

## CHAPTER FOUR : INCEPTION PROCEDURES.

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#### **4.05 Conclusion**

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#### **4.01 The Urgency and Importance of Inception Activity.**

It is easy to get the idea during the first few weeks of a contract period that because few constructional. operations are underway the period is a slack time for the supervision team when lit-

tle is expected of them. That is an erroneous and dangerous notion. Although there may be little work to supervise on site, there are many activities which demand attention and most of them need to be dealt with as matters of urgency and importance.

First, there are essential contractual procedures to be followed. Additionally, it is necessary to establish supervision and administrative systems, arrange for accommodation and transportation, attend to the planning and detailing of constructional operations jointly with the contractor and to assign staff to their long term duties. If these matters are not dealt with before construction starts in earnest, the day to day pressure of work later on may make it impossible to complete the preliminaries in an orderly way, or catch up with all the work involved in them. As a result, the initiative for the control that should be exercised by the supervision team may pass to the contractor and never be recovered.

#### **4.02 Staff Deployment.**

It often happens that the supervision team is only partially mobilised at the beginning of the contract and those individuals that have arrived on site may therefore have to accept that they are pressed into service for jobs they are not intended to undertake in the long team.

The inception period, then, is a period for carefully marshalling staffing resources and tackling a number of important duties in an energetic, resolute and systematic way. There follows a check list of items to be attended to during the inception period. it is intended primarily for Resident Engineers or other officers directly responsible for on-site organisations.

#### **4.03 Checklist.**

- a) Notice to Proceed
- b) Right of Way
- c) Insurances d) Bonds
- e) Plant Mobilisation
- f) Plant and Cash Advances
- g) RE's Office and Equipment

- h) RE's Laboratory and Equipment
- i) Approval of Materials, Products and Sources
- j) Contractor's Programme
- k) Progress Charts and 'S' Curve
- l) Correspondence and filing system; drawing register
- m) Supplies of standard forms, etc.
- n) Agree site procedures with contractor
- o) Staff Assignments
- p) Contractor's staffing organisation
- q) Initial survey checks
- r) Utilities
- s) Public Relations
- t) Site Safety
- u) Assimilate contract documents
- v) Design checks and redesign

The following sections offer guidance on how to act under each of the individual headings or provide reference to other relevant parts of the Manual.

#### 4.04

##### a) Notice to Proceed

Most Conditions of Contract\* require the Engineer to order the commencement of work in writing. Where there is such a requirement this is an essential contractual preliminary since the whole contract time schedule has its origin on the date of the Notice. The Notice is normally issued by the Engineer or JKR HQ. The RE should check that the Notice has been issued and determine from it the date by which works must start and be completed.

The giving of site possession is an important corollary and the R.E. should keep in close touch with the land office and make urgent representations to it if there appears to be a danger that the possession dates prescribed in the contract may not be met. He should inform the contractor in writing of the dates on which individual parcels of land will be available and carefully record dates of actual first occupation by the contractor.

*\* In the case of form 203A contracts a "Date of Possession" on which work is required to start is quoted in the Letter of Acceptance.*

##### b) Right of Way (R.O.W.)

Members of the supervision team may find that the Right-of-Way has been demarcated prior to their engagement for the project. In this case standard pattern concrete markers as indicated in Figure 4A are likely to have been used\*. If no boundary markers have already been established the Resident Engineer must obtain the land plans and supply the contractor with the necessary data for setting out the R.O.W. limits. For all projects implemented after the date of this Manual land acquisition plans prepared by the Department will carry co-ordinates for the R.O.W boundary points. Although establishing the R.O.W on the ground (like all setting out activity) is a contractor responsibility it must be carefully checked by the supervision team's surveyor (see Chapter 5.04). The important danger to guard against at this stage is that the contractor may clear or carry out earthworks on land outside the highway reserve, resulting in compensation claims from the owners. For some projects the R.O.W limits are indicated on the road layout plans. If copies of the land plans are not immediately available, these can provide a useful coarse check (by simple scaling) on areas being cleared.

