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GUJARAT PIPAVAV PORT LIMITED

EXCAVATION WORKS BEHIND THE NEW CUSTOM GATE (NEAR FIRE FIGHTING AREA) AT APM TERMINALS PIPAVAV

TENDER DOCUMENTS

VOLUME-II (B)

GENERAL & TECHNICAL SPECIFICATIONS

APRIL 2025

Revision, Review and Approval Records

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EXCAVATION WORKS BEHIND THE NEW CUSTOM GATE
(NEAR FIRE FIGHTING AREA) AT APM TERMINALS PIPAVAV

SUBSECTION 6B: GENERAL & TECHNICAL SPECIFICAITONS

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1. INTRODUCTION

This Specification describes the requirements for the Excavation and disposal works required under the Contract. These works are required by GPPL to deepen area behind the New Custom Gate (Near Fire Fighting Area).

The Works will be carried out in parallel with port operations and will be located within a working port. As such, coordination with GPPL operations and with other contractors will be an integral part of the Works under this Contract and must be incorporated within the Contractor's working methods and programme.

This Specification must be read in conjunction with the Bills of Quantities, Drawings and other documents forming the Contract documents.

1.1 SCOPE OF WORK

The Works includes all of the work shown in the Specifications, Drawings, Bills of Quantities and Contract documents as a whole, and that work which can be reasonably inferred in order to achieve the Employer's requirements.

The Contractor's work scope includes all of necessary items to deliver the Works required by the Contract documents as a whole, and any works that can be reasonably inferred therein.

The scope includes but is not limited to the following:

1.1.1 Excavation

Excavation by suitable means approved by the Engineer from the existing depths to the lines and levels indicated on the Drawings/BOQ/Tender documents.

The contractor shall be responsible for maintaining the required Excavation level +3m CD.

The topographic survey at the time of pre-Excavation, interim Excavation (if required) & post Excavation for depth & Excavation quantity shall be carried out by Contractor in presence of GPPL.

The contract shall be consolidated contract with assured specified depths as per the final excavation level mentioned above.

Disposal shall be using suitable equipment, as approved by the Engineer and as further described in this document.

Uprooting of bushes, trees to be done first & same is to be shifted to the designated area. Further excavation by suitable equipment to be done up to +3 m CD levels. Excavated soil is to be shifted to the designated area inside the port premises. Shifted soil is to be spread in layer wise manner. Watering & compaction are to be done by 10T roller to achieve 95% Procter density in each compacted layer of 150 mm thickness.

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1.2 DEFINITIONS AND ABBREVIATIONS

1.2.1 Deleted

1.2.2 Deleted

1.3 STANDARDS REGULATIONS AND CODES

The Contractor shall maintain a copy of the latest editions of the Standards, Laws and Codes applicable to the work to be undertaken on site.

The Work covered by this Specification shall comply with the latest editions and revision notes of Indian and International Standards including but not limited to the standards given below and elsewhere in this Specification:

Standard	Description
IS 3764	Code of Safety for Excavation Work
IS 1200	Methods of Measurement of Building & Civil Engineering Works

1.4 TAXES AND PORT CHARGES

The contractor will pay all dues, taxes, Customs Duty and statutory charges applicable to the project. The Contractor is responsible to ensure all of his operations are carried out in accordance with Indian law and is responsible for all associated costs.

1.4.1 Port Charges

Port charges are exempted at Pipavav Port in association with the Works.

The Contractor shall pay the charges, duties, taxes etc to Gujarat Maritime Board, Custom Department, other government agencies etc related to this work and its included in rates.

1.5 PROGRAMME AND MILESTONES

1.5.1 Milestones

Execution of the Works on Site is planned to take place in between May 2025 to June 2025. The milestone for the Excavation work required by the Employer is set out in the Appendix to Tender.

Irrespective of the onset of the monsoon, the Contractor shall be responsible for completing the works within the stipulated timeframe. If for any reason the Contractor requires to perform part of the works during poor weather conditions no claims shall be entertained for adverse weather conditions.

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2. SITE INFORMATION

This section briefly describes the general site conditions. Site information is provided for information only and the Contractor shall remain fully responsible for ascertaining actual conditions on site.

The information is believed to be correct but the Employer accepts no responsibility for any inaccuracies in the information given or for the use or otherwise of the information below by the Contractor.

The Contractor shall allow for all necessary tidal working and for all delays and damages due to weather and wave action in its program, time schedules and in its rates and prices affixed to the Schedule of Rates and Prices. No claim will be admitted in respect of any loss, damage or additional work arising there from.

2.1 LOCATION

Pipavav port is located in a tidal inlet on the southwest side of Gulf of Khambhat on the Saurashtra Coast. The latitude is 20° 54°N and the longitude is 7l° 30° E. The port is set in a unique surrounding with land mass on the West, a small island on the East (Shiyal Bet) and numerous shoals in the vicinity. The port is accessed from the South through the Western channel. The existing port facilities are shown in the Drawings.

The port is connected to National Highway 8E state via a 10km access road. The nearest railway station/ airport at Bhavnagar, approximately 150km from Pipavav.

2.2 CLIMATE

The climate at Pipavav is characterised by four seasons:

- Monsoon season from middle of June to September with predominantly south westerly wind (SW monsoon)
- Post monsoon season during the months of October and November
- North East monsoon period prevails during December to March (winter season); this normally does not have much effect at Pipavav. The summer season from April to mid June.

2.2.1 Rainfall and Humidity

The annual rainfall in Pipavav area is approximately 500 mm and mainly occurs during the South West monsoon. The wettest months are generally July and August, although rainfall has also occurred in September/October.

2.3 COASTAL CONDITIONS

2.3.1 Wave Conditions

The wave conditions at the site are governed by the SW monsoon owing to the fact that the wave conditions off the coast are by far most severe during the SW monsoon Situated in the northern extremity of Arabian Sea, Pipavav is rarely affected by major cyclones.

NIOT carried out a wave penetration study in the year 2000 and review of it by DHI indicates that berths are relatively well sheltered from waves. The NIOT study is available for perusal.

