaft | |
| (Mukuno | 94 % |
| (Kojo | 100 % |

(3) Work and expenditure until 1948 fiscal year (until March, 1949)

| kind of work | Cost |
|---|---|
| Tunnel | ¥ 22,229,500 |
| Shaft | 9,998,800 |
| Road | 5,947,500 |
| Machine operation | 12,284,600 |
| Miscellaneous work | 28,833,100 |
| Machinery | 34,655,700 |
| Building affairs | 20,536,300 |
| Expropriation of land, supplied | 756,400 |
| Surveying | 352,100 |
| Peraonal, sundries | 23,075,700 |
| Total | 158,599,700 |

(4) Work at present (fiscal year 1949)

(a) Expenditure

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| Kind of work | Cost |
|---|---|
| Tunnel | ¥ 33,940,000 |
| Shaft | 13,670,000 |
| Road | 77,000 |
| Machine operation | 5,199,000 |
| Miscellaneous work | 27,650,200 |
| Machinery | 30,494,800 |
| Building affairs | 11,242,100 |
| Expropriation of land, supplied | 220,900 |
| Surveying | 325,000 |
| Personal, sundries | 7,181,000 |
| Total | 130,000,000 |

(b) Materials required

| | |
|---|---|
| Steel | 850 tons |
| Cement | 640 tons |
| Wood | 7,800 koku |
| Laborer | 218,000 heads |

(5) Work in future:

We have the following two plans for the work in future:

(1) In the first place, we complete the both seaside shafts and 780 m. under sea tunnel, temporarily equipped the elevators for lifting the trucks in the shafts, and open the traffics under sea. After then, construct the 2670 m. length land side approach tunnel.
We call this plan "A".

(2) Another plan is called "B", that is, we construct the tunnel 3450 m. length, including land and under sea section, simultaneously.

| | Plan "A" | Plan "B" |
|---|---|---|
| Budget for Construction | ¥ 1,500,000,000 | ¥ 3,000,000,000 |
| Materials used to be | | |
| Steel | 5,200 tons | 17,070 tons |
| Cement | 17,300 " | 65,000 " |
| wood | 28,000 cub.y'd. | 60,800 cub.y'd. |
| Laborer | 2,000,000 heads yearly ave. | 4,800,000 heads |

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| | Plan"A" | Plan "B" |
|---|---|---|
| Laborer | 2,050,000 heads yearly max. | 4,963,000 heads yearly max. |
| | 660,000 heads daily max. | 1,322,000 heads daily max. |
| | 1,800 heads | 3,620 heads |

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Direct economic effects as may be brought on the completion of Kammon Highway Tunnel.

(A) Goods and passengers transported between Shimonoseki and Moji through the tunnel after completed are as follows:-

| | Passing through the tunnel after completed | | Cars passing through the tunnel |
|---|---|---|---|
| | 1948 years | Tunnel opening 1954 years | |
| Goods | 244,590 tons | 376,500 tons | vehs. |
| | | (heavy truck 231,924 | |
| | | (light truck 210,840 under 0.5 t. | 442,764 vehs. |
| Passengers 3,436,948 heads | | 3,780,640 heads | heads |
| | | (pedestrian 170,130 | |
| | | (bicycle 397,160 | |
| | | (bus 2,859,880 | 104,860 |
| | | (pleasure car 224,935 | 123,714 |
| | | ( small sized car 128,535 | 94,259 |

(B) Excluding economic influences on intangible conveniences, commercial transaction, etc., only those which can be stated in figures are enumerated as follows:

(a) Reduction of loading and unloading charges of goods.

In case goods are carried directly by trucks from market or warehouses, more than twice of loading and unloading could be saved. Loading and unloading expenses of goods per kilo-ton in 1954 will be reduced as follows:

220 ¥/ton X 376,500 tons = 82,830,000 ¥.

(b) Prevention of goods from damage.

4 or 5 % of goods transported between Shimonoseki and Moji are subject to damage at present. In this damage rate can be cut down to 2.5 % in bulk cargo

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and 1.0 % in packed ones by number of times of stevedor stevedoring to be reduced, direct stevedoring by slippers, and shortening of keeping hours of goods,etc., the following sum of money could be saved:

Value of bulk cargo per kilo ton
¥ 6,000 X 376,500 ton X30% X2.5% = 16,942,500

Value of packed cargo per kilo ton
¥ 30,000 X 376,500 t.X70% X1.0 % = 79,065,000

(whole cargo, constituted of 30 % of bulk cargo and 70 % of packed ones)

(c) Saving of packing expense

Packing expenses of such goods as transported by private trucks, in little risk of theft, and simply-packed for commercial purpose, can be saved by simplification of transportation and reduced number of times of stevedoring. Such matter may reduce packing expenses of the whole packed goods by 20% or so as under:

packing expense per kilo ton
¥ 2,500 X376,500 X 70% X 20% = 131,775,000 ¥.

(d) Prevention of loss originated in traffic tied up.

Water traffic between Shimonoseki and Moji is interrupted for 20 days on the yearly average owing to stormy weather in winter. Heavy loss, material and immaterial, arising from such fact has occasioned deadlock of cargo transportation, which makes revolving fund stop, impediment to production, smoothlessness of commercial transaction, etc. These losses may be removed by opening of this tunnel, that is, the following interests yielded by funds will be saved:

average value of goods
¥ tons days days
(22,800 X 376,500 - 365 ) X 20 = 470,360,000

interest:
¥ 376,300 calculated by 8 sen per diem

storage, insurance etc., added to the interst:
¥ 1,000,000.

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(3) Such direct economic effects as may be mentioned above become:

| | | |
|---|---|---|
| Reduction of loading and unloading charges of goods | ¥ | 82,830,000 |
| Prevention of goods from damage | | 16,942,500 |
| Saving of packing expense | | 79,065,000 |
| Prevention of soll originated in traffic tied up | | 131,775,000 |
| | | 376,300 |
| | | 1,000,000 |
| yearly | | ¥.311,988,800 |

(D) Another merits brought about by Kammon Tunnel.

(a) Prevention of shipwreck.
There is no shipwreck considered to arise directly from cross transportation. Decreawe of which, needless to say, will be of direct or indirect use for decrease and prevention of shipwreck.

(b) Conditions to be bettered for sightseeing route.
Opening of this tunnel will bring forth a conditions as a link in the chain of sightseeing route such as the Seto Inland Sea coast, Chomonkyo, Northern Kyushu, Unzen, Aso.,etc.

(c) Part assigned to this construction in relief of the unemployed.
This construction requires laborers 4,963,000 manday.
There are already more than 2,000,000 persons of the unemployed now in this country and as the circumstances has become into social problem, relief of the unemployed is taken up as an important policy to be mentioned in the various subjects the rehabilitating Japan is facing.