(See also notes under Site Clearance in Chapter 13, Section A)

*\* More often, the concrete boundary markers are not established until the contract works have been completed*

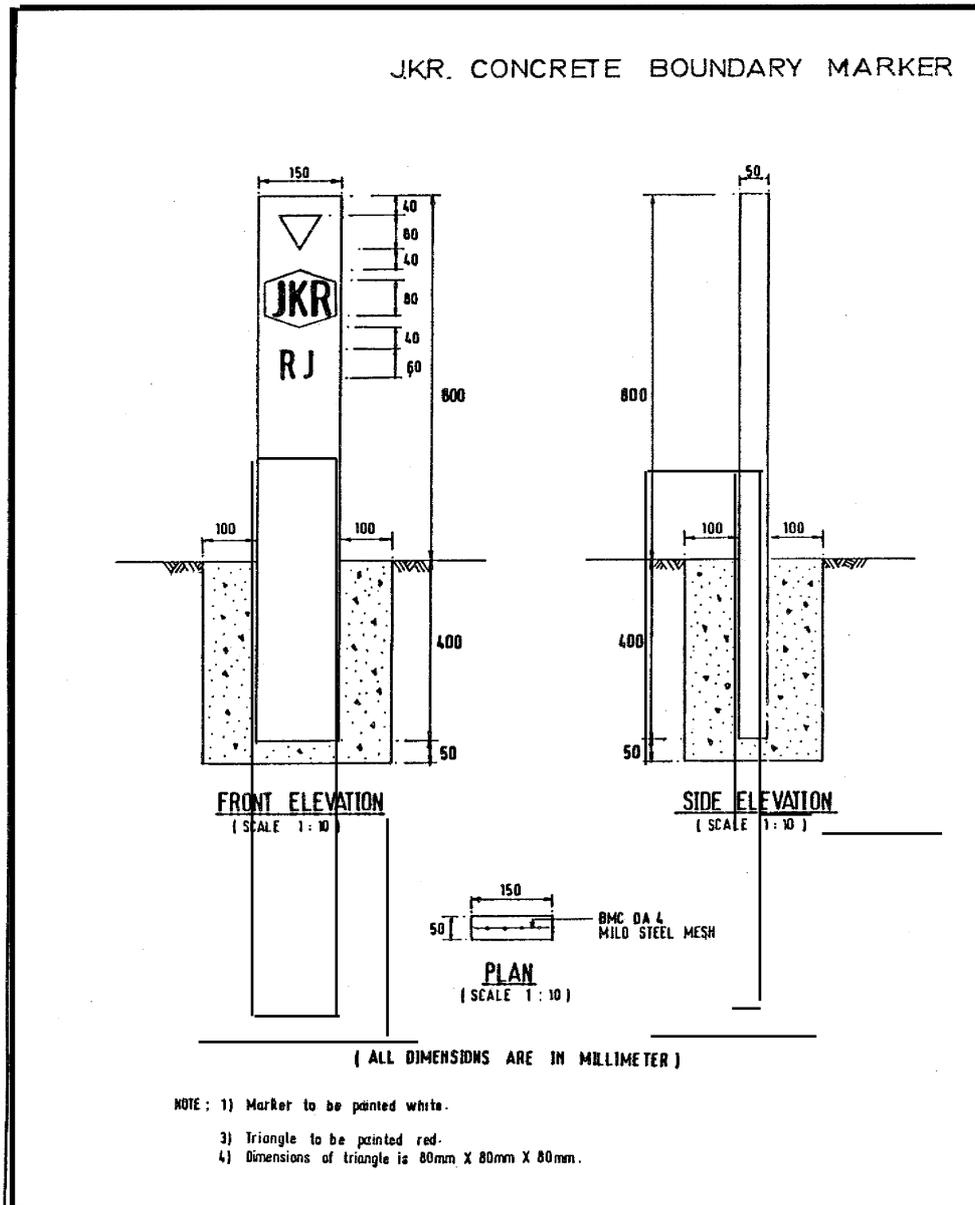
##### c) Insurances

The contractor is required under the Conditions of Contract to provide insurances for the following:

- i) Contractors All Risks (CAR)
- ii) The Works, if not included in (i) ii) Public liabilities
- iii) Workers Compensation, Socso, etc.

No work should be permitted to commence on site until these insurances have been effected. The RE should ensure that the originals of the policies, cover notes and premium receipts are submitted by the contractor to the office which issued the Letter of Acceptance. Work should not be permitted to start until the insurance documents have been vetted in this way.

FIGURE 4A



#### d) Bonds

The provision of a Performance Bond, Deposit or Banker's Guarantee is also a contractual requirement. The original Bond or Guarantee or the Deposit should be lodged with the State JKR or JKR HQ who will obtain confirmation of the validity of the bonds etc. from the issuing bank or insurance company. The RE should ensure that all these requirements have been met before allowing work to proceed on site.