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However, the Excavation areas are located in the Gulf of Khambat which is exposed during monsoons as defined above, the Excavation works may be affected by waves, rains and storms.

Suitable precautions shall be taken by the Contractor to avoid any delay due to this and there shall be no claim for additional cost or time due to the adverse marine or climate conditions.

2.3.2 Tidal Information

The following tidal data were used for the design of the existing structure.

High High Water Springs	HHWS	+3.92 CD
Mean High High Water	MHHW	+3.19 CD
Mean Sea Level	MSL	+1.76 CD
Mean Low Low Water	MLLW	+0.50 CD
Low Low Water Springs	LLWS	-0.1 CD

2.3.3 Currents

Current measurements have been carried out by NIOT during the period 20.11.2001 to 12.12.2001 at six locations in the existing channel. The field measurements were carried out over a period of fourteen days. Both profiling type acoustic current meters (Sontek) at two locations and Anderaa RCM - 9 current meters (balance four locations) were used.

Table 1 gives the coordinates of locations with water depths.

Table 1: Current Measurement Details

Station Name	Type of Instrument	Co-ordinates (Everest)		Water depth (CD) (m)	Measurement depth above from seabed (m)
		Latitude	Longitude		
CM1	ADCP	20°53’18.00”	71°29’46.80”	17.0	5.5
CM3	RCM-9	20°54’17.38”	71°30’16.42”	12.0	4.0
CM4	ADCP	20°54’36.63”	71°30’26.67”	9.8	2.5,3.5,4.5, 5.5,6.5,7.5 8.5 and 9.5
CM5	RCM-9	20°54’42 78”	71°30’17.58”	8.0	3.0
CM6	RCM-9	20°54’49.49”	71°30’36.64”	10.5	3.5
CM7	RCM-9	20°55’20.61”	71°31’l0. ll”	8.5	3.0

The current is found to be predominantly tidal. In general, the speed and direction varies for ebb and flood tide. Flood current speeds are found to be more than that of ebb. Table 2 summarizes the average speeds and direction for ebb and flood flow and maximum speed for each location.

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Table 2 : Average speed and direction of current at different locations

Station Name	Type of Instrument	Co-ordinates (Everest)		Ebb		Maximum Speed (cm/s)
		Speed (cm/s)	Direction (°N)	Speed (cm/s)	Direction	
CM1	66.46	75.78	47	48.79	239	120
CM3	44.65	49.52	33	39.28	214	90
CM4	47.82	51.14	38	44.21	215	115
CM5	51.13	51.15	42	50.65	226	84
CMO	53.62	55.97	*55*	50.33	222	115
(TM7	42.57	48.55	54	35.47	226	100

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3. GENERAL REQUIREMENTS

3.1 GENERAL

A high standard of workmanship in all trades is required. The Contractor shall ensure that only skilled and experience personnel are employed.

The Contractor shall be responsible for the supply, use and maintenance of all plant and equipment and he shall ensure that it is suitable for the work and is maintained in such a manner as to ensure its efficient working. The Engineer may direct that plant which is not efficient and is prejudicial to the quality of the work be removed from the Site and replaced by a plant to his satisfaction.

The Contractor shall be responsible for all sub-contractors, and he shall ensure that their labour and plant is in keeping with the high standards required.

The Contractor's supervisory staff shall be fully experienced in the types of work being carried out under their supervision and capable of ensuring that it is done well and efficiently.

The Contractor shall provide all personnel, tools, supervision (including supervision and administration of lower tiered sub-contracts and suppliers), design, professional and technical services, Construction Plant including vessels and equipment, temporary works, Material (except where stated otherwise in the Contract), consumables, inspection, testing, transportation and support services, and shall perform all operations required to complete the Works in accordance with the Contract. Contractor is responsible for the provision of the vessel(s) spreads and shall be self-sufficient and provide all equipment, personnel and consumables necessary for the safe, timely and proper execution of the Works.

The Contractor shall cooperate and work with the Employer to ensure the timely and efficient execution of the Excavation Project in a safe manner, complying with the requirements of the Contract in particular and Employer’s expressed policies, goals and objectives in general.

The Contractor shall provide all procurement, logistics and administration support services in relation to the Works.

The Works shall be performed under the rates detailed in the Bills of Quantities, Rates and Prices contained in the Contract unless it is specifically stated that the execution of any part is at Employer’s discretion and shall be performed as an option or under a Variation.

The Contractor shall perform the Works in accordance with the Scope of Work, the Technical Specifications, Drawings and other Documents listed in the Contract or created pursuant to the Contract.

3.2 DRAWINGS

All permanent Works shall be constructed to coordinates or dimensions marked on the drawings and not based on dimensions, scaled from these drawings, if no dimensions are marked. The Contractor shall be responsible for requesting from the Employer in due time any clarifications of the drawings or any additional information, which it requires on the drawings in order to construct the Works or to place orders for materials or supplies

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3.2.1 Scale

Throughout the execution of the Works drawings produced by the Contractor shall be at scales approved by the Engineer. Larger scale drawings shall be used in preference to smaller scale drawings.

Paper size for all drawings shall be A1 plus A3 reference copies unless otherwise approved by the Engineer.

3.2.2 Drawings Issued by Employer

Three copies of the Drawings to the original scale, and in digitised format, shall be made available to the Contractor free of charge.

3.2.3 Dimensions and Interpretation

Figured dimensions on drawings shall be used in preference to scaled or measured dimensions.

3.2.4 As Constructed Drawings

On completion of each section of the Works the Contractor shall prepare the following as constructed drawings:

Two (2) copies of A1 size of the as constructed survey drawings shall be provided by the Contractor to the Employer together with a narrative survey report on the procedures used.

In addition, the Contractor shall also provide the raw survey data and electronic copies of the survey drawings geo-referenced in AutoCAD format.

3.2.5 Contractor's Working Drawings

The Contractor shall, at least two (2) weeks prior to commencing the Excavation works on site submit any required working drawings to the Employer. The Employer shall advise the Contractor in writing of the acceptance or rejection of the Contractor's working drawings or schedules.

