



**FILE
START**

Computer # _____

TRUST TERRITORY OF THE PACIFIC ISLANDS--ARCHIVES SURVEY FORM

Primary Branch, Department, Bureau, or Office producing materials:

R20

Subgroup of the above: _____

Author/Title/Date of publication (if any) of specific materials: _____

Subject of materials: (See schedule in TPI Files System Manual)

Brief description: _____

Geographic area dealt with in materials:

TPI at large: _____
Individual districts: _____
Individual governments: _____
Individual islands: _____
Other: _____

Span of years covered by materials: _____

Format of information:

Correspondence: _____
Reports: _____
Clippings: _____
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Physical arrangement of materials: (How are they organized within the file?)

Geographically: _____
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Physical location of materials: (Area where presently located)

Office: _____ Subgroup: _____
File cabinet number: _____
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Frame #: _____

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Subject of materials: (See schedule in TTIPI Files System Manual)

Brief description:

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MEMORANDUM FORM 11-5700

TRUST TERRITORY OF THE PACIFIC ISLANDS

Office of the High Commissioner, Saipan

TO See List Below

DATE: 9/26/72
Serial: LS11209
File: 178.23.1

FROM Chief, Lands and Surveys

SUBJECT: Policy Concerning Easements and Rights of Way

The policy to be followed concerning surveys and other matters discussed herein shall be the policy of the Division of Lands and Surveys concerning existing rights of ways for roads, paths, power and telephone lines, sewer and water lines or streams used for travel by boat, raft or canoe. This policy is for immediate implementation. Comments and recommendations for changes are invited. Please review and forward your suggestions got later than October 15, 1972. Your replies will be edited and the Land Commission Regulations will be amended to reflect this statement of policy.

The following definitions apply in this policy statement:

1. Prescription - the establishment of a claim to title to something under common law, originally by virtue of immemorial use and enjoyment or, usually, in modern times by use and enjoyment for a period fixed by statute, as 20 years by Trust Territory Law. (See 6 TTC Sec. 302) To create an easement by "prescription," the use must have been open, (regular) exclusive, and under claim of right for the statutory period of 20 years.
- 2A. Easement
A right or interest in the land of another which allows the holder of the easement to some use, privilege, or benefit (such as to place pole lines, pipe lines, or roads thereon, or to travel over).
- 2B. Private or Public Easements - a private easement is one in which the enjoyment is restricted to one or a few individuals, while a public easement is one the right to the enjoyment of which is vested in the public generally or in an entire community; such as an easement of passage on the public streets and highways or of navigation on a stream.
3. Right of Way - the right of passage or of way is a servitude imposed by law or by convention, and by virtue of which one has a right to pass on foot, or horseback, in a vehicle, or by boat or raft, to drive beasts of burden or carts, through the estate

178.71.0

TRUST TERRITORY OF THE PACIFIC ISLANDS

Office of the High Commissioner, Suva

TO : See List Below

FROM : Chief, Lands and Surveys

DATE: 9/26/72
 Serial:LS11209
 File:178.23.1

23

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178.71.0

2.

of another. When this servitude results from the law, the exercise of it is confined to the wants of the person who has it. When it is the result of a contract, its extent and the mode of using it is regulated by the contract.

A right of way may be either public or private,--it may be a right of which every individual may avail himself, or it may exist for the benefit of one individual or class of individuals.

4. Roadway - the strip of land through which a road is constructed and which is physically altered. The part of a bridge used by vehicles.
5. Road - an open way or public passage for vehicle, persons, and animals. A public way outside of an urban district. A vehicular way for local traffic, as a private way.
6. Path - a track made by the frequent or habitual use of men or animals: a trodden way.
7. Custom - long established, continued, peaceable, reasonable, certain and constant practice considered as unwritten law and resting for authority on long consent: a usage that has by long continuance acquired a legally binding force.
 A usage or practice of the people, which by common adoption and acquiescence, and by long and unvarying habit, has become compulsory, and has acquired force of law with respect to the place or subject matter to which it relates.
8. Way - a thoroughfare used or designed for traveling or transportation from place to place.
9. Right - a power or privilege vested in a person by the law to demand action or forbearance at the hands of another: a legally enforceable claim against another that the other will do or will not do a given act: a capacity or privilege the enjoyment of which is secured to a person by law.

The policy statement follows:

1. Any road, roadway or path which has been acquired by deed conveying full title shall be surveyed and mapped as a separate parcel of land.

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The policy statement follows:

1. Any road, roadway or path which has been acquired by deed conveying full title shall be surveyed and mapped as a separate parcel of land.

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2. Any right of way or easement which has been acquired by a signed document shall not be surveyed and mapped as a separate parcel. The center line only thereof shall be surveyed and mapped. However, the map shall indicate the side lines.
3. Any right of way or easement for which there is no written agreement or document, which has been used by the public for a period of 20 or more years as a public way or for public service without a record of protest from the landowner shall be considered to have become a public use easement under prescriptive rights. However, if a landowner through no fault of his own does not know where his property lines are and through that ignorance does not protest a right of way, cause of action shall be computed from the date the true boundary lines are known to the landowner. This will not be surveyed but will be shown by sketch on survey map. However, if a survey is requested by the easement holder, it may be surveyed if confirmed by either the Land Registration Team of the area where the land is located or by the District Land Management Officer.
4. Any such rights of way which have been used and maintained or bettered by public or community effort for a period 20 years or more without a record of protest from the landowner shall be considered to have become a public use easement under customary and prescriptive rights. These rights shall be surveyed and mapped as in No. 2, above.