#### e) Plant Mobilisation

Most contracts require the contractor to submit a list of plant he proposes to employ on the works and the list (or any subsequent revision required by the Employer) becomes part of the contractor's accepted bid. Under the terms of the contract the scheduled plant is vested in the Employer. The RE should ensure that the contractor mobilises the plant that has been scheduled and inspect individual items to ensure that they are in reasonable working condition and

capable of providing the output required of them throughout the works period. Although a few items such as pavers, etc. may not need to be mobilised immediately most plant involved in roadworks contracts is required at an early stage.

In particular, the RE should urge the contractor to make early preparations for the installation of any heavy fixed plant he proposes to use such as crushing/ screening plant, batching and concrete plant and asphalt manufacturing plant. Alternatively, the contractor must arrange for supplies of bought-in products until such time as his own equipment is operational.

If Variation of Price features in the contract, the RE should take note of plant capacities for the V.O.P computations.

#### f) Plant Advances ; Cash Advances

If Plant Advances are provided for under the terms of the contract, further checking in connection with the mobilised plant is necessary. The contractor should be required to submit a comprehensive schedule including the following data on each item of plant against which the Advance is to be made.

- i) Plant type, make, model and serial number
- ii) Date of manufacture
- iii) Date of purchase by the contractor
- iv) Original cost price
- v) Purchase price to contractor if not tiv)
- vi) Claimed current value

The details in the schedule should be carefully checked against the items on site and the plant should be seen to be in good, operable condition.

It is then necessary to assess the current value of each item in order to check the contractor's claimed figure. One method is to take the new purchase price quoted by the contractor (and verified with local agents or distributors) and apply accepted annual depreciations. The following factors and residual values for different plant categories may be useful in this connection.

Although this method enables a depreciated value to be determined, the over-riding criterion should be the current market value. State JKR Mechanical Engineers and dealers in second hand plant should therefore be consulted and the prices they quote should be weighed against the

calculated values in order to arrive at realistic values in connection with the Advance.

Additionally, the Engineer or Resident Engineer should collect from the contractor the following documents.

1. Original of the plant registration cards where applicable
2. Purchase Receipts

These documents, together with the authenticated schedule of data and a report on the condition of individual items prepared after the inspection on site and the assessed current value are to be forwarded to the State QS or JKR HQ QS, as appropriate. A Bank Guarantee is required for the Advance and the original of the bond must be obtained from the contractor and similarly forwarded before payment of the Advance is certified.

When the Engineer is informed by JKR HQ of the amount of the Advance to be made against the committed plant, he or the RE will prepare an interim certificate solely for the Advance amount, separate from any other works payment. The RE will note the amount for reference in connection with repayments under future interim certificates.

Plant items included in the schedule must be held in the contractor's own unencumbered ownership - items under mortgage or forming the subject of a hire purchase agreement must not be included.

Cash Advances not secured by the plant are also made under some contracts. They usually amount to 15% of the Contract Sum (excluding Provisional Sums etc.) with a limit of \$5.0 million and are made at the start of the contract period. Payment for them should not be certified until the following have been provided by the contractor:-

Contract Insurances (see c above)

Performance Bond (see d above)

Bank Guarantee for Cash Advance.

Details of the required Guarantee for either type of Advance are usually set out in the Conditions of Contract together with arrangements for repayment of the Advance from monies due to the contractor under interim payment certification.

#### g) R.E.'s Office and Equipment

If the-supervision team is to establish firm control from the outset it needs to have its office and equipment provided at an early stage.

RE to arrange for assistance with preliminary testing from JKR regional or other local JKR laboratories. Alternatively arrangements can be made with commercial laboratories for tests to

PLANT TYPE	ANNUAL DEPRECIATION %	RESIDUAL %
Bulldozers	25	15
Tracktor Shovels	25	15
Wheeled Loaders	25	15
Graders	20	15
Hydraulic Excavators	25	15
Mechanical Excavator	25	15
Rollers	15	20
Pavers	15	15
Compressors	15	20
Pumps	15	20
Concrete Mixers	15	20
Trucks	25	15
Mobile Cranes	25	20
Static Plant - Crushers, Concrete and Asphalt Plant	25	20

Almost invariably, the office is provided under the terms of the contract and the contractor should be urged and prodded to act quickly. In particular, telephone connection (or shortwave radio if it is to be provided), electrical supply, water and sanitation should be pressed for. As a government officer the RE may be able to give the contractor some assistance that he needs in these connections and in obtaining local government planning consents, etc.