3.2.6 Verification of Levels and Dimensions

The levels of the ground and seabed and the levels and dimensions of existing features and structures are not guaranteed. The Contractor shall carry out its own surveys and measurements to verify existing levels and dimensions of existing features.

Prior to commencement of the Works and within seven (7) days from the date of the letter of notice of Award of Contract, the Contractor shall check all survey data, including dimensions on site. Should the Contractor find any error or omission in the survey data it must immediately be brought to the attention of the Engineer in writing.

3.2.6.1 Existing Features

The Contractor shall produce and plot data, prepare charts and cross sections showing the minimum Excavation profile required by the Engineer and the profile required to monitor progress and operate the Contractor’s equipment’s.

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3.3 GPPL PORT OPERATIONS

3.3.1 Port Operations Have Priority

Note that the Site is located within a working port and the operations of the port shall take priority.

Port operations shall have priority over all and any Excavation operations unless otherwise directed by the Harbour Master. The Contractor shall plan all work in advance and in consultation with the port management team including the Harbour Master. The Contractor shall have contingency plans in place that allow the Contractor to efficiently relocate its Excavationr(s) to areas that are not affected by port operations.

3.3.2 Shipping

Port traffic will have priority over the Contractor's vessels at all times. It is very important that the Contractor shall take all precautionary measures when executing the Works to ensure the safety of the shipping traffic and of his plant, equipment and personnel.

If necessary or as directed by the Engineer, the Harbour master, Port Control or authorized Pilot, the Contractor shall shift his Excavation and other plant and equipment within 3 hours of receiving an instruction to do so, to make way for the vessels which pass through the Excavation areas. All stand-by time, delay and other expenses resulting from such shifting shall be included in the rates.

The order to "Move", in this context, will be defined as the need to move the Excavation and/or ancillary equipment more than half the width of the channel **and** resulting in the loss of more than 2 hours of production time. Clear details of every such move shall be shown in the logs and signed off by the Engineer on the day on which the move occurred.

A warning system for navigating vessels and marker buoys and other navigational facilities shall be installed and maintained by the Contractor, as required and to the approval of the Port Authority, and other relevant Authorities and/or the Engineer. The Contractor shall also allow for the shifting of such navigational facilities when so directed by the Port Authority, or other relevant Authorities and/or the Engineer. Upon completion of the Works, the Contractor shall remove all the temporary navigational facilities which have been installed by him.

3.3.3 Permissions and Permits

The Contractor shall at all times comply with the latest requirements of:

a. Navigation, Shipping and Pilotage Acts
b. Port Authority Acts
c. Marine Oil Pollution Management Plan
d. Marine Oil Pollution Contingency Plan
e. Emergency Response Plan
f. Cyclone Contingency Plan
g. Port of Pipavav Safety and Port Operations Procedures.

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The Contractor shall ensure that plans and procedures developed under the Works are integrated with those of the port operations at Port of Pipavav and to the satisfaction of the Harbour Master at any port where logistics are undertaken.

The Contractor shall obtain advance agreement with the Harbour Master prior to vessel movements.

The Contractor's operations may involve work during mobilisation, repairs and maintenance, cargo, coal, fuel and bunkering berths. The Contractor shall comply with all the Employer's or Port's Operations Manual and regulations pertaining to those areas and obtain the necessary permits. Hot work permits will be required prior to undertaking welding or flame cutting in these areas.

3.4 DELETED

3.5 DELETED

3.6 EXISTING PORT INFRASTRUCTURE

3.6.1 Port Structures Condition Survey

Prior to unloading of equipment at any structure owned or operated by the Employer, the Contractor shall undertake a Condition Survey of the in-situ position and condition of all any wharf, berth and hard standing area likely to be impacted by the Contractor's work. The Condition Survey shall be carried out with competence and it shall be capable of audit by third parties.

The Condition Surveys shall include all parts of the structure and surrounds likely to be impacted by the Contractor's operations.

3.6.2 Damage to Port Structures

If in the sole opinion of the Employer or the harbourmaster at the Port of Pipavav, the Contractor has caused damage to any part of a structure by Excavation, unloading or loading or any other operations the Contractor shall be responsible for carrying out repairs to the structure to the satisfaction for the authority.

All costs and expenses associated with the repairs to such damage, or the replacement of damaged parts shall be for the Contractor's account.

3.6.3 Deleted

3.7 CONTRACTOR'S PROGRAMMES

All programmes submitted by the Contractor with its tender and during the execution of the Works shall be accompanied by a descriptive commentary detailing the number of weeks, operational hours (Excavation, disposal hours) required, the in situ cubic metres to be Excavated and the area (square metres) to be covered to complete the Works.

The Contractor shall provide details of production rates for the Excavation which shall include but not limited to details of allowances made for downtime and/or delays including repair and maintenance, weather and sea-state etc. This information shall be set out in a manner that will enable the Engineer to accurately monitor the Contractor's progress against the Excavation Programme.

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3.7.1 Detailed Breakdown of Contract Programme

Unless otherwise notified by the Engineer in writing the Contractor shall, within seven (7) days after the date of Notice of Award of Contract, submit to the Engineer for approval a revised work programme to that which was submitted with the Tender with a detailed breakdown of the contract Works. The programme shall be submitted in both hard copy and MS Project electronic.

Updated programmes shall be submitted during the works which include an estimate of the percentage of the Works which will be completed at the end of each week during the contract period.

If the Engineer is of the opinion that the detailed programme submitted by the Contractor does not enable the Engineer to readily evaluate the Contractor's progress, the Contractor shall, upon being so notified by the Engineer, continue to submit amendments of the detailed programme until the said programme is approved by the Engineer.

Notwithstanding the number of times the Contractor is required to amend the programme, and the Contractor shall in any event ensure that the programme is acceptable to the Engineer by not later than fourteen (14) days after the date of Award of Contract.

At such time the programme is approved in writing by the Engineer, it shall become and thereafter be referred to as the approved Contract Programme.

The Contractor shall adhere to and perform the Works in accordance with the approved Contract Programme unless otherwise agreed in writing by the Engineer.