(In those cases where the rights of public use of an area are in accordance with sections 3 and 4 of this policy statement, the rights are only those that can be demonstrated and the area involved is only that area which was actually used. An example: a path way has been used as a foot path for more than 20 years; the actual path way varies in width at different places from 3 ft. to 9 ft. The only rights the public holds vary in width from 3 ft. to 9 ft. depending upon the physical evidence of past use at any exact location).

5. Where a path or road is the boundary between two parcels of land, the parcel boundary shall be the center-line of such way.
6. A right of way which was not conveyed by written instrument and has not been regularly used for 20 years shall be considered abandoned.

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8. If an abandoned easement or right of way formed the boundary between two parcels, the center line of such right of way will be surveyed and mapped as a parcel boundary in the same manner as if the right of way had never existed.
9. If a road passes over public lands it will be surveyed and mapped as a separate land parcel. The surveyed width of such roads should comply with District standards and include sufficient width for water, sewer and other utilities.

If immediate implementation of any part of this policy statement appears improper at this time, please refer any questions to this office for advice.

Kozô Yamada
Kozô Yamada

Distribution List:

All District Administrators
All District Land Management Officers
All District Surveyors
Senior Land Commissioner, Marianas
Senior Land Commissioner, Palau
Senior Land Commissioner, Yap
Senior Land Commissioner, Truk
Senior Land Commissioner, Ponape
Cadastral Surveyor, Marianas
Cadastral Surveyor, Rota
Cadastral Surveyor, Palau
Cadastral Surveyor, Truk
Cadastral Surveyor, Ponape
Cadastral Surveyor, Kusaie

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 Cadaster Surveyor, Palau
 Cadaster Surveyor, Truk
 Cadaster Surveyor, Ponape
 Cadaster Surveyor, Kusaie

Director of Public Works

Deputy Director of Res. & Dev.

CIP Roads (Reference your memo, Serial: E-71-277)

The draft copy of the design criteria attached to your memo of March 31, 1971 was reviewed by the Division of Lands and Survey. Since its receipt, we have received a redraft of the material and find no objections to the redrafted material.

The original copy and the redraft are being returned and are attached.

Eusebio Reucher

Attachments: a/s

ORIGINATOR	RPERR
ROUTING	April 8, 1971
HC	
DHC	
XD	
AG	
ED	
FI	
HS	
PA	
PERS	
PW	
RD	
MC	
SC	
AUD	
PPB	
MGT	
AGR	
ECON	
LAND	
TRAN	
COMM	
PAD	
PID	
CDD	
SIGNATURE	
HC	
DHC	
XD	
AG	
ED	
FI	
HS	
PA	
PERS	
PW	
RD	<i>XXRP</i>
TC	

ORIGINATOR	RPERRY/ATS
ROUTING	April 8, 1971
HC	
DHC	
XO	
AC	
ED	
FI	
HS	
PA	
PERS	
PW	
RD	
TC	
SC	
AUD	
PPB	
MGT	
AGR	
ECON	
LAND	
TRAN	
COMM	
PAD	
PID	
CDD	
SIGNATURE	
HC	
DHC	
XO	
AC	
ED	
FI	
HS	
PA	
PERS	
PW	
RD	XXRB
TC	

MEMORANDUM FOR THE SECRETARY

TRUST TERRITORY OF THE PACIFIC ISLANDS Office of the High Commissioner, Suva

DATE: March 31, 1971
 Serial No. E-71-277
 E-0731-102

TO : Director of Resources & Development

FROM : Acting Director of Public Works

SUBJECT: Land Acquisition, for a site

Public Works is now in the process of preparing proposals for the design of air roads for the Pacific Islands. The design of roads for the Pacific Islands will be a major project in the region. The roads will be built in the Pacific Islands, and the design of roads for the Pacific Islands will be a major project in the region. The roads will be built in the Pacific Islands, and the design of roads for the Pacific Islands will be a major project in the region.

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Your early comments are invited.

Roy Perry
 Roy Perry

178.710

178. 710

Trust Territory of the Pacific Islands
Office of the High Commissioner
Saipan, Marianas Islands 96950

DESIGN CRITERIA
ROAD CONSTRUCTION
PHASES I, II AND III

*Revised to HQ 2-5
by Sam French
6 April 1971*

1. General Conditions

It is the intent of the Government of the Trust Territory of the Pacific Islands to construct roads on the several islands indicated in Section 3 "Schedule" of this criteria.

Preliminary studies and field observations on a limited amount of the roads were performed by McAlister, Newville, Meyer, and their report "Road Development Plan" for Truk-Yap-Palau-Ponape" dated October 1970, provides a basis for field observations and routing of roads insofar as it applies. Standards for design and construction of roads as set forth in that report are considered inappropriate to the needs of the Trust Territory.

General routes for the roads are prescribed in the attached alignment sketches. Considerable latitude in the alignment is provided; in general, the final alignment should be within 1500 feet of the prescribed alignment.

2. Site Conditions

Subgrade for the roadbed varies from submerged reef to highlands bedrock, from unconfined silt to fat clays, from soft sediments to metamorphic rock. Each island has its own geological character, and within each island the type of subgrade can change completely within a short distance.

Information concerning basic geology of the islands is available in the military geology studies. Rainfall data is also available, but in general the rainfall throughout the Trust Territory is too high to permit compaction of clays or clayey soils. Where clays are encountered, any materials from cuts will probably have to be wasted, and fill materials will probably have to be imported.

Silts are acceptable for subgrade, provided they are suitably confined. "Silts" in the Trust Territory are generally calcareous, with only a small amount of natural colloidal fines. Breakdown under abrasive load is quite rapid.