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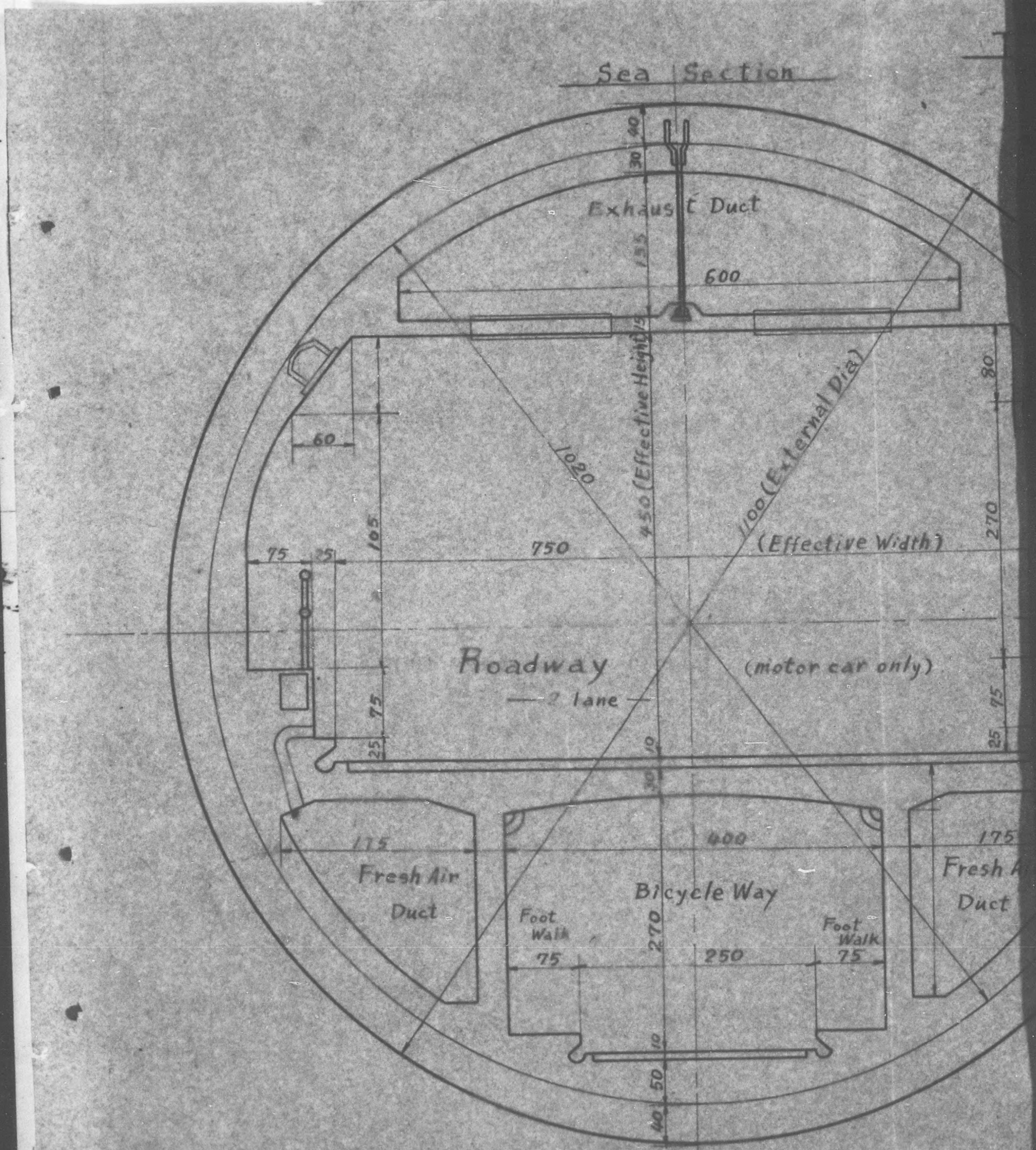

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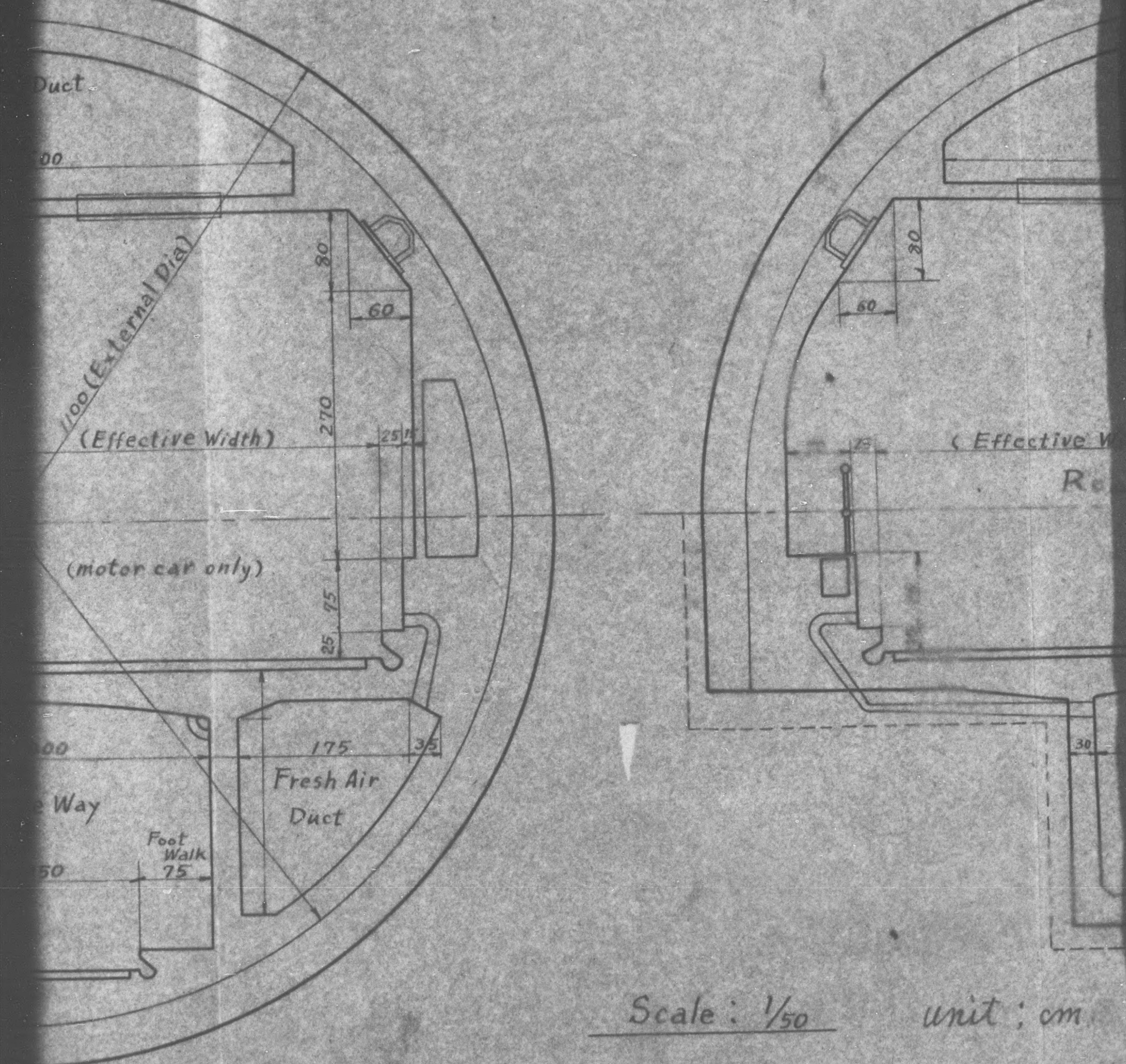
# TYPICAL TUNNEL SECTION