The Contractor acknowledges that the Engineer will rely upon the approved Contract Programme in co-ordinating other work at the Site.

3.7.2 Deviation from Approved Contract Programme

The Engineer may, from time to time, direct in writing a deviation from the approved Contract Programme. If any such deviation gives rise to a variation under the Contract, the Contractor will inform the Engineer before implementing and the variation shall subject to agreement under the terms and conditions of the Contract. If such a deviation is directed by the Engineer, the Contractor shall promptly amend the Contract Programme and submit copies to the Engineer for approval.

3.7.3 Contract Programme Updates

The Engineer may, from time to time, direct the Contractor to supply to the Engineer with an updated Contract Programme.

The Contractor shall within two (2) days after the receipt of such a direction so to do shall supply to the Engineer such updated Contract Programme, and shall continue to submit amendments of the Contract Programme until it is approved by the Engineer

The Contractor shall comply with the approved updated Contract Programme when so approved by the Contractor.

3.7.4 Revision of Contract Programme

The Contractor may from time to time submit a revised Contract Programme with

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the purpose of reorganisation of the execution of the Works so as to enable the Contractor to complete the Works in the shortest practicable time. The revised Contract Programme must first be approved by the Engineer and if and when such approval in writing is given the Contractor shall comply with the revised Contract Programme.

3.7.4.1 Effect of Acceptance or Approval of Contract Programme

The acceptance or approval by the Engineer of a Contract Programme or revision thereof shall not relieve the Contractor of its obligation to complete the Works on or prior to the date for Practical Completion and will not give rise to a variation under the Contract.

3.8 WORK METHOD STATEMENTS

The Contractor shall prepare a Work Method Statement and an Excavation Disposal Management Plan (EDMP).

The Contractor's work method statements shall include the procedures to be followed by his staff and equipment's.

Method Statement shall be submitted for the approval of the Engineer one week prior to the commencement of Excavation. Excavation is not permitted to commence prior to the revised EDMP, and Work Method Statement being approved by the Engineer. The Contractor is to allow fourteen (14) working days in its programme for the Engineer to approve the revised EDMP and Work Method Statement.

The EDMP shall be updated as and when required to reflect changes in procedures and work methods. No changes to work methods shall occur unless the Engineer has approved changes to the EDMP and change pages have been issued to recipients detailed on the document's distribution list.

In addition to the requirements set out above the Contractor shall propose work methods that will optimise the use of the Contractor's range of equipment, demonstrable experience in Excavation, Disposal works, other project interface and management skills.

The Contractor work methods shall:

a. eliminate where possible the risk of injury to personnel and damage to equipment during operation and maintenance

b. enable the Contractor to safely change of Excavation, Disposal equipment

c. enable the safe transfer of equipment's & personnel in all working conditions

3.9 HEALTH & SAFETY MANAGEMENT

3.9.1 Occupational Health and Safety

The Contractor shall comply with the GPPL Occupational Health and Safety Requirements set out at Appendix C.

3.9.2 Training

All personnel on Excavation equipment shall be suitably qualified, experienced and trained by the Contractor for the class and specific vessel, equipment or duty they are engaged on.

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3.9.3 Employer and Contractor Inductions

The Contractor's personnel, including the personnel of any lower tiered Contractors or suppliers, shall undergo the Employer's, Contractor and Port of Pipavav inductions to the satisfaction of the Contractor. The programmes will be conducted by the Employer at no charge to the Contractor. The Contractor shall make all necessary allowance for the time required for all persons to undergo the Port of Pipavav, Employer's and Contractor Induction Programmes. The cost of all Contractor's personnel's time and expenses to attend the inductions is for the Contractor's account and shall be deemed to be included in the Contract price.

3.9.4 Health and Safety Manager

The Contractor shall have in place a qualified locally experienced and proactive Health and Safety Manager approved by the Engineer prior to commencing the Works.

3.9.5 Safety Management Plan

The Contractor shall prepare and submit for approval a Safety Management Plan which complies with the requirements of the Contract and with all relevant Indian and local laws and regulations. The plan shall describe the responsibilities and procedures for all relevant aspects of the safety management on the Works and shall be capable of regular audit throughout the course of the Works.

The Contractor shall ensure its Safety Management Plan meets the requirements of Appendix C and in addition include:

a. Safety Policy Statement of Senior Management and a project responsibility matrix

normal protocols for personnel requiring access into and out of Port operational areas e.g. coal, container and LPG terminals of the site;

Emergency plans for all identifiable potential incidents such as fires, foundering, oil spills and the like

- Visitor and safety inductions
- Vessel Safety Audits
- Drills frequency and type -Drills shall be separated into those required for statutory or insurance purposes and additional drills proposed for the works. Vessels and crew training shall meet the safety requirements of the Contract and of all Indian and Local Government statutory authorities and bodies
- Emergency evacuation procedures, lifeboat and evacuation drills
- Certification of crane drivers, in full compliance with Indian requirements

The implementation of a procedure for random drug and alcohol testing of all of its employees and staff throughout the execution of the Works to the satisfaction of the Employer. The Contractor's personnel shall be subject to the Drug and Alcohol Search Procedure set out in Appendix C

- Job Hazard Analysis - The Contractor shall provide written working procedures; directions including Job Hazard or Job Safety Analysis (JHA/JSA) in order to ensure the safe and timely execution of the Works. JHA/JSA, procedure revisions and drills shall be ongoing during the course of the works according to a programme approved by the Engineer and set out;

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- Safety Management Plan
- Hazardous materials register and storage
- Staff, Crew and Visitor Inductions
- Any onshore or offshore activities which cannot be undertaken 24 hours per day due to safety or other constraints
- Accident / Near Miss investigation procedures
- Competency testing
- Employee training
- Tool-Box Meetings, Work Area Inspections; Signage, First Aid facilities and trained personnel
- Equipment locks out procedures
- Confined space access procedures
- Auditing frequency

An appendix containing individual Emergency Response Plans which can be used as a quick reference standalone document at work areas in the event on an incident or emergency.