Coral is currently being quarried at the major islands, or can be quarried at little expense. Use of unstabilized coral materials is not acceptable where there will be direct exposure to moving water or wave action. Coral costs currently run about \$2.00 per cubic yard delivered to site.

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2.

Stone is now being quarried and crushed at all District Centers except Yap. In Saipan the stone is calcareous limestone; in Truk, columnar basalt; in Ponape, pahoehoe; in Majuro coral heads; in Palau, prismatic basalt. A stone quarry is currently being developed for Yap, but the size is not yet selected; the quarried stone at Yap will likely be serpentine or limestone. Primary-run rock currently costs about \$2.50 to \$3.00 per cy delivered to site, compared to \$5.00 per cy for 1½" minus and \$5.50 per cy for ¾" minus. Costs vary significantly between Districts.

All stone now being quarried can produce a CBR of 80, though compactive effort to achieve that CBR varies considerably, perhaps beyond the point of being economically feasible. All stone now being quarried meets requirements of the Asphalt Institute for abrasion loss. No stone now being quarried is reactive with Portland cement. Current ASTM test results of all stone is available from the Engineering Division of Public Works Headquarters, but additional tests may be necessary.

Sand is available in all Districts. It is generally calcareous, or coral sand, and is almost unlimited in quantity. Manufactured sand is available on those islands where rock crushers are maintained, but its cost is inordinately high. In past experience, no concrete test cylinders have failed due to failure of the sand, but failures have occurred frequently at about 4800 psi due to ~~aggregate~~ failure of the concrete aggregate.

On Ponape Island in the Ponape District, and Yap Island in the Yap District, a very small amount of acquisition of Rights of Way has been accomplished, and further acquisition is under way under local initiative. The current program of acquisition is limited to the perimeter road around the island, and generally follows traditional routes, including the old Japanese road beds which have fallen into disuse. The Rights of Way are generally 50 feet wide, and are being acquired without benefit of location surveys or road designs; it will likely be necessary to compromise the design in several locations in order to remain within the limits of these Rights of Way. Acquisition of additional Rights of Way or rerouting of roads in the location survey should be avoided except where substantially lower costs can be affected by rerouting.

RIGHTS OF WAY SHOULD BE ACQUIRED THROUGH THE
LAND MANAGEMENT OFFICERS OF THE DISTRICT CENTERS.

RIGHT-OF-WAY RECORDS ARE ACCESSIBLE THROUGH
LAND MANAGEMENT OFFICERS IN THE DISTRICT CENTERS.

3.

Except for the limited amounts on Yap and Ponape, there is little or no certified Right of Way, either for existing roads or for old road beds. There was certification by the Japanese of some of the older road beds during their tenure, but the legal validity of those certifications is in question.

For programming the field work, it should be assumed that there is no existing Right of Way in the Trust Territory, either for existing roads or for proposed roads. Drawings for the Right of Way are to be prepared as prescribed in Section 4, "Scope of Work". Insofar as possible, the new Right of Way should include the Japanese Rights of Way where they exist, and the traditional Rights of Way for existing roads even though those Rights of Way are not certified.

BOTH PRIMARY AND SECONDARY SURVEY CONTROL POINTS
IN ALL ISLANDS WHERE ROAD CONSTRUCTION IS PLANNED.
LOCATIONS OF MONUMENTS, BENCH MARKS AND TRAVEL CONTROL
STATIONS ARE AVAILABLE THROUGH THE LAND MANAGEMENT
OFFICE IN THE DISTRICT CENTERS.

Point
to
monument

4.

3. Schedule

The following tentative construction schedule is established. The final construction schedule may vary somewhat when cost estimates become available, and some segments may be added or deleted from any given fiscal year. The exact sequence of construction does not affect the priorities in design. Refer to the attached sketches for location of segment.

<u>PHASE</u>	<u>FY FUNDING</u>	<u>DISTRICT</u>	<u>ISLAND</u>	<u>SEGMENT</u>	<u>APPROX. LGTH</u>	<u>LANES</u>	<u>SURFACE</u>
I	1971						
I	1971						
I	1971						
II	1972						
II	1972						
II	1972						
III	1973						
III	1973						

5.

4. Scope of Work

A. Work included under the contract.

1. ~~Records search~~ ^{FIELD INQUIRY} to determine extent of existing Right of Way.
2. Establish prices of locally procured materials for cost estimates.
3. Establish lists of available ^{FIELD BUILDING} equipment, both Government and private.
4. Perform ^{PRELIMINARY} location surveys ^{AND FINAL LOCATION SURVEY}.
5. Perform all field sampling, field tests, and lab tests necessary to accomplish the design, including subgrade, borrow materials, and any additional sampling and tests required on quarried materials.
6. Establish waste areas where required.
7. Determine quantities, flows, and characteristics of surface water insofar as it affects the design.
8. Determine groundwater location and movement insofar as it affects the design.
9. ^{PREPARE ENVIRONMENTAL IMPACT STATEMENT & REPORT} Provide an engineering evaluation of the various methods of constructing the various types of asphalt pavements which are available to Trust Territory, and make recommendation for the preferred alternate.
10. Provide final design documents for the roads, to include all drawings and specifications for the earthworks, borrow areas, waste areas, bridges and drainage structures; drawings are to include listings of all materials utilized. Provide separate drawings for each bridge or box culvert, complete and suitable for release separately under local private contract.
11. Final design drawings are to include location data for the Right of Way, complete and suitable for Government acquisition of the Right of Way.
12. Provide Right of Way monuments, spaced at not more than 1200 ft. at alternating sides of the roadway, referenced to the primary control for the area as a closed traverse.
13. Determine final location of borrow areas and waste areas, to include approximate quantities, suitable for negotiation with land-owners for lease on purchase. Determination is to include access and egress routes, and is to be referenced to the primary control.
14. Provide cost estimate breakdown for each segment of roadway indicated in Section 3 "Schedule". Estimate is to include engineering evaluation of actual availability of earthmoving equipment compared to the amounts and types of earthmoving equipment required to do the work efficiently.