Detailed requirements for the site office are normally given in the General Section of the Specification and shown on the Drawings. The RE should ensure that the specifications are met and that construction is sound enough to ensure that the offices are secure against weather and unauthorised intrusion and will remain so throughout the contract period.

**h) R.E.'s Laboratory and Equipment**

Again, provision of these facilities is usually a contractor responsibility, and is a matter of urgency because no work can be permitted to start on site until testing facilities are available. In the event of delay it may be possible for the

be carried out at the contractor's expense.

As equipment for the laboratory is received from the contractor it should be checked against the Specification schedule to ensure that it complies with the requirements and is in suitable working order. It should be carefully inventoried, quoting make, model and serial number and the data should be passed to the contractor for verification and confirmation.

**i) Approval of Materials, Products and Sources**

The contractor will require approval for materials and manufactured products which he proposes to use in the early stages. Sub-base, crushed stone for road base and concrete drainage pipes are examples. He will probably also ask for general approval of the sources from which items come, that is, the quarries, factories and yards, etc. On receiving the requests the RE should arrange as follows.

1. Receipt of samples. A member of the supervision team should be present at the selection in order to ensure that the material submitted is representative of the nominated

source and that material is available in sufficient quantities from it. Quarries should be inspected to ensure that material can be, and is being, recovered without contamination from overburden or other unsuitable material and that equipment and methods will result in the supply of consistent and acceptable material.

2. Visit factories and yards from which manufactured products are to be supplied to check that production and quality control methods will result in consistent and acceptable supplies.
3. Undertake such tests\* as are specified and necessary for acceptance. If site testing facilities are not available at this stage the alternative arrangements noted in (h) may be adopted.

When the RE has satisfied himself on all these points he should confirm the results of tests to the contractor and issue written approval of the material and source subject to subsequent regular site testing and the continuance of satisfactory conditions at the particular quarry or factory, etc. It should be noted that there is no contractual obligation on the contractor to have sources approved, or for the Engineer to give approval, but the arrangement is a sensible and practical one which can be the subject of mutual agreement.

With regard to products manufactured off - site the Department gives general certified approval to some factories for periods of 2 -3 years at a time, subject to spot checks by the Central Laboratory. In such cases it is, of course, unnecessary for the RE to arrange for his own independent testing.

The Resident Engineer may also be asked to arrange at an early stage for approval of trial mixes for cement concrete and job mix formulae for asphaltic mixes.

\* See "Guidelines for-Inspection and Testing of Roadworks" and the relevant sections of the standard Specification for Road Works.

#### **j) Contractor's Programme**

The contractor is obliged under all Conditions of Contract forms except 203A to submit a works

programme within a specified period of the Notice to Proceed. The programme should be appraised for approval as soon as possible so that the contractor can proceed with his planning and allow for any amendments that may be required by the Engineer.

See Chapter 8.06 for notes on programme appraisal, etc

#### **k) Progress Chart and 'S' Curve**

The progress chart and 'S' curve are required to be prepared by the contractor but they must be carefully checked by the RE or his staff. See Chapter 8.07 for further notes.

#### **l) Correspondence and Filing System; Drawing Register**

As soon as any proposed secretarial or other staff assigned to these duties are available and appropriate office furniture is provided, the filing system for correspondence and records should be established.

Arrangements for receiving and despatching correspondence between the RE's and contractor's offices should be agreed. The system adopted for dealing with correspondence will depend very much on the size of the project but should provide suitable filing and, if necessary, distribution and circulation arrangements.

The most important point is to ensure that correspondence from the contractor is dealt with promptly. If it is not it may result in delay to his site operations and to claims for extra cost.

The Drawing Register should also be prepared to record drawings made, issued and received. Copies of contract drawing prints in suitable numbers should be obtained for site and office use. See Chapter Ten for further details.

#### **m) Supplies of Standard Forms, etc**

A number of standard forms are identified in this Manual. Copies of those required for the particular contract should be obtained at the outset from the State JKR office or JKR HQ in suitable number.