3.9.6 Personal Protective Equipment

The Contractor shall ensure that or provide all employees and visitors to the site with Personnel Protective Equipment (PPE), which shall include but not be limited to hard hats, personal self-inflating floatation devices during over-water transportation and vessel to vessel transfers, safety glasses, safety boots, sunscreen lotion, conspicuous work clothing or high visibility vests and the like. Specific PPE shall be provided by the Contractor to all specialist trade employees irrespective of whether they are direct employees or contract service providers.

3.9.7 Safety Audits

The Contractor's Head Office personnel qualified and experienced to do so, shall undertake audits of the site management performance and project operations during the Works in order to evaluate the degree of compliance of the Contractor's site operations to the Contract requirements for Health and Safety as set out in Appendix C.

Audits shall be undertaken by an audit team. The audit team shall consist of the Contractor's Head Office Representative (team leader), a Representative of the Employer and an independent specialist experienced in the type of audit being undertaken. The independent audit representative shall be approved or appointed by the Employer and paid for by the Contractor. An audit agenda based on the Contractor's commitments will be prepared and agreed prior to the audit.

Any audit shall follow the normal procedure for this type of activity with an Entry Meeting, the Audit and a Close Out Meeting where preliminary findings will be discussed direct with the Contractor's project staff. An audit report shall be prepared and agreed by the audit team. Non-compliances shall be actioned by the Contractor.

Contractor shall routinely audit the use of training aids and drills and provide training and direction to the project management staff and to all masters and crews

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The Contractor's head office personnel shall arrange regular audits of all project management personnel against documented company procedures and Indian Occupational Health and Safety Law and Regulations.

3.9.8 Incident and Accident

3.9.8.1 Reporting

Incident and Accident reporting and statistics shall be undertaken to the relevant Indian Standard, Employer's and Contractor's requirements.

3.9.8.2 Investigations

If an accident results in an injury to an employee or damage to equipment or release of hydrocarbons from the vessel or requires evacuation of personnel from floating equipment, oil spill clean-up, subsequent hospitalisation of any individual or major repairs to equipment the Contractor shall arrange for a qualified independent third-party investigation and report. The third-party investigator shall be approved by the Employer.

A preliminary report shall be prepared and submitted to the Engineer within 24 hours and a detailed report shall be submitted within seven (7) calendar days of the occurrence of the accident or incident. Should any element of the Excavation spread need to stop work for the duration of the investigation, attendance of witnesses etc, Modifications to safety plan, Job Safety/Hazard Analysis, Modification and validation of work procedures, Government Agency inspections and procedures, Any other reason then all costs associated with the delay shall be for the Contractor's account.

The Contractor's attention is drawn to the likelihood that any downtime resulting through loss of life, limb or other serious accident or incident may be considered as prima facie evidence that the Contractor's Works and Safety Management Plan and or Environmental Management Plan procedures and recruitment and training system are inadequate and or deficient. The Employer and other Agencies may require a complete reworking and independent audit of the Contractor's safety system and Job Safety Analysis sub elements and environmental protection procedures. The cost of such delays and reworking of procedures caused by such activities will be to the Contractor's account.

3.9.9 Deleted

3.10 QUALITY ASSURANCE AND QUALITY CONTROL

3.10.1 Quality System

The Contractor shall have a Quality System which complies with ISO 9001 and shall provide evidence of third-party assessment and endorsement. The Employer may require Audits in accordance with its specification for HSEQ requirements in Appendix C.

The Contractor shall prepare and submit a project specific Quality Plan in line with his ISO 9001 Quality System. The Contractor shall generate quality records covering Excavation, field surveys, survey data reduction, data editing, data plotting and chart presentation.

All Quality records shall be traceable from the Inspection and Test Procedures to the deliverable set.

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3.10.2 Documentation

All documentation to be provided by the Contractor shall be completed and delivered to the Engineer before the issue of the Certificate of Practical Completion. All documentation setting out weekly and monthly progress shall be delivered to the Engineer before monthly progress claims will be approved for payment.

The Contractor shall deliver to the Engineer, the following documentation by the dates indicated. Documents shall be in their final form and shall have been previously submitted as high level drafts with the tender documents and progressively updated during tender negotiations and post-award working meetings and correspondence.

Contractor's deliverables are a key interface for the management of the Contract and to allow the Employer to interface with Indian and Local government agencies. Non delivery of documentation may mean the Employer will withhold progress payments until documentation or data is received.

Table 3-1 CONTRACTOR DOCUMENT DELIVERABLES

Ref	Document	Date Due
A	Contract Programme.	To be supplied with Tender Weekly after award of contract with WBS detailing following weeks work.
B	Environmental Management Plan	To be supplied with Tender Revisions to be supplied within 2 weeks after Award of Contract, **or** as required by the Government, GPPL and Local Agencies.
C	Safety Management Plan	To be supplied with Tender. Revisions as made within 1 weeks after Award of Contract.
D	Mobilisation Plan	Preliminary Mobilisation Plan to be provided with tender submission Detailed Mobilisation Plan to be provided 1 weeks after Award of Contract. Revisions as made
E	Work Method Statements - Excavation	Work Method Statements with tender submission. Update of Tender submission in detail linked to the programme activities 1 week before commencement of Excavation and resubmitted with revisions each 2 weeks.
F	As Constructed Drawings	Prior to the issue of Taking Over Certificate for each Section Completion.
G	Survey Procedure	2 Weeks prior to commencement on onsite surveys and modifications and change pages as made by Contractor
H	CD-ROM containing survey ASCII data binned at 1.0 metre	Delivered weekly within 18 hours of completion of survey

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I	Progress Volume and Area Calculations	Each week with updated levels of all areas Excavated during the week
J	Daily Excavation, Disposal Reports	Each day for each shift accounting for each period, including location of Excavation both in plan and in elevation showing cut layers, and all levels.
K	Updates to Contractor produced Drawings	As each Revision is made.
L	Excavation Disposal Management Plan	1 weeks before the commencement of Excavation and revised as and when required to reflect changes
M	Emergency Response Plan Fire, Oil Spills, Injured Personnel	2 Weeks before commencement of Excavation on site.
N	Work Method and Profiles for Excavation, Slopes	At least 2 weeks Prior to Excavation
O	Structures condition survey report	2 weeks before arrival of equipment on site if port facilities are to be used.
P	Audit Reports, Agendas, Close Out Reports and Follow Up	As required by the Engineer
Q	Environmental Monitoring Reports	As required by the Environmental Management Plan
R	Copies of Insurance Policies set out at Schedule I.	Two weeks after Contract Award.
S	Other documentation mentioned in the Contract documents but not listed above.	As required by the Contract.