By P. L. 190.

15/14. Provide cost estimate breakdown for each segment of roadway indicated in Section 3 "Schedule". Estimate is to include engineering evaluation of actual availability of earthmoving equipment compared to the amounts and types of earthmoving equipment required to do the work efficiently.

6.

B: Work not included.

1. Any transactions with landowners.
2. Transactions for Rights of Access for Survey.
3. Records search for private landowners.
4. Staking of private plats.
5. Location of private plats on Right of Way drawings.
6. Off-set stakes for center line of roadway.
7. Monuments for borrow and waste areas.

5. Location Survey, Soils Sampling and ROW Survey

Party chief for the field work ^{IS TO} ~~SHALL~~ be a qualified highways engineer. His resume' is to be submitted to the Contracting Officer for review and approval prior to his being assigned to the project.

The location survey is to include topographic mapping to either side of the ~~proposed~~ roadway adequate to establish characteristics of flow for surface water and for computing earthworks, but in no case less than 100 ft. to either side. The traverse for the topographic survey is to be tied to the ^{OR SPERMING} primary control in the area, ^{AND THE POINTS OF THE TRAVEL ARE TO BE TIED TO THE} ~~and is to be closed back to the primary control.~~ ^{AND TWO POINTS OF THE PRIMARY CONTROL SECTION ARE TO BE CONTROLLED THERE.} Separate topographic drawings in addition to the design drawings are not required.

Alternate locations are to be considered where lower construction costs can be realized, but the proposed alternate location is to fall completely within the 1500' corridor to each side of the routing as indicated in the attached sketches. Where substantially reduced costs can be achieved by routing the roadway outside those limits, the proposed routing with comparative cost estimates is to be submitted promptly to the Contracting Officer for his review and decision.

The location survey is to include location and topography of borrow areas and waste areas, with sufficient detail to permit their acquisition and to permit reliable cost estimates to be made for their development and use.

The soil sampling and survey is to conform to ^{ASTM 398 - 1970 - 10 D-42} ~~ASTM~~ Specification, designation: ^{ASTM D-1552} ~~T-203~~, with soil classification in accordance with ~~ASTM~~ ^{ASTM D-1552} system. Soil classification and ~~Atterburg limits~~ ^{IS} ~~are~~ to be determined at each station along the proposed center line of roadway, or at any change in soil characteristics. Samples are to be taken to a minimum depth of 3 feet utilizing standard techniques for ^(ASTM D-1552) auger sampling (AASHTO Designation: T203). Where there is evidence of stratification, samples to a minimum of 6 feet are to be taken.

are to be taken to a minimum depth of 3 feet utilizing standard techniques for auger sampling (ASTM D-1452) (AASHTO Designation: T203). Where there is evidence of stratification, samples to a minimum of 6 feet are to be taken.

7.

At each change of soil, but no further than 8 stations apart along the center line of roadway, field density determinations are to be made and CBR value of the subgrade is to be determined. In-place determination of CBR for subgrade is not required, ^{FOR THE LABORATORY VALUE} BUT MAY BE MADE PERIODICALLY. Borrow areas are to be sampled, and the borrow material classified to the full depth of anticipated excavation. No fewer than 3 borings and soil classifications and CBR values are to be made at each proposed borrow areas.

Where the proposed roadway coincides with an existing roadway which can be improved to meet design standards, the foregoing topography and sampling ^{is} to be taken. In addition, CBR values and field density tests of the surface course and base course ^{are} to be determined. Test intervals are to be frequent enough to permit full engineering evaluation but no case further apart than ⁵ stations.

^{AT LEAST} No fewer than 2 borings are to be made within ¹⁰ 3 feet of each bridge abutment. ^{ONE PENETRATION SAMPLE IS TO BE TAKEN AT EACH BOX CULVERT.} ~~end at each headwall for box culverts.~~ Soil bearing capacity is to be determined either by penetration methods or by ^{borings} borings. Borings or penetration readings are to be made to a depth at least 6 feet below the anticipated depth of footing.

Bridges having more than one span or longer than 30 feet are classed as major structures and full foundation investigation for abutments and piers is to be performed.

Survey for the Right of Way is to be tied to the primary control as a closed traverse.

Survey for the Right of Way is to include erection of marked monuments along the boundary at no more than 1200 ft. intervals, on alternating sides of the Right of Way. Monuments are also to be erected at ^{points of intersection} sharp or significant points ~~of intersection~~ on the ROW boundary. Monuments are to be offset at points of deep cuts ^{or} fills to prevent their displacement during construction; offsets are to be clearly marked on the monuments.

Monuments are to be two inch diameter steel pipes, concrete filled, or 4 inch diameter concrete cylinders. The monuments are to be a minimum 24" long, buried at least 18", with a non-corrosive metal cap properly marked. Monuments are to be located within ± 0.25 ft. of their true position.

8.

Drawings for the Right of Way are to reference the monuments; final drawings are to include sufficient location data for the Right of Way, referenced to primary control, to permit the Government to proceed with acquisition of the Right of Way.

Center line stakes, grade stakes, slope stakes, or other construction markers are not required.

6. Design Criteria

A. General

All roads are to be designed as two-lane asphalt paved roads, with detailing to permit construction in 3 phases: single lane with turnout^s and stabilized surface course; ~~and~~ the second lane, ^{and} also with stabilized surface course; add asphaltic pavement.