A list of standard forms likely to be required is as follows:-

- i) Duplicate Memo Book }
- ii) Site Instruction Form

- (Triplicate Book } See
- iii) A.P.P. } Chapt.
- iv) Certificate of Variation of Works/  
PPJHK Forms } Six
- v) Buku Harian
- vi) Inspector's Daily Report Form
- vii) Culvert Form
- viii) Interim Certificate (JKR Form 66)
- ix) Standard Test Result Forms (as available)
- x) Staff Leave Application Form

In addition to standard forms it is necessary to design forms unique to each contract site. These may include the following:-

- (a) Works Approval Forms
- (b) Weather Record
- (c) Non Standard Test Result Forms
- (d) Measurement Forms (various)

Non standard forms can be locally typed and photocopied but if large numbers are anticipated (say over 500) arrangements can be made with the JKR Printer.

#### **n) Agree Site Procedures with Contractor**

As was seen in chapter Three the Conditions of Contract confer wide powers on the Engineer and his delegated staff for the administration and control of the contract. However, they do not go into detail, generally speaking, on procedures to be adopted and these are very much a matter for discussion and agreement between the contractor and the, Resident Engineer. At the earliest opportunity, the RE should meet with the contractor's staff and reach agreement on practical arrangements to be adopted. In particular, the provision of contractor's daily/weekly advance programme and monthly progress report, and procedures for site inspection, the use of an approval chit system, site instructions, testing and measurement (including the scheduling of payment of the "preliminary" items) should be agreed. The meetings should be minuted to record the details of arrangements agreed or the points should be recorded and confirmed in letter form.

The Chapters of this Manual noted below are relevant and may be consulted for guidance in connection with these matters.

Chapter Five: Site Inspection, Testing & Approval

Chapter Six: Instructions  
Chapter Seven: Measurement and Financial Control  
Chapter Nine: Reports  
Chapter Ten: Drawings (As Built etc)

#### **o) Staff Assignments**

Although all site staff may not be mobilised at the start of the contract the Resident Engineer will probably be given details of staff to be engaged eventually on the supervision team. The RE can therefore make staffing assignments and prepare Duty Lists at an early stage. See Chapter Two for guidance on these points

#### **p) Contractor's Staffing Organisation**

The contractor should be asked to provide details of individual staff to be employed in his site organisation, the duties they will undertake and the construction operations for which they will be responsible. The Resident Engineer should review the credentials of the Site Agent and his deputy and assess the adequacy of the whole contractor's site organisation, bearing in mind that the Engineer can ask for changes he considers necessary, or demand the replacement of contractor's employees considered unsuitable.

#### **q) Initial Survey Checks**

Basic survey information and setting out data for road alignment, etc is usually given on the drawings but the RE should obtain any additional survey data that may be available from the design team, or other officers engaged in pre-contract activity for the project. Armed with the data, the Resident Engineer should, jointly with the contractor's staff, locate and identify on the ground all survey marks and reference points established earlier, including IP's, curve points and bench marks.

As soon as the supervision team's survey staff\* are posted to the site they should be engaged in checking by instrument the co-ordinated values and elevations of the marks to ensure that those scheduled on the drawings (or elsewhere in the contract) are correct. The values should then be agreed with the contractor after correction of any errors that come to light. Any missing survey

stations or setting out marks should be re-established from such agreed data as then exists. All checking work of this nature should be undertaken by the Engineer's surveyors working independently from the contractor, using separate instruments.

A further important early survey activity is the recording of original ground levels. Again, the work should be done independently and the results agreed with the contractor and carefully recorded. The importance of the exercise warrants close supervision by the RE himself. A discrepancy of only a few centimeters applied, either by genuine mistake or deliberate fraud, throughout the whole length of even a relatively short route can result in the incorrect payment of many thousands of ringgit. Once the earthworks are complete, verification of original ground levels is difficult.

*\* Seer Chapter 5.04 for alternative arrangements if no survey staff are appointed to the site team.*

#### **r) Utilities**

Contact should be made with utilities' authorities at the earliest opportunity to work out arrangements for dealing with their services, locate the position of installations and detail diversions etc. (See Chapter :Eleven)

#### **s) Public Relations**

It is natural that local residents, land owners and others with local interests should be concerned about the effect that any major civil engineering project will have on their lives and livelihood both during and after construction.

If approached by members of the public, Resident Engineers should deal with enquiries in a helpful and courteous way, providing factual information about the project. Junior staff, however, should not discuss project matters with the public but refer enquiries to their Resident Engineer or regional chief officer. As a further word of warning no member of the site staff is permitted to give interviews to the press or media, or divulge any project information to them without reference to the Project Coordinator or other senior officer in the regional office or JKR HQ.