3.11 SITE MEETINGS AND REPORTING

3.11.1 Weekly Requirements

Weekly Site Meetings will be chaired by the Engineer and will be convened to discuss the progress of the Works and other relevant matters. The Weekly Site Meeting agenda shall be as determined by the Engineer but will typically include but not be limited to:

a. Adoption of Previous Minutes

b. Outstanding Matters

c. Health and Safety

d. Quality Assurance

e. Excavation Production Rates and Availability

f. Interface Coordination & Special Business

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g. Programme Milestones, Achievements and Slips

h. Plant and Equipment

i. Survey and Clearance of the Works

j. Survey progress and programme

k. Contractual Matters

l. Progress Payment Claims and Payments

m. Other Business

When required by the Engineer, specialist meetings covering onshore and offshore survey work; occupational health and safety; environmental management and quality shall be held independently of the weekly meeting with the Contractor's section heads. Any unresolved issues arising from these supplementary meetings shall be included and form part of the weekly meeting.

Daily contact and informal discussions shall also be held each day between the Engineer and the Contractor's Project Manager.

Additional results of discussions between the Engineer and the Contractor shall be conveyed to the Contractor's surveyors and HSEQ staff and advisers and the Contractor's section heads and shall also occur in order to distribute agreed reviews of the forthcoming day's and short-term programme and any specific issues arising at that time.

During the performance of the Works, the Contractor shall submit to the Engineer, daily, weekly and monthly reports to the format required by the Engineer in both hard copy and in a digital format. The contents of the various reports will be tailored to the specific discipline or type of plant deployed and will typically including the following at the daily, weekly or monthly summary levels:

n. a copy of the approved Contact Programme outlining progress to date for the major items of the Works, including a statement of the Contractor's programme for the following week

o. a list of equipment used on the Works, together with hours worked and hours survey including any idle or unserviceable equipment

p. details of Safety Statistics, External and Internal Inspections Audits and Reports, Incidents and Near Misses and a summary of man hours worked.

3.12 DELETED

3.13 MOBILISATION AND DEMOBILISATION

3.13.1 Mobilisation, Installation Setup and Preparatory Works

The mobilisation, installation, setup and preparatory works and site facilities comprising all activities necessary to commence the project works are including but not limited to:

Mobilisation of equipment's, labour, management, other items, consumables and spares required to undertake the Works, meet the intermediate milestones and the date for Practical Completion of the Works, including the;

i. Delivery of all equipment to site

ii. Assembling of equipment

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iii. Compliance with Indian Laws & other statutory requirements

iv. Compliance with Indian Customs, Quarantine and Immigration requirements

v. Compliance with any quarantine requirements for access to Port of Pipavav, India and the surrounding waters

vi. Training of local crews and personnel management.

b Undertake Pre-Excavation surveys of the:

i. Excavation areas including areas outside the Excavation footprint boundaries

ii. All in accordance with these Specifications and the accepted work methods, as offered by the Contractor at tender stage.

c Pre-requisite approvals and updates during the Works:

i. Excavation and Disposal management plan

ii. Survey method statements, procedures, calibrations, surveys and charts

iii. Work method statements

iv. Health, Safety, Environmental Management and Quality Plans

v. Other documentation required under by the Contract.

3.13.2 Demobilisation of Equipment and Disestablishment of Site

The Contractor shall not demobilise equipment or personnel from the site until the remediation of any deficiencies listed in the Certificate of Practical Completion unless approved in writing by the Engineer which shall not be unreasonably withheld.

Any costs incurred by the Contractor due to the Engineer not approving demobilisation of items of the Excavation Disposal equipments, personnel or management due to delays in completion or deficiencies listed in the Certificate of Practical Completion shall be for the Contractor's account.

On completion of the works, the Contractor shall demolish and remove from the Site all temporary structures leaving the area in a clean and tidy condition to the approval of the Engineer.

No claim for extra payment or for extended time in the removal of such items and the like will be entertained and the Contractor shall allow in his rates for the cost of removing any items which may be encountered in the course of the work which it is required to execute.

3.14 CONTRACTORS WORKING AREAS AND FACILITIES

3.14.1 Fences and Markers

The Contractor shall, at his own expense, install and maintain fences & markers to define the extent of the Site and working areas.

3.14.2 Shore side Working Area, offices, site facilities and lay-down

The Contractor may, at his own expense, and subject to the approval of the Engineer and statutory authorities, construct offices, stores, workshop in the area allocated to him and remove the same as per the orders of the Engineer, on completion of the Contract.

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The Contractor shall at his own expense erect and maintain in good condition temporary fences and gates along the boundaries of the Contractor's area assigned to him for the purpose of the execution of the Works.

The Contractor shall except when authorized by the Engineer, confine his men, materials and plant within the Site of which he is given possession, together with along the route of the access thereto. The Contractor shall not use any part of the Site for purposes not connected with the Works unless prior written consent of the Engineer has been obtained. Access shall be made to such areas only by way of approved gateways and roadways.

The Contractor shall provide accommodation for staff and labor outside the port limits. No accommodation of staff or labour will be permitted within the port.

3.14.3 Access through the Port

The Contractor will restrict his operations and internal Port access to roads designated by the Employer for the purpose.

The Contractor shall be responsible for the provision of any jetties, dolphins or other structures required and any such structures shall be in locations approved by the Engineer and shall be removed by the Contractor at the completion of the contract.