B. General Design Standards

In general, standards of the American Association of State Highway Officials for feeder roads are to be used as the design standard. A general guide follows:

Design Speed, M.P.H.	
Flat topography	40
Rolling topography	35
Mountainous topography	25
Sharpest curve, degrees	
Flat topography	11
Rolling topography	18
Mountainous topography	36
Maximum gradient, percent	
Flat topography	8
Rolling topography	10
Mountainous topography	12
Non passing sight distance, ft.	
Flat topography	325
Rolling topography	250
Mountainous topography	175
Width of surfacing or pavement	20 feet
Width of roadbed	28 feet
New Bridges	
Clear width, ft.	24
Design load	H 15

Width of roadbed	28 feet
New Bridges	
Clear width, ft.	24
Design load	H 15

9.

Bridges to remain	
Clear width, feet	15
Safe load, tons	8
Width of Right of Way, minimum	40 ft.
(or, width as required for construction)	
Single axle load	H'15
Traffic count, minimum	100

C. Partial Construction

It may be elected by the District to construct only one lane of a particular segment of roadway, with periodic turnouts for opposing traffic. For that instance the typical sections are to include alternate designs to permit construction only of the upstream lane of a road segment with appropriate turnouts. Similarly, drainage structures and bridges are to be alternately detailed to permit construction for only one lane of traffic, except that bridge abutments and piers are to be constructed in their entirety.

Construction of single lane roadway with turnouts need not be considered within 3 miles of the District Center.

D. Design Methods and Construction Specifications

Design is to be accomplished by the CBR method of road design. Specifications are to reflect criteria for field control and inspection utilizing the CBR method.

All standard specifications referenced in the design documents are to be non-federal standards. Roadway standards are to be AASHO, materials specifications are to be ASTM, pavement specifications are to be Asphalt Institute, Structures Specifications are to be AASHO, Stabilization Specifications are to be Asphalt Institute or ASTM, and soils Specifications are to be ASTM. Except for design wave loads, design wind loads, and paints, no Federal or Military Specifications are to be referenced.

Proprietary specifications are not encouraged but ^{are} acceptable where an "Approved Equal" alternate is indicated.

E. Surfacing

Based on availability and reliability of equipment, level and availability of skilled labor, availability of suitable materials, and haul and fill volumes, an engineering evaluation is to be made of the various alternate methods of constructing asphalt pavements. Superficially, the three most promising alternates are; penetration macadam; multiple surface treatment; road mix. It is not expected

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Engineering
Section
10/10/54*

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10.

that plant-mix asphalt concrete ^{will prove} ~~is~~ ^{feasible} for long-term ^{road} construction in the 6 Districts of the Trust Territory.

The evaluation is also to include full depth asphalt pavements, where both the base and the wearing surface are constructed by any one of the foregoing methods. Full-depth asphalt pavement is expected to be particularly applicable where base course material is not readily available, or where CBR values of 80 or more are difficult to obtain. If full-depth asphalt pavement should be proved most practical, the need for an intermediate stabilized wearing surface is of course obviated.

It is desirable that one standard method be adopted throughout the Trust Territory, in order that skills can be developed in utilizing that method. It is recognized that asphalt grades and types may vary considerably from district to district, and within any one district, in utilizing any one of the foregoing methods, but the standard ^{construction} procedures remain the same; it is that standard ^{construction} procedure which is desirable.

In some locations over short distances, foundations may be of such character that Portland cement concrete pavement may provide a less expensive method of construction than compacted embankments. Such pavement shall be reinforced and may be considered only where central batching is available.

Stabilized surfacing is to include, but is not to be limited to, mechanical stabilization, asphalt stabilization, lime stabilization, and Portland cement stabilization. Mechanical stabilization is preferred where suitable materials are available. Field blending of coral with primary-run rock is permitted to achieve gradation requirements of ASTM D-1241-68 (AASHTO M-61-62), ~~except that maximum aggregate size to be acceptable when the~~ ^{thickness of surface course is} at least 4 times the maximum aggregate size.

Asphalt stabilized surface course or single treatment surfacing may be considered where base and subbase are adequate. Asphalt stabilized surface courses shall conform to Specifications of the Asphalt Institute for the type of asphalt selected.

If other types of stabilized surface are considered, complete specifications and descriptions of the method are to be submitted to the Contracting Officer for review and approval prior to final design.

11.

F. Hydrology-Hydrography

Surface water quantities are to be based on run-off for 10 year maximum, except that major bridges ^{ARE TO} shall be designed for 50 year maximum.

Calculations for 10 year maximum and 50 year maximum flows are to be made by Fuller's formula; tributary areas may be taken from existing small scale (1:10,000) topographic maps. Other recognized methods of arriving at maximum design flows which are preferred by the engineer will be approved upon written request.

Surface course of the roadway shall be maintained a minimum of 4 feet above the ground water table, or 4 feet above mean sea level. Systems of subsurface drainage are acceptable to keep the water table 4 feet below the surface course only where the system is not subject to excessive siltation.

Wave actions against embankments are to be determined by U. S. Navy standard ^{DM-26} NAVFAC ^{DM-26} Except for inter-island causeways, no roads are to be routed over the reef where maximum wave heights exceeds 4 feet, and in all cases the surface course is to be at least 2 feet above the design wave height.

Inter-island causeways are classified as causeways rather than roads, and are to be designed and detailed as separate and complete projects. Separate Specifications for each causeway are not required.