On the practical side, Resident Engineers have a clear responsibility to watch the interests of local and travelling members of the public and ensure at all times that they are not put to unnecessary risk or inconvenience. Particular points to note are that the contractor should not intrude into private land outside the Right of Way, create unreasonable noise, dust or other nuisance or interfere with, or damage, access to public or private property. The matter of responsibility for traffic and the effect of obstructions and diversions is also important (See Chapter 11.08 - 11.11).

All of these responsibilities remain throughout the contract period of course, not only during the early stages.

#### **t) Site Safety**

Although site safety is largely the concern of the contractor, the Resident Engineer's total management responsibility for the project make it a matter in which he must also take a hand. He should ensure that agreed safety precautions are observed so that both the contractor's workmen and his own staff are not put at personal risk.

The inception period is the time to discuss with the contractor's Site Agent what safety rules are to be applied and what arrangements should be established for obtaining urgent professional medical assistance and transport to hospital in the event of an accident. Additionally, at least one member of either the contractor's or the supervision team with suitable training should be nominated as the person to render First Aid, and a First Aid Kit should be maintained in a designated place to which access can be obtained at all times.

In drawing up further safety rules, the following points should be included.

- (i) All staff engaged in, or supervising, site operations should be required to wear protective boots and "hard hats".
- (ii) Contractor's superintendents and supervision team inspectors should carefully inspect scaffolding and walkways for elevated sections of structures to see that they are secure and also that ladders are securely fixed at top and bottom.

- (iii) All lifting equipment, slings, hooks and splices should be checked regularly for wear or damage and staff should be made aware of the need to ensure that attachment systems are suitable for the particular lifting job in hand.
- (iv) Staff should ensure that all machinery guards and guardrails for static plant are maintained in place at all times.
- (v) All excavations and trenches in which men have to work must be suitably strutted against possible collapse.

**u) Assimilate Contract Documents**

This is a fairly obvious requirement and one which becomes easier to meet as the Department increasingly adopts standard Specifications, Drawings and Conditions of Contract. However, Resident Engineers should search the documents for special provisions or unusual details and see that these are noted by the appropriate site staff.

It may not be possible to provide each member of the supervision team with a full set of documents, in which case- relevant sections should be copied and presented to each individual - an activity which can be undertaken in conjunction with the preparation of Duty Lists mentioned in Chapter 2.06.

**v) Design Check & Redesign**

It is necessary at the beginning of the contract for the Resident Engineer to review the details of the design as presented on the Drawings and to keep them under review as construction proceeds, giving better access to the site and revealing physical conditions which may not have been apparent to the designers. If changes are found to be necessary or desirable the RE and his staff can undertake redesign work or, if this is beyond the competence or resource of the supervision team, the JKR regional office or JKR HQ should be contacted to arrange for redesign. In any case, no major new design should be introduced without reference to, and approval of, the original design team and consideration of the financial and contractual implications by the JKR regional office or JKR HQ.

Examples of design changes which are most likely to arise include the following.

- i) Changes in vertical or horizontal alignment to economise earthworks quantities, avoid rock etc. or to avoid underground services.
- ii) Relocate and re-size drainage culverts to ensure that they are appropriate to hydro logical conditions on site.
- iii) The additional provision or deepening of side ditches or provision of sub - soil drains to deal with underground water; general drainage re-arrangement to suit local drainage topography etc.
- iv) Special provisions to deal with earth works settlement or stability - removal of soft material below embankments, pre loading, construction of stabilising berms, benches etc.; provision of revet ments, changes in length and cross section dimension of designed retaining structures and drainage of cut slopes.
- v) Subgrade improvement or replacement or strengthening of pavement construction to deal with weak subgrades in localised areas.
- vi) The utilization of materials found in excavations on site which may be suitable and more economical than designed materials for pavement construction e.g. sands, gravels or laterite for subbase, shoulders etc.
- vii) Changes in foundation arrangements for structures in accord with soil conditions different from those predicted at the design stage.
- viii) Changes in the layout or wording of direction or warning signs or road markings to accommodate traffic patterns or conditions which are different from those designed for.

It is re - emphasized that careful consideration must be given to the financial and contractual effects of any proposed design changes. Where the changes constitute variations to the contract the requirement of Departmental Circular KPKR BIL : 6/1988 for approval procedures must be observed.