Scale : 1/50 unit ; cm

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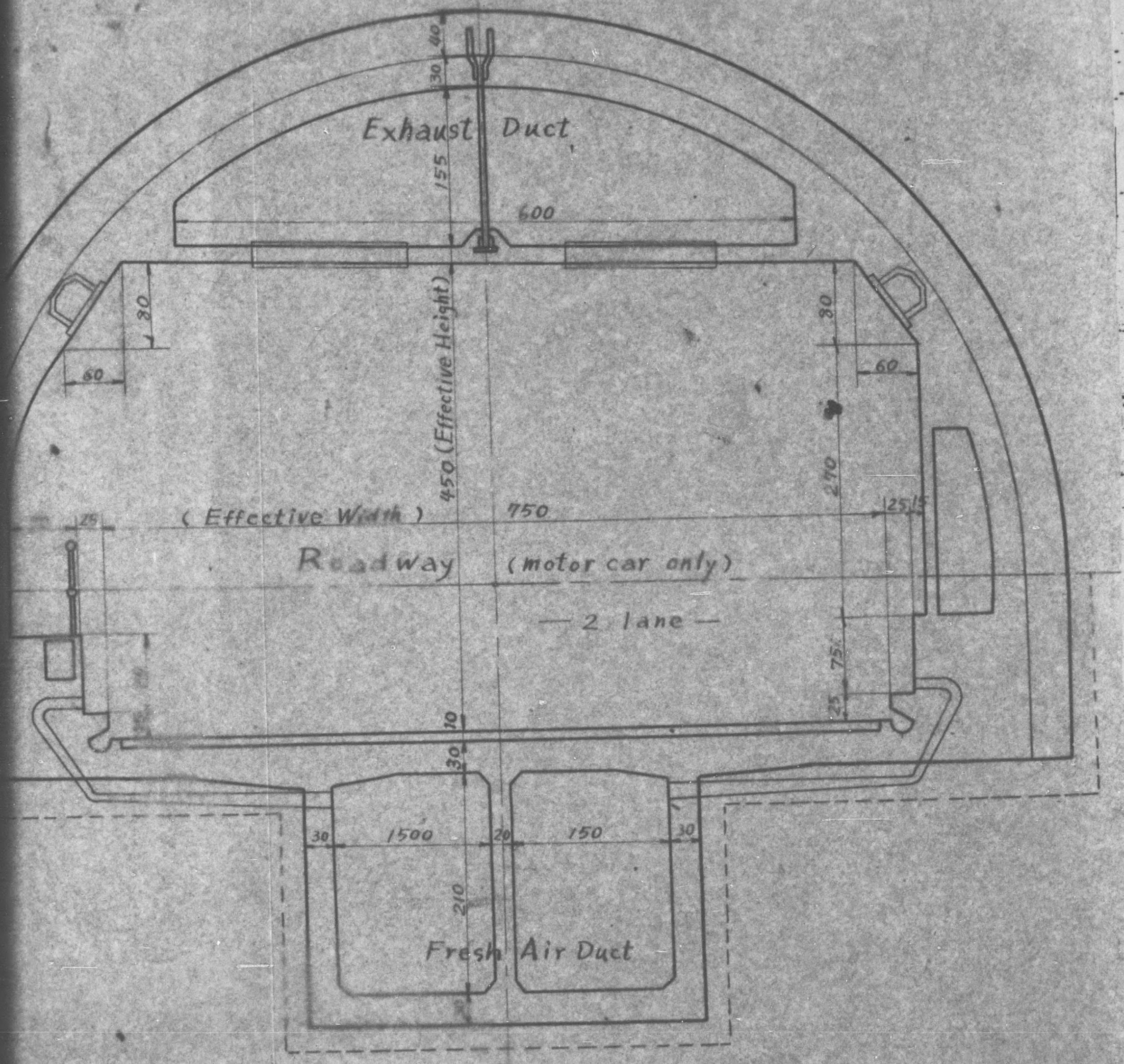
ECTION

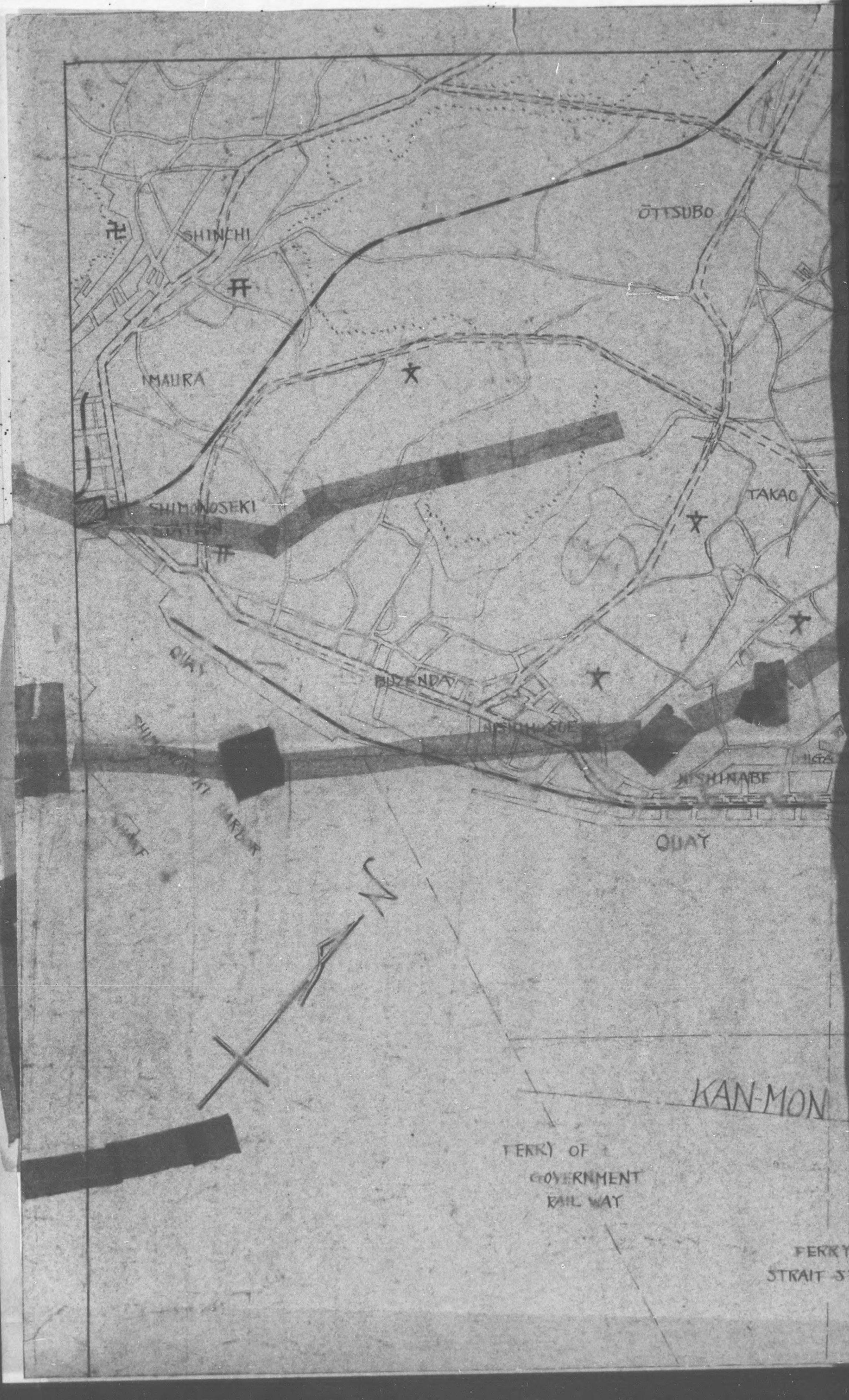
Land Section




o unit ; cm.