G. Embankments or Fills

Where coral is used as fill material, it is to be mechanically stabilized or otherwise ^{PROTECTED} wherever it comes in contact with moving water or where it is subject to wave action. ^{MECHANICAL STABILIZATION IS TO CONFORM TO ASTM D-1261-66 (ASPHD M-56)} In addition, where ~~unprotected~~ coral is subject to wave action it is to be further protected by a suitable filter prior to placement of riprap or armorstone. For short distances, sacked concrete riprap is preferable to natural stone.

Where quarry-run stone is used to provide an embankment over the reef, a suitable filter is to be provided on top of the embankment prior to placing the base and surface courses to protect them from erosion from underneath.

For embankments built in excess of 3 feet in new materials, no asphalt paving will be considered for at least one year.

For embankments built over ^{CL, CL, AND ML} ~~loose, sandy, and silty~~ soils, no asphalt paving will be considered for at least 2 years.

for embankments built over ~~poor~~ ^{poor} soils, no asphalt paving will be considered for at least 2 years.

12.

Where backfill in excess of 3 feet deep is placed and manually compacted behind headwalls or abutments, an approach ramp ^{OR APPROACH RAMP} at least 20 feet long is to be provided over the backfill. The approach ramp is to be constructed as a part of the pavement, and its cost is to be included with costs for paving. ^{APPROACH RAMP IS NOT REQUIRED UNLESS THE FILL CAN BE MANUALLY COMPACTED AS A PART OF THE ROADWAY.}

H. Drainage Structures

Wherever feasible, drainage structures ~~and headwalls~~ are to be constructed in reinforced concrete or in ferro-cement. Design is to conform to AASHTO Specifications for highway bridges and for miscellaneous drainage structures. Design wheel load is to be H15 with a minimum count of 100 vehicles per day. No concrete is to be specified with an ultimate strength greater than 3000 psi at 28 days.

Pipe culverts having a diameter greater than 4 feet are to be avoided. Drop inlets to pipe culverts are to be avoided. Casting of concrete headwalls under water is to be avoided. Flared headwalls are to be avoided.

^{OR REINFORCED CONCRETE RIPRAP}
Sacked concrete riprap for headwalls for single and multiple pipe culverts is encouraged, but returns and cutoff walls are to be carefully detailed to prevent undercutting. Sacked concrete riprap is especially encouraged where its use will obviate any need for casting concrete underwater.

Design drawings for box culverts are to include ^{ALTERNATE} simple methods of stream diversion during the casting of the base slab. Multiple box culverts are acceptable where the stream diversion can be accomplished to preclude any underwater concreting. Box culvert headwalls should be held to minimum sizes, with any extensive slope protection to be accomplished with ^{CONCRETE} riprap or ferro-cement cover.

Swales combined with pipe culverts are encouraged in more remote locations where maximum flows are significantly greater than the average flow. In all cases, returns, cutoff walls and headwalls are to be carefully detailed to minimize undercutting during periods of immersion, and particular attention is to be paid to dissipation of energy at the downstream side during periods of average flow.

Where foundation conditions permit, small bridges are preferable to box culverts, but bridge spans in concrete greater than 30 feet are not encouraged. All bridges are to be provided with deflection ^{OR} curbs, handrails, and a 24" pedestrian walk at both sides.

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13.

Bridges having more than one span or with a single span greater than 30 feet are classed as major bridges and shall be designed and detailed separately; standard designs are not to be used for major bridges.

Design drawings for each drainage structures except simple pipe culverts are to be submitted in separate complete form, suitable for releasing a local contract for only that structure. Drawings are to include a complete materials takeoff, and general notes are to include any compaction and backfill information. Separate specifications for each structure are not required.

J.H. I. Estimates & Construction Evaluation

Estimates are to be broken-down for each segment of road indicated in Section 3. The estimate is to include 3 possibilities for construction: Single lane with turnouts and stabilized surface; ^{ADD ASPHALT PAVEMENT} two-lanes with stabilized surface; additional costs to provide asphalt pavement. Single lane construction need not be considered within 3 miles of the District Center.

It is recognized that in many cases it would be somewhat cheaper to omit the stabilized surface and to pave immediately. That practice will not be encouraged; at least one year's observation and traffic compaction on all roadways is highly desirable before paving is considered.

The estimate is to include an evaluation of available equipment, and where the estimate is based on availability of assumed addition ^{AND WHICH MUST BE PURCHASED} of equipment not currently in Trust Territory inventory that assumption is to be clearly stated. In almost all cases it is expected that the equipment used by private contractors will be rented from Public Works.

K.F. Liaison

The Contracting Officer will cause to be designated a project manager from the engineering staff at Trust Territory Headquarters and a Liaison Officer from the Public Works Staff in the District concerned. The District Liaison Officer will be responsible for obtaining rights of access for survey, providing local determination of ^{ROW} widths, establishing local priorities and performances, and all other local liaison and coordination.

In no case is it expected that the party chief will have direct dealings with the local chieftains.

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K.3. Liaison

The Contracting Officer will cause to be designated a project manager from the engineering staff at Trust Territory Headquarters and a Liaison Officer from the Public Works Staff in the District concerned. The District Liaison Officer will be responsible for obtaining rights of access for survey, providing local determination of ^{ROW} widths, establishing local priorities and performances, and all other local liaison and coordination.

In no case is it expected that the party chief will have direct dealings with the local chieftains.

For verification of Impact Statement
During the course of the survey conducted and no initial action work, no substantial impact statement is to be prepared in accordance with the provisions of Title I, Section 102(d) of Public Law 91-190, National Environmental

Recovery Act of 1969 as amended by the 91st Congress. Content of the Environmental Impact Statement is to conform to the required format of Part 516, DM-13 Chapter 2, Section 6 of the Department Manual of the Department of the Interior.