Full details of the Contractor’s mobilisation activities will be provided in a Mobilisation Plan.

3.14.4 Deleted

3.14.5 Bunkering of Water and Fuel and Supply of Electric Power

The Port of Pipavav is served by a reticulated mains water system. The tenderers will be able to draw water from this system under the normal commercial arrangements with the use of such water and will determine from the Port, the relevant charges, and these charges will be assumed to be included within the tender price. Reticulation of the water from the Port’s point of supply will be at the expense of the Contractor.

There are no bunkering facilities available within the limits of Pipavav Port. The Contractor has to make his own arrangements for bunkering for all his craft.

The Contractor shall arrange for all his own water, electricity, compressed air and telecommunications services for the performance of the Contract including the provision of any cables, pipes, valves, meters, storage tanks, etc. Water pipes, cables and the like will not be permitted to trail across any access or operational areas. The Contractor must therefore provide a separate generator, water supply, etc. for each working area.

The Contractor shall provide an adequate supply of drinking water, with all necessary drainage, on the Site for the use of his staff and the work people and shall make all the necessary arrangements there for with the competent authorities. The construction, number, capacity and location of the installations shall be to the satisfaction of the Engineer.

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3.14.6 Sewerage Facilities

Sanitary conveniences for the use of persons employed on the Works shall be provided and maintained by the Contractor to the extent and in such a manner and at such places as shall be approved by the Engineer and the authority concerned, and all persons connected with the Works shall be obliged to use them exclusively. The Contractor shall make all temporary arrangements for the proper discharge of sewage and drainage from or in connection with the Works and shall maintain the same to the satisfaction of the Engineer and the authority concerned as long as they may be required.

3.14.7 Temporary Works

Where required, the Contractor shall furnish such details of his temporary works as may be called for by the Engineer and the Contractor shall satisfy the Engineer as to their safety and efficiency. The Engineer may direct that Temporary works which he considers unsafe or inefficient shall be removed and replaced in a satisfactory manner.

3.15 FACILITIES FOR ENGINEER'S REPRESENTATIVE

3.15.1 Accommodation and Facilities for the Engineer

Not Used.

3.15.2 Deleted

3.15.3 Deleted

3.16 TEMPORARY WORKS

Temporary works include, but are not limited to the provision, establishment, maintenance and removal of all temporary works whatsoever, on and off site. Temporary works may include but are not limited to:

a. Site or construction offices
b. Workshops and repair yards
c. Warehouses
d. Construction power supplies
e. Construction and drinking water
f. Site communications systems
g. Facilities for the safe transfer of personnel and stores
h. Facilities for mobilisation and installation of equipment's
i. All temporary facilities shall comply with all statutory and local authority standards and requirements.

3.17 EQUIPMENT

All equipment's shall comply with Indian and Local Government requirements and all third-party surveyor requirements, for example Lloyds, B.V., DNV, ABS, and Indian Safety Authority or similar.

Test certificates, maintenance records and the like for all equipment's shall be

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available for inspection by the Engineer and for third party audit. Slings for which test certificates are not available shall not be used and will be removed from the site prior to the commencement of the works.

3.18 SUBMISSIONS TO THE AUTHORITIES

1) The Contractor shall allow sufficient time in his programme for the issue of any statutory notices including those to port users by the relevant Authorities which may be required prior to the commencement of the relevant Works. The Contractor shall provide the Engineer with evidence that the relevant Authorities have been notified of the proposed Works in accordance with relevant regulations and ordinances.

   a) detailed plans of the works showing the proposed overall limits of the working area(s) and the space requirements of each of the operations

   b) information on the type and operating frequency of all proposed electronic positioning systems

   c) proposed means of communication to be established between the relevant Authorities

   d) the name of the person(s) in charge of the works who can be contacted by the relevant Authorities on a 24-hour basis and means and procedures to contact them

   e) the proposed schedule of all works carried out under the Contract indicating the different types of operations, their number, duration, space requirements and phasing

   f) details of weather conditions in which operations would cease and all working equipment's removed from the working area.

   g) Required permits & work-related issues are the responsibility of the contractor. All correspondence between the Contractor and relevant Authorities including all submissions shall be copied to the Engineer.

   h) All environmental permitting issues will be dealt through GPPL

3.19 SEASTATE AND WEATHER FORECASTING

The Contractor shall subscribe to the Indian Meteorological Department weather forecasting service for the coastal area around Port of Pipavav.

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4. EXCAVATION REQUIREMENTS

4.1 GENERAL

The material to be Excavated generally consists of fine to coarse sands and silts, gravel, cobbles, clay, mixtures thereof stiff to hard clay, rocklike materials and rock. The clay and rocklike portions are expected to form clay balls, boulder, cobble and gravel sized material, sand and remnants of clay in the form of clay balls.

4.2 LINE AND LEVEL

The Contractor shall ensure the Excavation area footprint to the lines, assured levels and tolerances specified by the Contract and the Drawings.

4.3 DEPTHS AND TOLERANCES

Excavation set-out coordinates shall be as shown in the Drawings.

All Excavation shall be undertaken to remove all materials so as to achieve the depths as specified on the drawings.

Over Excavation shall be restricted to within the +or- 0 (zero) tolerance limits in these Specifications, unless specifically approved by the Engineer in writing.

4.3.1 Deleted

4.3.2 Deleted

4.3.3 Deleted

4.3.4 No Payment of Over-Excavation Materials and Under-Excavation area

There will be no payments for over-Excavation material either in the vertical or the horizontal plane unless instructed otherwise by the Engineer.

If the contractor failed to Excavate the required depth in particular section/area or if any patches have been left out. There will also be no payment for such whole area/section wherein the contractor has failed to achieve the required depth.

4.4 VOLUME CALCULATIONS

It is a measurable contract. The calculation of the quantities of material Excavated will be based on the Pre and Post Excavation Survey which will be carried out by Contractor in presence of GPPL.