October, 1948

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78-0

ÖTTSUBO

TAKAO

TANAKA

NISHINABE

HIGASHINABE

QUAY

USHIRODA

SHIMONOSEKI CITY OFFICE

SHIMONOSEKI

SONODA

DRAIN SHAFT

SHIMONOSEKI SHAFT

CROSS CUT

SUMP

PILOT TUNNEL

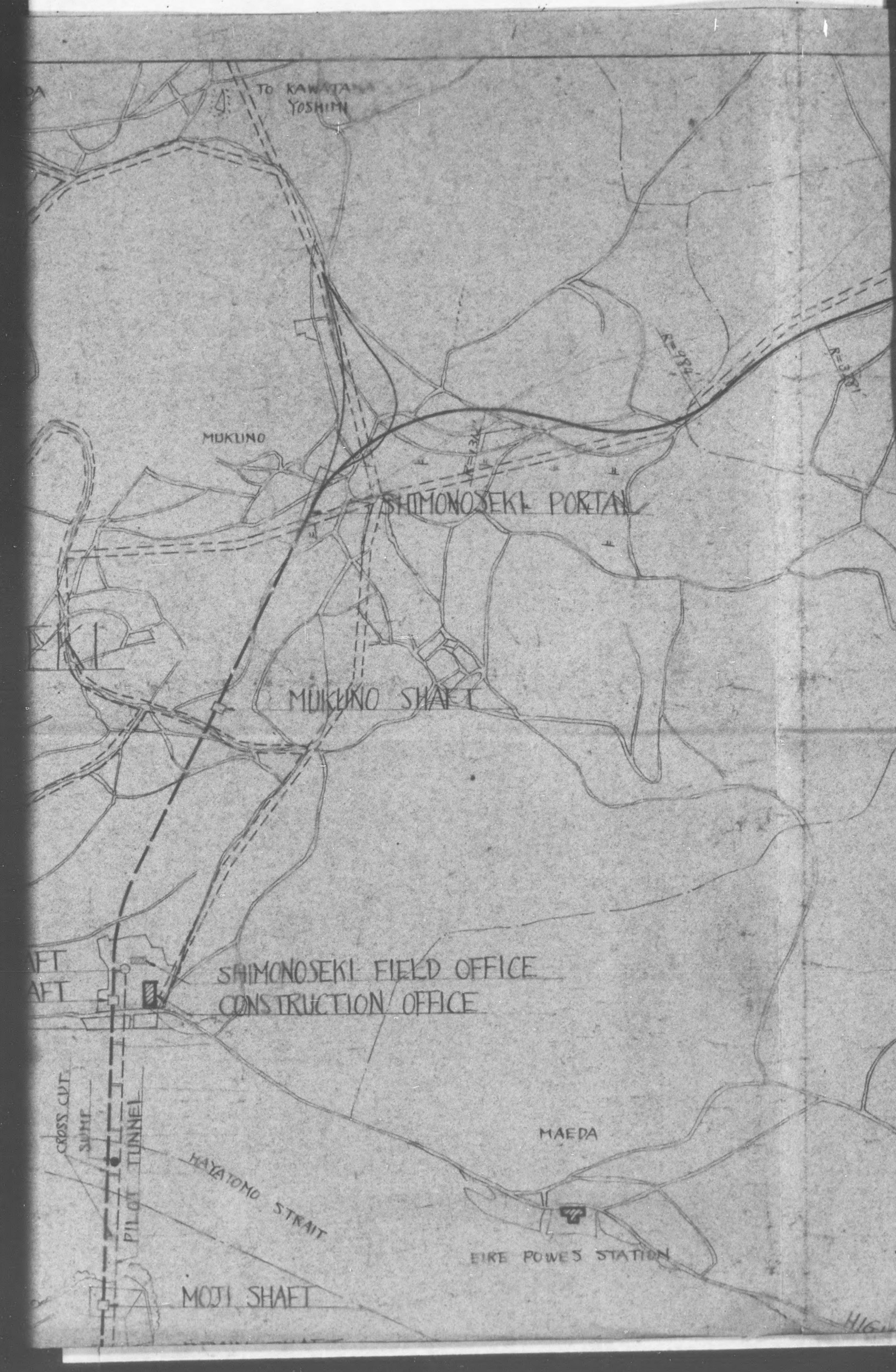
KAN-MON NORROW

YAMAGUCHI PREF.

FUKUOKA PREF.

FERRY OF
STRAIT STEAMER CO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

TUNNEL

KAN-MON VEHICU

HI

SHOFU TUNNEL 1870

TEMPLE
KOZAN

CHOFU

NOKURUME

TORIMAE

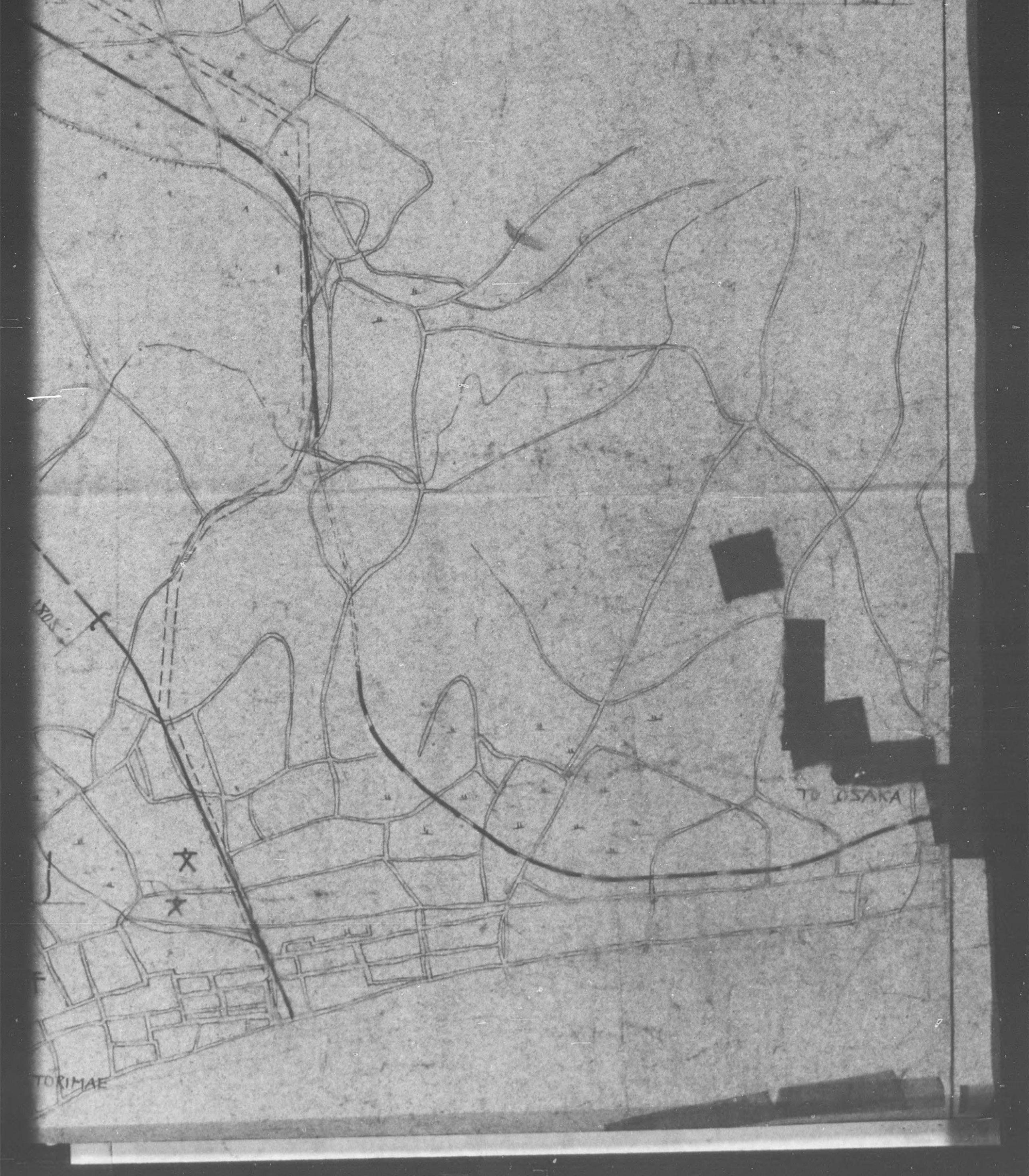
DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

