



Model Curriculum

Technician - Prestress

SECTOR: Construction
SUB-SECTOR: Real Estate and Infrastructure Construction
OCCUPATION: Prestressing
REF ID: CON/Q0802
NSQF LEVEL: 4





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Technician – Prestress

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Technician – Prestress”, in the Construction Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Technician – Prestress		
Qualification Pack Name & Reference ID. ID	CON/Q0802		
Version No.	1.0	Version Update Date	23-08-2017
Pre-requisites to Training	Preferably 10 th standard 9 years site experience in same occupation for Non trained worker/ 3 years site experience as a certified Assistant Technician Prestress		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Fix anchorage and lay ducts for installing pre-stressing systems: Fix anchorage guide cones to the formwork shutters as per marking & lay sheathing ducts for pre-stressing work. • Lay pre-stressing tendons through anchorages and bearing plates: - Cut tendons as per marking & lay tendons through ducts and anchorages for pre stressing work. • Assist in stressing of tendons and monitor pressure grouting works: - Shift and fix stressing jacks to the tensions & monitor grout preparation and grouting works. • Work effectively in a team to deliver desired results at the workplace: - Interact, communicate & support effectively with co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task. • Plan and organize work to meet expected outcomes: - Prioritize work activities & organize desired resources prior to commencement of work to achieve desired results. • Work according to personal health, safety and environment protocol at construction site: - Importance of Health & Safety aspects & safety measures to be followed while working. 		

This course encompasses 6 out of 6 National Occupational Standards (NOS) of “Technician – Prestress” Qualification Pack issued by “Construction Skill Development Council of India”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction</p> <p>Theory Duration (08:00 hrs.)</p>	<p>Theory:</p> <ul style="list-style-type: none"> • Introduction to the Prestressing occupation and its importance. • Major responsibilities of technician – Prestress. • Role description/functions and tasks performed by technician – Prestress. • Expected personal attributes of Technician-Prestress • Brief description about course content, mode of learning and duration of course • Future possible progression and career development provisions for technician – Prestress. 	<p>Classroom Requirement</p> <ol style="list-style-type: none"> 1. Classroom of 30 students capacity 2. Black/White board 3. Projector/LED Monitor 4. Computer 5. Trade specific charts and other teaching aids
2	<p>Fix anchorage and lay ducts for installing pre-stressing systems</p> <p>Theory Duration (54:00 hrs.)</p> <p>Practical Duration (128:00 hrs.)</p> <p>Corresponding NOS Code :- CON/N0804</p>	<p>Theory:</p> <ul style="list-style-type: none"> • Basic mathematical calculations related to linear, areal, volumetric measurement and conversion of units • Application measuring instruments like measuring tapes, plumb bobs, spirit level etc. • Method of use of hand tools and tackles like hammer, nails, threads etc. • Method of Use of power tools such as power cutting machine, power drilling machine etc. and its operations. • Standard procedure of marking using appropriate marking tools. • concept of reinforcement steel works and factors related to the same Methodology of measuring, cutting and fixing foam sheets • Standard method of fixing sealants, tapes etc. to embedded stressing Components • Characteristics & functions of sheathing ducts and material used for making the same (steel/PVC etc.) and also maintenance and storage condition of the same as per specified norms of pre-stressing works. 	<p>Components required:</p> <ol style="list-style-type: none"> 1. Bearing plate 2. Tube unit 3. Wedges 4. Trumpet 5. Bearing cone 6. Strand coupler 7. Sheathing couplers 8. Jack Locking plate <p>Equipment required:</p> <ol style="list-style-type: none"> 1. Chain pulley arrangement <p>Apparatus & instruments:</p> <ol style="list-style-type: none"> 1. De-coiling setup <p>Hand/ Power tools:</p> <ol style="list-style-type: none"> 1. Spanner 2. Power cutting machine. 3. Power drilling machine <p>Measuring tools:</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Physical condition to be maintained for laying of sheathing works & fixing duct supports as per approved methodology • Method of locking supports at their position using appropriate means of locking • Standard method of laying ducts and their joining technique and positioning of duct supports with respect to duct joints and other embedded parts • standard method of joining ducts and use of approved joining materials • application of sealant to the joints <p><u>Practical:</u></p> <ul style="list-style-type: none"> • Carryout measurements to mark location of inserts on the formwork shutters or components using appropriate marking tools/ paints • Demonstrate cutting of opening in the shutter panels by using power cutting tools and make wooden templates as pockets as per drawing within dimensional tolerance limit for fixing guide cones • Check <ul style="list-style-type: none"> ✓ Shape of reinforcement bars, ✓ Centre to centre distance, ✓ Covers, ✓ Tying of bars <p>at the location of fixing anchorages in reference to applicable drawing</p> <ul style="list-style-type: none"> • Carryout fixing of pockets, anchorage guide cones, inserts to the formwork shutters as per marking by using suitable hand tools • Carry out fixing of foam sheets, stoppers to the inserts for making pockets as per applicability • Carryout checking of duct laying location for completion of preparatory works (reinforcement / shuttering works, cleaning etc.) prior to start placing sheathing ducts • Carryout placing of duct supports at specified interval with appropriate method 	<ol style="list-style-type: none"> 1. Measuring Tape 2. Steel scale 3. Stopwatch 4. Plumb bob 5. Sprit level <p><u>Material & consumables required:</u></p> <ol style="list-style-type: none"> 1. HT strands/ tendon 2. Sheathing pipes/ ducts 3. Marker pen 4. Line thread 5. Spongy 6. Binding wire 7. Self-adhesive tape <p><u>Safety instruments:</u></p> <ol style="list-style-type: none"> 1. Safety Helmets 2. Safety goggles 3. Hand gloves 4. Safety Shoes (Assorted size) 5. Ear Plug 6. Nose mask 7. Face mask 8. Board of Safety instructions