Of particular concern is the effect of cutaways on the ^{local} main keep and on the main life in the vicinity of the cutaway.

It is found that the environmental effects on the environment could occur as a result of ^{the} construction, the Contracting Officer is to be advised ^{immediately} in order that alternative ^{acceptable} courses may be described.

ENVIRONMENTAL IMPACT STATEMENT
DURING THE COURSE OF THE SURVEY INVESTIGATION AND INITIAL LOCATION WORK, AN ENVIRONMENTAL IMPACT STATEMENT IS TO BE

PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 102(C) OF PUBLIC LAW 91-190, NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 AS ENACTED BY THE 91ST CONGRESS. CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT IS TO CONFORM TO THE REQUIRED FORMAT OF PART 516, DMI-3 CHAPTER 2, SECTION 6 OF THE DEPARTMENTAL MANUAL OF THE DEPARTMENT OF THE INTERIOR.

OF PARTICULAR CONCERN IS THE EFFECT OF CHOSEWAYS ON THE ^{LIVING} CORAL REEF AND SPAN MARINE LIFE IN THE VICINITY OF THE CHOSEWAY.

IT IS FOUND THAT IN THE EVENT ^{THE} DETRIMENTAL EFFECTS ON THE ENVIRONMENT WOULD OCCUR AS A RESULT OF ^{THE} CONSTRUCTION, THE CONTRACTING OFFICER IS TO BE ADVISED IMMEDIATELY IN ORDER THAT ALTERNATE ^{ACCEPTABLE} CHOICES MAY BE DEVELOPED.

Attorney General
JAS

SEP:ecj
Ser: E-71-137
9 Feb 1971

All Department Directors
All District Administrators
All Immediate Staff Officers
High Commissioner

Definitive Program for TI-Wide Road Construction

The following seven directives are issued as a means to bring the CIP Road Construction Program immediately into proper perspective. Appropriate revisions to the Administrative Manual are to be initiated.

The attached flow diagram is forwarded to provide a guide for the inter-relationship of responsibilities between the Department Directors, the District Administrators, and the Staff Officers.

DIRECTIVE NO. 1

Preliminary planning of roads throughout the Trust Territory shall continue to be included in the comprehensive master plans which have been developed, and which are being developed, for each district.

Conforming to the approved Master Plan, and in close coordination with the District Administrator, the Director of Transportation and Communications shall initiate detailed programming of road construction to include routes within specified limits, priorities of construction increments, degrees of improvements, general determination of rights-of-way, and shall assemble total cost figures from the engineering estimates and other pertinent sources. The detailed roads program shall be subject to review and coordination annually with all Department Directors concerned, and with the District Administrator in the district involved.

Engineering and design shall continue to be the responsibility of the Director of Public Works. Coordination of the entire program between the various departments and the districts shall be the responsibility of the Director of Transportation and Communications.

The Director of Transportation and Communications shall submit each year to the District Administrator for inclusion in the District budget submittals the current cost figures for each increment of the CIP Roads Program, including all categories of overhead, together with definitive descriptions of the work to be performed in each increment.

Attorney General
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All Department Directors
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2.

DIRECTIVE NO. 2

The McAlister, Newville, Meyer "Road Development Plan" dated October 1970, is adopted as the initial guide for the Trust Territory insofar as it applies to field observations and routing of roads. The standards for construction, design and rights-of-way as proposed in that report are to be revised as appropriate to conform to the needs of the Trust Territory.

DIRECTIVE NO. 3

The Director of Public Works shall establish engineering standards for design and construction of roads under the CIP Road Construction Program. The standards shall generally provide for two lanes of traffic where justified by traffic volume or strategic routing, and for one lane with turnouts elsewhere. All roads, regardless of traffic load, shall be planned, designed and routed for at least 18,000-pound axle loads, such that they may be improved to two-lane asphalt concrete paved at minimum rework when such improvement is considered justified. Rights-of-way shall be held to a minimum width, with 40 feet (or 12 meters) being the minimum standard, plus a minimum setback of 10 feet (or 3 meters) for all new construction. Utility easements, where required, shall be held in the setback wherever possible.

DIRECTIVE NO. 4

Director of Transportation and Communications shall submit the detailed roads design criteria to the Director of Public Works, who shall accomplish the engineering design, including specifications, construction estimates and complete surveys for rights-of-way. The completed rights-of-way drawings, engineering drawings, specifications and construction estimates shall be forwarded to Director of Transportation and Communications for appropriate distribution.

Director of Transportation and Communications shall submit the final drawings for rights-of-way to the District Administrator who shall proceed with land acquisition in accordance with local policies and practices. The Director of Transportation and Communications shall provide coordination as necessary in the event rights-of-way must be shifted or revised, and additional work in engineering design is thus incurred.

DIRECTIVE NO. 5

Where it is necessary to acquire private lands for rights-of-way, the District Administrator is encouraged to promote voluntary contributions. Acquisition costs, if any, shall be set at fair value and shall be deducted from the district budget for road construction.

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3.

DIRECTIVE NO. 6

Funds for construction of CIP roads shall be allotted to the Director of Public Works in accordance with established practice for CIP projects; the Director of Public Works shall then initiate the construction through routine procedures for private contract, regardless whether the selected builder is a private contractor or a Government Agency. Administration of the construction shall continue to be at the district level.

Monthly progress payments made to private contractors shall be based on percentage completion in accordance with established practices.

Where the construction is to be performed by a Government Agency, an advance payment may be made to allow for mobilization costs and initial salaries. Thereafter, progress payments shall be made as with private contractors.