TUNNEL CONSTRUCTION OFFICE

# KAN-MON VEHICULAR TUNNEL

SCALE HORIZONTAL 1 : 10000
VERTICAL 1 : 2500

MARCH 1947



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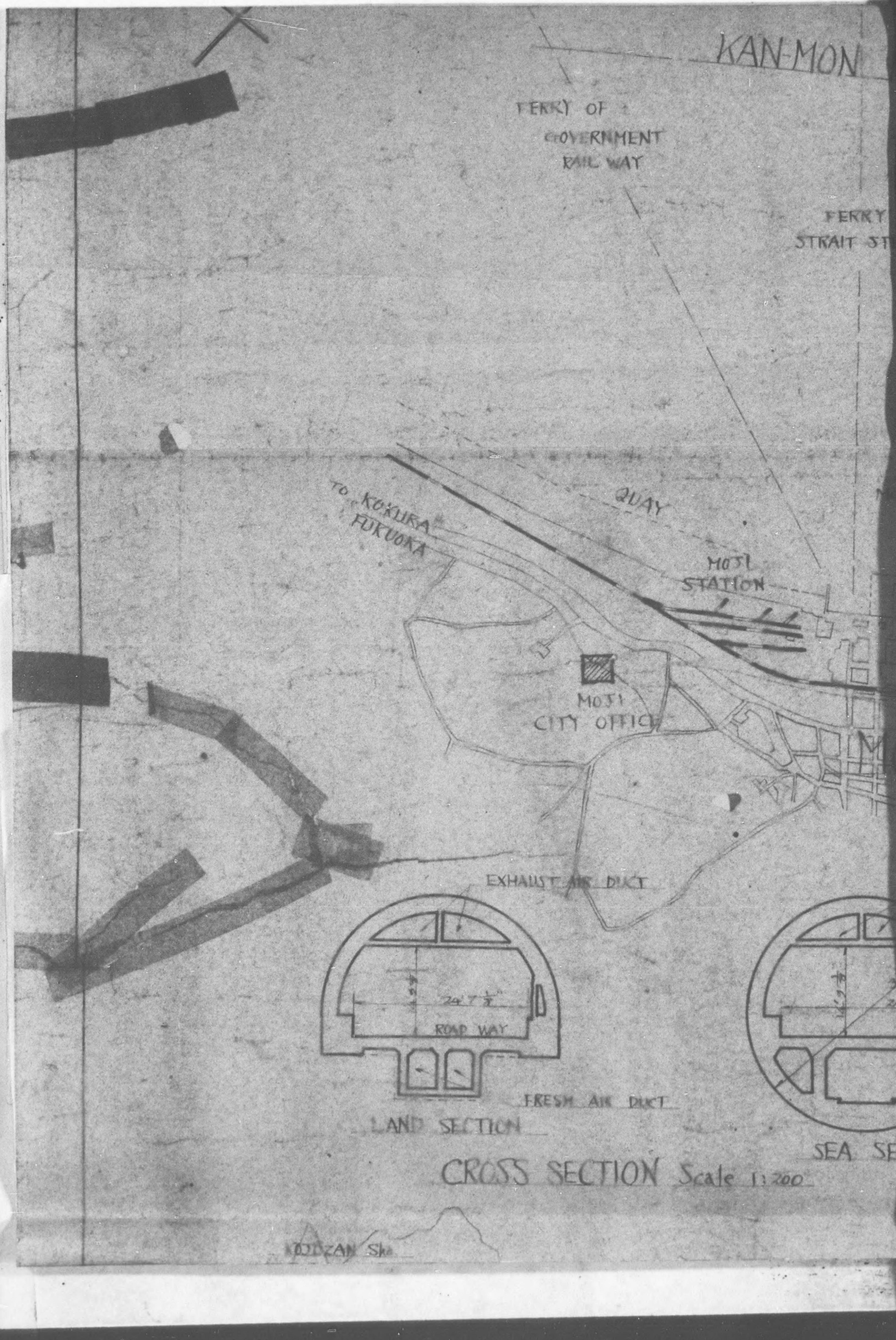



CROSS SECTION Scale 1:200

KOJIZAN Sha

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

N NORROW

YAMAGUCHI PREF.
FUKUOKA PREF.

RRY OF
T STEAMER CO.