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Practice locking of supports by tying with reinforcement or by suitable means as per approved method Demonstrate tying of sheathing duct to the supports as per approved method Demonstrate joining of the duct terminals to the anchorage guide cones as per drawing/ specification Connect sheathing ducts by screwing or sealant tapes as per applicability ensuring water tightness Apply appropriate sealant to the joint of duct and anchorage cone 	
3	<p>Lay pre-stressing tendons through anchorages and bearing plates</p> <p>Theory Duration (55:00 hrs.) Practical Duration (128:00 hrs.)</p> <p>Corresponding NOS Code :- CON/N0805</p>	<p>Theory:</p> <ul style="list-style-type: none"> Physical condition of the tendons to be used for laying pre-stressing tendons through anchorages and bearing plate Application of power cutting tools and its operation Application of measuring instruments like measuring tapes, plumb bobs, spirit level etc. Dos and Don'ts regarding handling/ storing of pre-stressing tendons as per manufacturer's guidelines standard method of uncoiling and expanding tendons for cutting Essential parameters to be checked and maintained in pre-stressing tendons before and after cutting tendon such as condition of edge, cutting length etc. Standard/ approved method of placing/laying tendons through the sheathing ducts and anchorages checks are to be carried out to the sheathing ducts to ensure intactness of the same, such as check for damage, rupture, corrosion etc. Methodology of fixing grips to the tendons and tighten the same also know how to form bulbs to the steel tendons using appropriate tools/ machine 	<p>Components required:</p> <ol style="list-style-type: none"> Bearing plate Tube unit Wedges Trumpet Bearing cone Strand coupler Jack Locking plate <p>Equipment required:</p> <ol style="list-style-type: none"> Hydraulic jack Hydraulic pump Chain pulley arrangement <p>Hand/ Power tools:</p> <ol style="list-style-type: none"> Spanner Power cutting machine Power drilling machine <p>Measuring tools:</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Methodology of locking/ fixing of tendons at blind end anchorage as per specification/ approved method • know reason behind proper closing of ducts and materials to be used for closing <p><u>Practical:</u></p> <ul style="list-style-type: none"> • Check for corrosion and any visible deviation/distortion in the exposed tendons. • Monitor uncoiling and expansion of tendons • place one or multiple tendons together and fix them at their appropriate location • Carry out necessary measurements and mark required cutting lengths using appropriate marking tools • Cut tendons using abrasive cutting tools and ensure the smooth edge of tendons after completion of cutting. • Demonstrate pull and push of tendons through sheathing ducts & ensure that there is no harm caused to sheathing ducts during insertion and passing of tendons through the same • Demonstrate placing of specified number of tendons of specified grade through each duct • Carry out threading of tendons using appropriate threading tools as and when necessary • Demonstrate insertion of the 'bearing ring' over the 'bearing plate' at both ends of the tendon and press to fully to sit properly over the 'guide ring' • Carryout insertion of the 'pressure plate' as per the orientation of the bearing plate hole • Carryout mounting of steel grips to the bearing plate holes and tighten them in prior to start tensioning • Prepare bulbs in tendon terminals using appropriate tools, in case of laying in blind (dead) end anchorage zone • Demonstrate locking of tendons by putting sleeves and distribution plates in case of blind end anchorage (if applicable) • Demonstrate closing all the opening in ducts by using suitable/ approved material as per instruction 	<ol style="list-style-type: none"> 1. Measuring Tape 2. Steel scale 3. Stopwatch 4. Plumb bob 5. Sprit level <p><u>Material & consumables required:</u></p> <ol style="list-style-type: none"> 1. HT strands/ tendon 2. Sheathing pipes/ ducts 3. Marker pen 4. Line thread 5. Binding wire 6. Hydraulic oil 7. Petrol <p><u>Safety instruments:</u></p> <ol style="list-style-type: none"> 1. Safety Helmets 2. Safety goggles 3. Hand gloves 4. Safety Shoes (Assorted size) 5. Ear Plug 6. Nose mask 7. Face mask 8. Board of Safety instructions