4.5 EXCAVATION SLOPE DESIGN

The Contractor is responsible for the design of stable side slopes from all Excavation toe lines, including the side slopes. The design of the slopes is to be presented to Engineer for his approval before any Excavation commences in the particular Excavation areas. In order to guarantee and clear the slopes shown on the drawings it will be required to deliver these + or – 0 (zero) tolerances. The Contractor shall avoid excessive over-Excavation on slopes and toes and shall take into account the following when Excavation the slopes:

a. slope materials physical properties

b. underlying materials physical properties

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c. method of Excavation e.g. stepped or rolled slopes

d. accuracy of Excavation

e. naturally occurring hydrodynamic loads

f. storm induced events

g. cyclonic conditions induced events

The Contractor shall be required to stop work immediately it has been detected that the stability of slopes in the area in which the Contractor is working are collapsing or otherwise affected by the Contractor's operations.

Stability checks shall be carried out by the Contractor to monitor the stability of the side and end slopes during the Excavation.

4.6 DELETED

4.7 QUANTITIES

The unit of quantity shall be a cubic metre (m^3) of excavated material. The rate shall include the full costs for all work associated with the project.

The total Excavation volume is calculated as the difference between the pre-excavation survey and post excavation survey levels of the required Excavation works, as shown on the Drawings.

Interim payment will be based on monthly Excavation progress volumes, measured between pre-excavation survey and Interim surveys.

4.8 EXCAVATION EQUIPMENT

The Contractor shall provide required equipment's (Excavator, Backhoe Loader, Dumper, Water Tanker, Roller etc.), work methods, manpower and management which meet the production, health, safety and environmental requirements of the Contract.

4.8.1 Pre-mobilisation Condition

The Excavation and supporting equipment's are to be in good working order and full compliance with standard requirements.

4.9 DELETED

4.9.1 Deleted

4.9.1.1 Deleted

4.10 DAILY REPORTING

The Contractor shall submit Daily Progress Reports to the Engineer.

4.11 COOPERATION

The Contractor shall coordinate its activities with servicing authorities and other contractors and operators working within and adjacent to the Site. The Contractor shall be fully responsible for coordinating its work with other Contractors to ensure

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that work proceeds without delay or conflict to itself or to any other parties. No claims for additional costs or extension of time for completion will be approved for any delays or additional costs that may arise as a result of any conflict with other works.

The Contractors on site for this project shall be expected to use their best endeavours to work co-operatively on site.

4.12 DELETED

4.13 SURVEYS

4.13.1 Initial Survey

An initial survey shall be carried out by Contractor in presence of employer before commencing any Excavation operations.

4.13.2 Final Surveys

Contractor shall carry out all surveys in the presence of the Employer after the completion of Excavation works. The Contractor shall give at least seven days' notice to the Employer of the intended survey and the survey shall use the same grid as was used for the initial survey to demonstrate the completion and satisfaction of the work.

If any rectifications have to be made, the surveys shall be repeated until a complete record is obtained of the agreed and approved final levels. These shall then be plotted on plans and on the same sections as were done in the initial survey.

All surveys include all agreed Initial, Intermediate (if any) and Final Surveys shall be plotted to Chart Datum (CD) and submitted to the Engineer.

The datum for all depths and levels referred to in this Specification is Chart Datum. A Benchmark will be provided as a base for the Contractor's set out and control for the project.

Pre-Excavation Survey:

A Pre-Excavation Survey shall be carried out by Contractor which is approved and accepted by both the contractor and the Employer.

The Pre-Excavation Survey as accepted and approved by both the Engineer and Contractor shall form the basis for all volume calculations throughout the execution of the Works.

The pre-Excavation survey shall constitute a HOLD POINT on the commencement of the Works.

4.13.3 Clearance Surveys (or Post Excavation Survey)

The Clearance Survey shall be carried out by Contractor which is accepted and approved by both contractor and the Employer over the same area as the Pre-Excavation Survey with closer spacing.

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4.14 DELETED

4.15 DELETED

4.16 DELETED

4.17 ENVIRONMENTAL MONITORING

Contractor shall set out monitoring procedures in the EMP to monitor the compliance of the Contractor's operations with the Contractor's forecasts.

4.18 WASTE MINIMISATION

The Contractor's is required to put into practice a philosophy for waste minimisation to reduce, reuse, recycle and recover as much waste material or refuse as is practical. Waste minimisation and segregation shall be exercised during mobilisation, installation, execution and demobilisation phases of the Works.

The Contractor shall endeavour to minimise waste materials such as equipment consumables, packaging and the like. All scrap generated during construction shall be segregated into components such as glass, paper products, aluminium, steel, rubber, insulation materials, plastics, steel, wood and the like.

4.19 PROJECT SPECIFIC ENVIRONMENTAL REQUIREMENTS

The Contractor is required to comply with the project specific requirements as set out at Appendix F and as may be amended by Government directive from time to time throughout the execution of the Works.

4.20 OIL SPILL MANAGEMENT

There are three main components of oil spill management at Port of Pipavav. These are:

a. vessel bunkering procedures;

b. Port Oil Spill Contingency Plan (OSCP);

c. Contractor's vessel procedures.

Fuel bunkering of major Excavation spreads will only be if approved by the Harbourmaster, for vessels, which have an approved OSCP and on-board oil spill clean-up equipment. The Contractor is to comply with the Port of Pipavav oil spill response procedures and is required to enforce procedures and provide workforce training.

Bunkering of ancillary vessels in Port of Pipavav waters may be permitted subject to appropriate work method statements and procedures being in place.

4.21 OIL SPILL CONTINGENCY PLAN

It is a government requirement that all ports have an OSCP that has been approved by the Indian Chapter of the Committee for Combating Oil Pollution at Sea. The Port of Pipavav has a set of emergency procedures which incorporates the OSCP.

The Port of Pipavav OSCP is designed to increase the resources of manpower and materials by linking other emergency response services with the Employer's own services.

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It is the responsibility of the Harbour Master to assess the extent of any spill and to determine a course of action to combat the spill. The Contractor is required by the Employer to participate in induction training, which covers the emergency response procedures required by the Port of Pipavav.

Every oil spill or potential oil spill must be immediately notified to the Harbour Master through Port communications.

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