CROSS CUT

SHAFT

PILOT TUNNEL

HAYATOMO STRAIT

MOJI SHAFT

DRAIN SHAFT

MOJI FIELD OFF

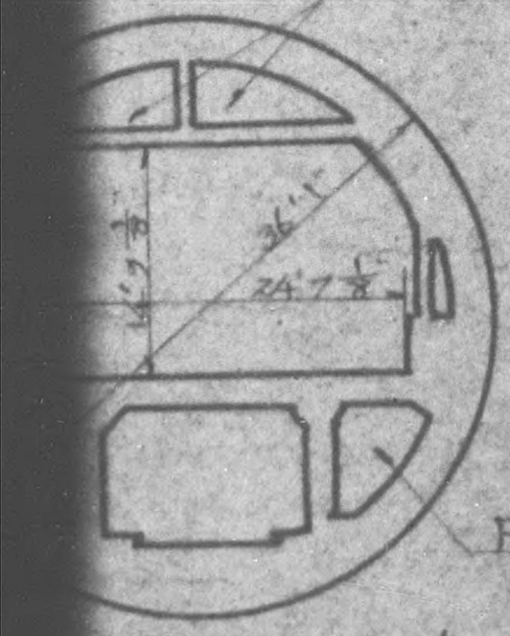
MOJI HARBOR

KOJOZAN SHAFT

MOJI ENTRANCE

MOJI

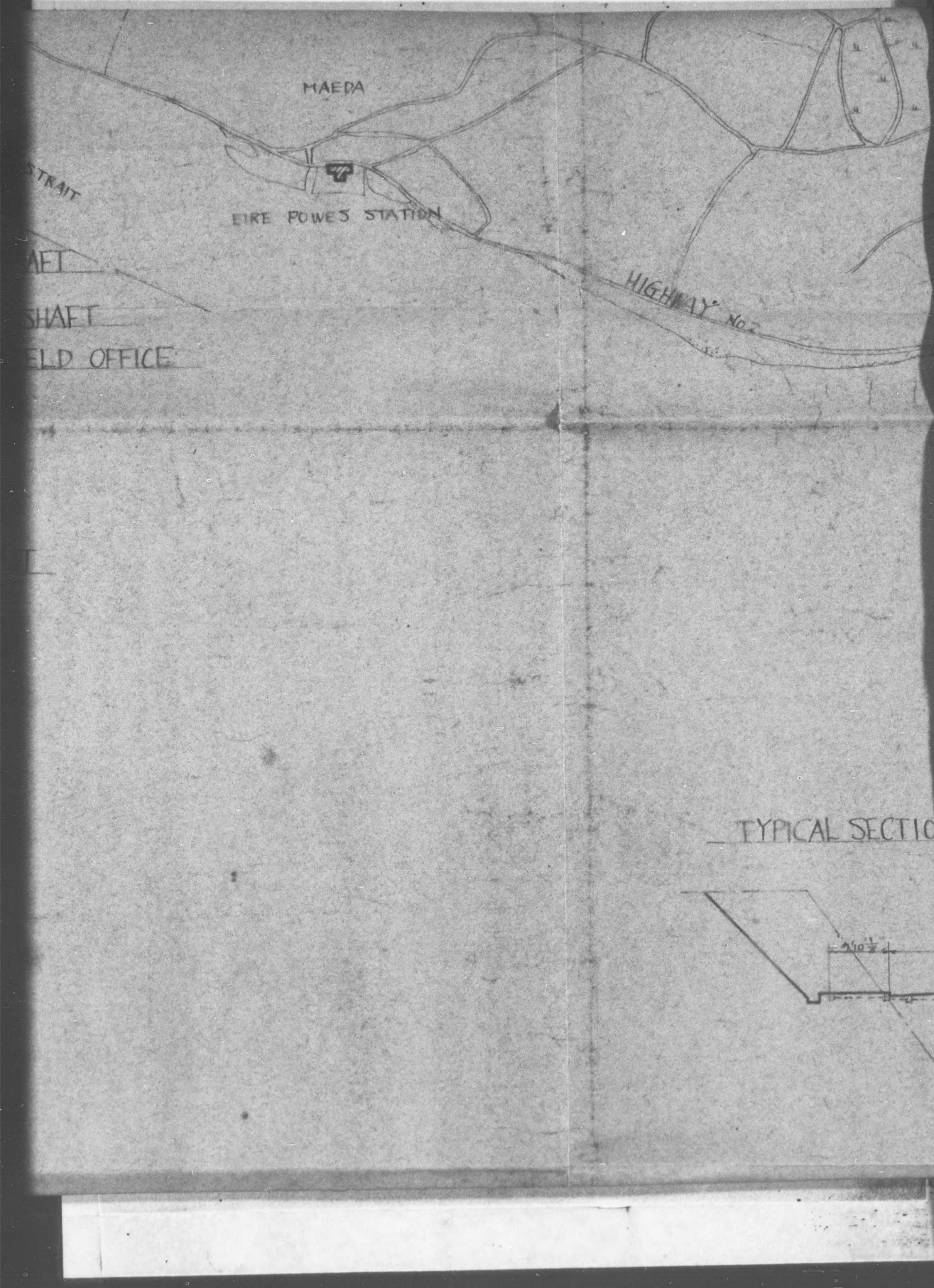
EXHAUST AIR DUCT




FRESH AIR DUCT

SEA SECTION

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 79-018



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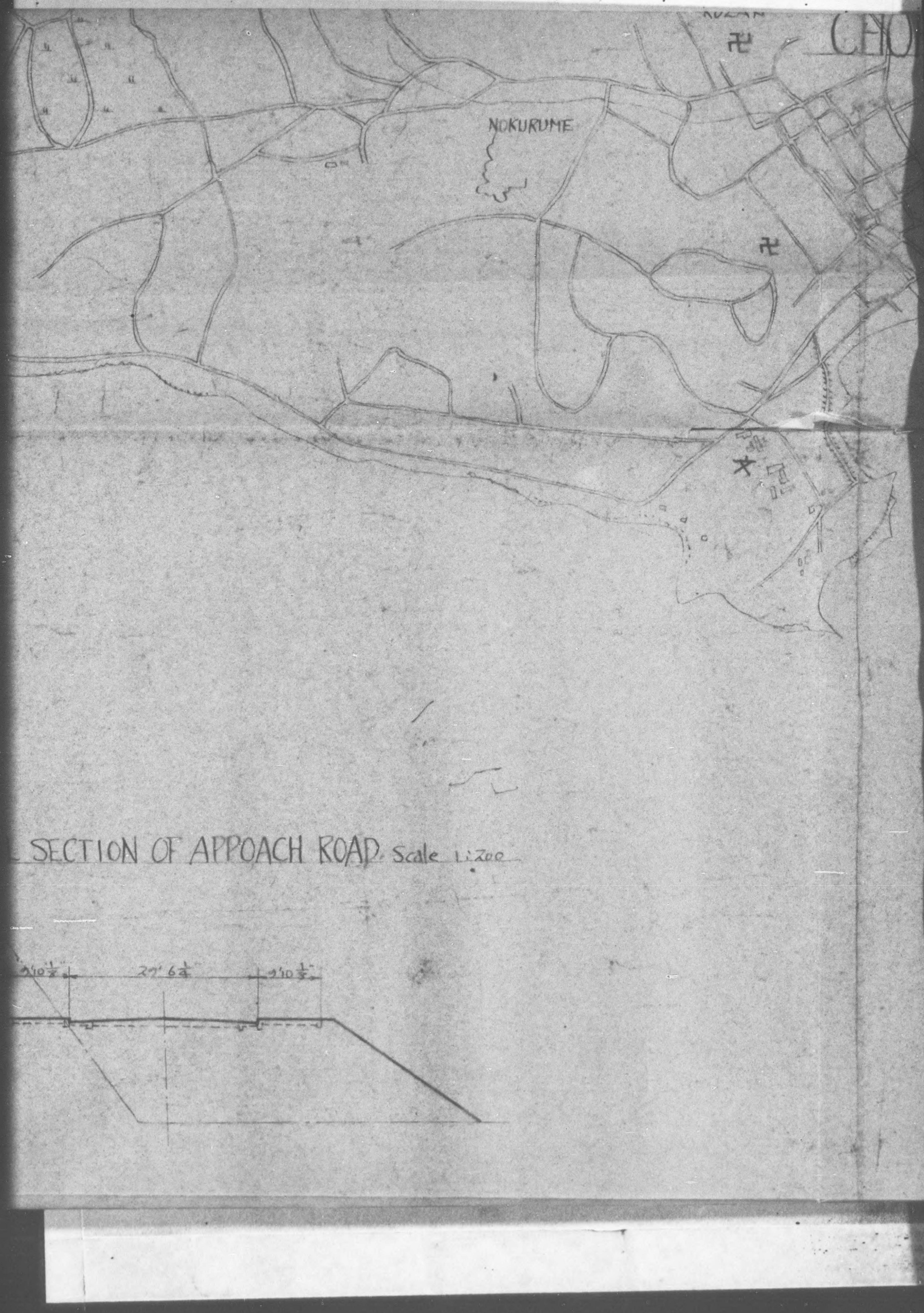
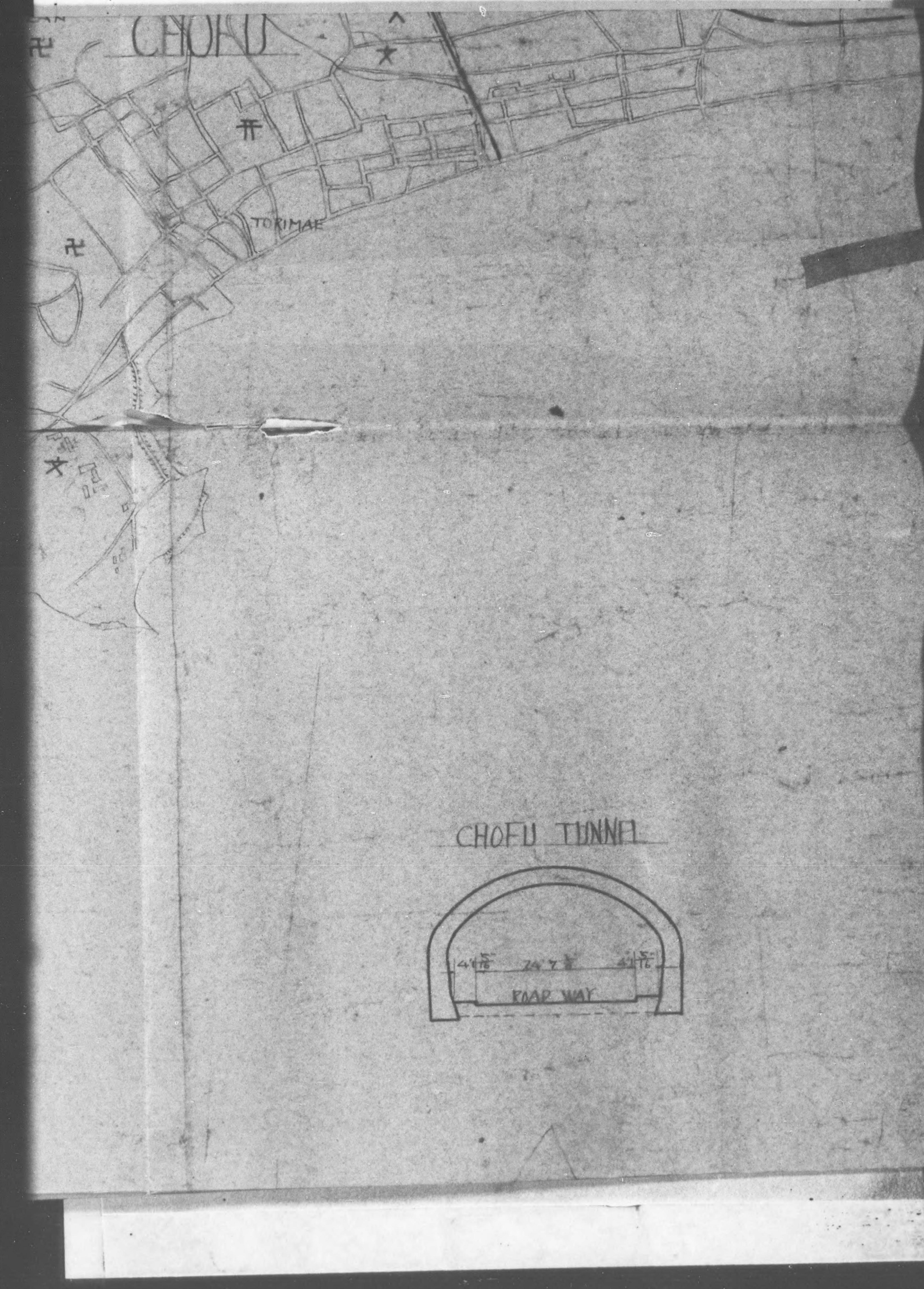