Standards of quality control shall be enforced consistently upon all builders; methods and procedures for enforcement are also equally applicable.

DIRECTIVE NO. 7

The basis for classification of all roads in the Trust Territory shall be established during the detailed planning and programming of CIP roads. All roads shall be classified as primary, secondary or tertiary at that time. The classification shall be reviewed annually as the road program itself is reviewed. Responsibility for maintenance, as prescribed in the Administrative Manual, shall conform to the established classifications, with the initial maintenance funds to be budgeted in the fiscal year the construction is initiated.

Edward E. Johnston
Edward E. Johnston

Attachment:
Flow Diagram for CIP Road Construction

3.

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Edward E. Johnston

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TRUST TERRITORY OF THE PACIFIC ISLANDS
MANUAL OF ADMINISTRATION

February 23, 1967

Administration Management	Part 306	Public Works Operation & Maintenance Roads Streets & Highways
Chapter 1:	TRUST TERRITORY ROAD CLASSIFICATION SYSTEM	306.1

Reference (a): Administrative Directive 65-10, dated February 9, 1965,
Subject: "Trust Territory Road Classification System"

I. INTRODUCTION AND PURPOSE:

Reference (a), approved by the High Commissioner, established the official policy of the Trust Territory Government concerning the system of classifying roads throughout the Territory.

Purpose of this chapter is to incorporate the original Directive as a part of the Manual of Administration.

Reference (a) is hereby cancelled.

II. ROAD CLASSIFICATIONS:

A. Designation of an officially established system of road, streets, and public thoroughfares on all of the major islands of the Trust Territory is necessary for planning purposes and allocation of funds for maintenance and construction. Although most such routes are now public rights-of-way insofar as legal status is concerned, systematic designation is essential to the establishment of specific areas of basic responsibility for construction rehabilitation and maintenance as between the several levels of government. Additionally, the classification of routes, incorporated into the system will provide a basis for establishing standards for rights-of-way and construction.

B. In order to initiate and facilitate the formal designation of the Territorial Road System the following categories are hereby established:

1. Territorial and Primary Roads: This category will embrace a defined system of key routes linking several communities or providing the principal road arteries on all major islands. The basic responsibility for the establishment and maintenance of the primary system is in the Territorial Government operating through the District Administrations. Certain auxiliary roads servicing facilities of the Trust Territory Government also fall in this category insofar as responsibility for maintenance is concerned and will be appropriately designated. Recognition and establishment of this basic responsibility does not preclude co-operative district or local assistance in creating and maintaining the system.

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306.1

Page 1

2. District of Secondary Roads: This category will embrace additional road segments, tributary to the primary system, recognized as having more than immediate local significance. Their establishment and designation as "District Roads" will be predicated on the assumption of basic responsibility for construction and maintenance by the respective District Legislatures. Assumption of this basic responsibility will not preclude grant-in-aid assistance from the Territory or other local assistance through monetary or labor contributions. Execution of the district programs will be the responsibility of the District Administration. Formulae for such grant-in-aid assistance will be approved by the Director of Public Works on the basis of proposals and recommendations submitted by the District Administrator.

3. Municipal or Local Roads and Streets: This category will embrace the streets in established villages towns or other municipalities which are not otherwise incorporated in the Territorial or District Systems as well as other thoroughfares of essentially local significance. The basic responsibility is in the organized municipality or in the unorganized local community although recognition of this responsibility will not preclude Territorial or District grant-in-aid assistance in appropriate circumstances.

III. INSTRUCTIONS PERTAINING TO THE ESTABLISHMENT OF THE DESIGNATED ROAD SYSTEM:

A. Territorial or primary roads will be established on the basis of recommendations of the District Administrators made to the High Commissioner through the Director of Public Works. Designation will be made of specific road segments on a clearly established basis of surveyed or plotted distances from point-to-point. It is not intended that the system be designated at once by general reference to "all the main Japanese roads," etc. Rather, the designed to record the system, and all available data as to the existing rights-of-way such as width, physical condition, road materials, number and placement of culverts, bridges and other structures. All such basic road data will be submitted as a basis for approval by the Director of Public Works for incorporation of the specific road segment in the designated road system: such data when approved will be filed separately in the Headquarters and District Land Offices. Establishment of appropriate standards and routenumber designations will be made by the Director of Public Works as the segments are incorporated in the system.

B. Recommendations for appropriate classification of the existing road should be made as expeditiously as possible. Addition of segments requiring complete rehabilitation or new construction will be accomplished as resources permit.

C. Where it is not clear that title to specific roads is in the Government, title determinations in accordance with Trust Territory laws and regulations should be required.

Martin P. Mangan
Martin P. Mangan
Deputy High Commissioner

Director of Public Works

Director of Land Management

Development of Standards for Highways and Roads - Trust Territory of the Pacific Islands

Last year a lot of work was put into developing standards for highways and roads. Unfortunately, commitments to other projects at the Trust Territory Public Works level has prevented the finalization of this work.

The map showing typical cross sections and details for class A to E (inclusive) roads is good and is just what this office requires to begin our surveys.

It would however, be well to check under your signature and to be supported by a clear, concise and factual description.

Similar standards should be developed for utility right-of-way (water, sewer, etc.).

These standards are urgently required and will stabilize uncertainty at the district level.

William A. McGrath

Assistant Commissioner, Administration
Administrative Officer/Administration

WAMcGRATH:raa
File:LM0178.7/0

ORIGINATOR	WAMcGRATH
DATE	April 26, 1966
SUBJECT	Highways
HC	
DHC	
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CS	
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Signature	<i>[Signature]</i>
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