SECTION OF APPOACH ROAD. Scale 1:200

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]




CHOFU TUNNEL

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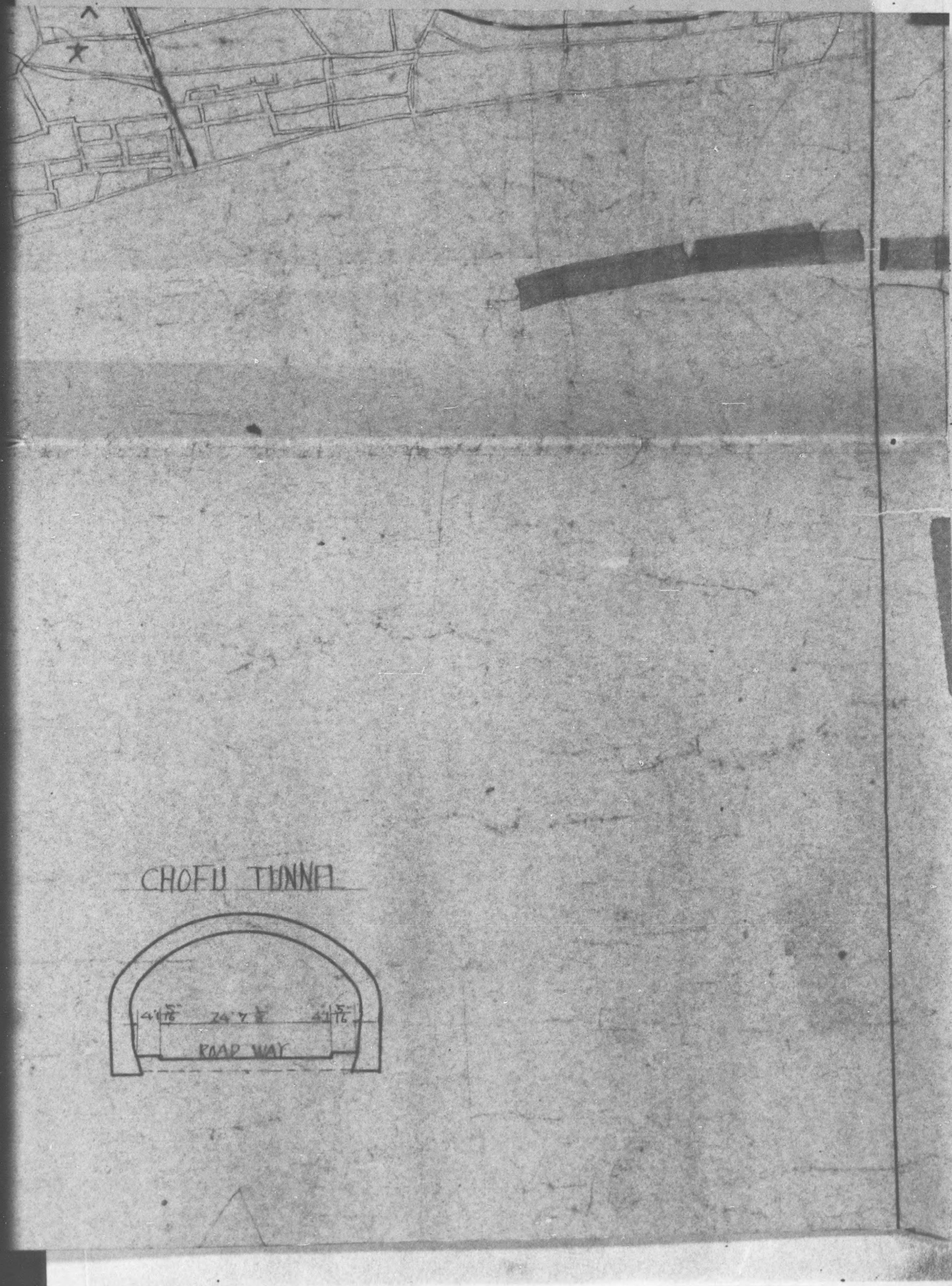

CHOFU TUNNEL

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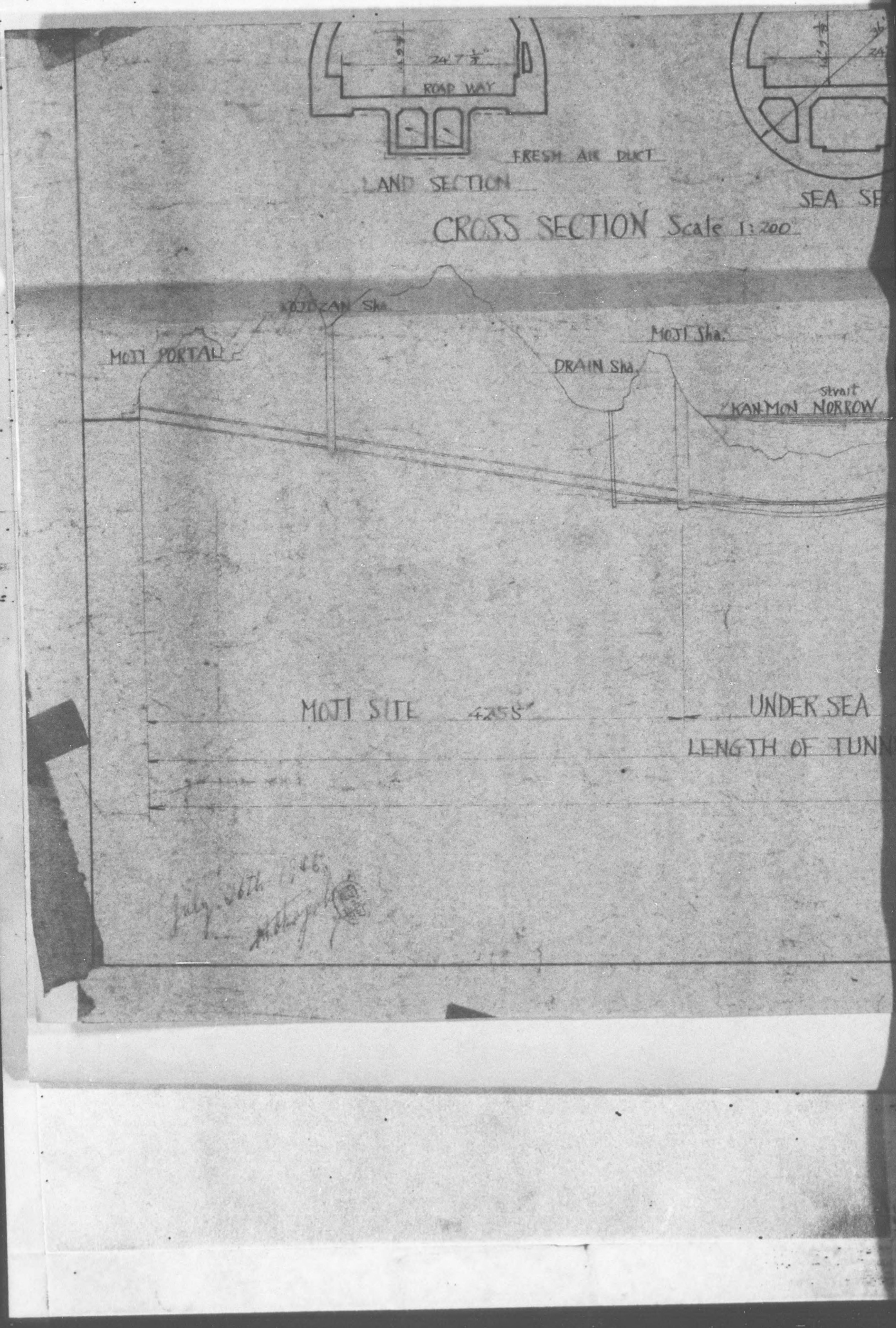
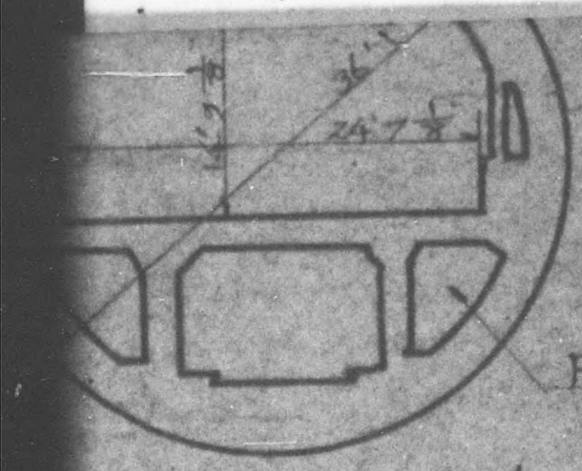
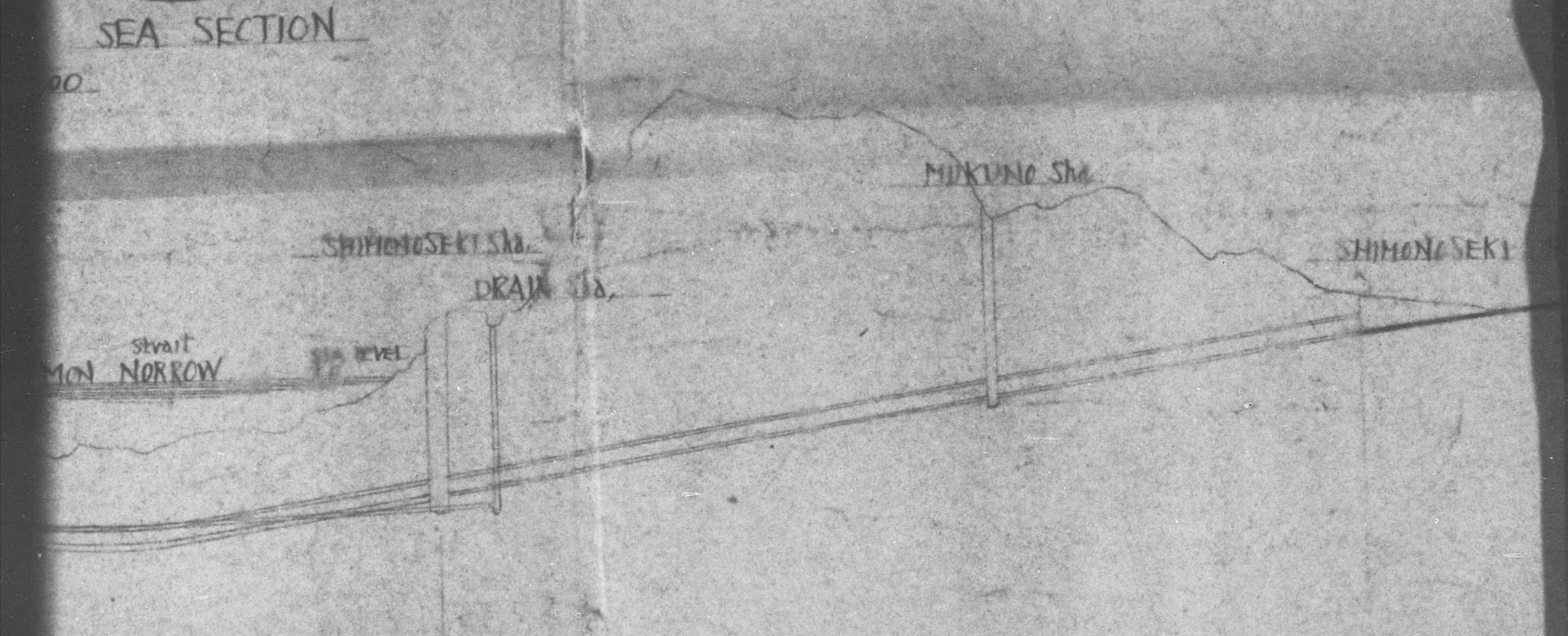


DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018




SEA SECTION




NDER SEA 2559'

H OF TUNNEL 11319'

SHIMONOSEKI SITE 4505'

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78019

ONASEKI PORTAL

TOTAL LENGTH 38.61'