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4	<p>Assist in stressing of tendons and monitor pressure grouting works</p> <p>Theory Duration (48:00 hrs.) Practical Duration (118:00 hrs.)</p> <p>Corresponding NOS Code :- CON/N0806</p>	<p>Theory</p> <ul style="list-style-type: none"> • Requirement of safety control measures at pre-stressing site as per work plan • procedure of placing tendons through the stressing jacks • Concept of calibration of pressure gauges used in grouting pump • Function of tensioning Equipments and their working mechanism, such as hydraulic jacks, power packs etc. • Standard method of handling tensioning Equipments • Methodology to connect power pack, hydraulic jack and hose as per standard practice/ applicable guidelines • Standard procedure of handling grouting materials used in pre-stressing works and their specified storing procedure • Visual checks carried out for grouting materials and grouting pumps to determine their usability • Condition of grouting vent to be kept and materials to be used for closing of the same • Desired mix proportion of grouting mix • Desired gauge pressure to be maintained while carrying out grouting of the sheathing/ tendon ducts <p>Practical:</p> <ul style="list-style-type: none"> • Check stressing Equipments(jacks/ power packs) visually for any visible damage or leakage prior to shifting • Demonstrate shifting of stressing jacks, power packs and their accessories to the appropriate location of stressing • Carryout placing of tendons through the jack as per instruction • Carryout locking of the tendons by using master grips prior to start stressing • Carryout connection of power pack, hydraulic jack through hose • Carryout connection of pre-stressing jacks and power pack units to electrical outlets • Check grouting material visually to ensure their usability 	<p>Components required:</p> <ol style="list-style-type: none"> 1. Bearing plate 2. Tube unit 3. Wedges 4. Trumpet 5. Bearing cone 6. Strand coupler 7. Sheathing couplers 8. Jack Locking plate <p>Equipment required:</p> <ol style="list-style-type: none"> 1. Hydraulic jack 2. Hydraulic pump 3. Grouting pump 4. Chain pulley arrangement <p>Apparatus & instruments:</p> <p>Cube mould</p> <ol style="list-style-type: none"> 1. Hydrometer 2. Flow cone apparatus 3. De-coiling setup <p>Hand/ Power tools:</p> <ol style="list-style-type: none"> 1. Spanner 2. Power cutting machine 3. Power drilling machine <p>Measuring tools:</p> <ol style="list-style-type: none"> 1. Measuring Tape 2. Steel scale 3. Thermometer

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Able to visual inspection to grouting pump visually damages and dislocation/ breakage of accessories • Monitor fixing of grouting nozzles as per specification • check connections of grouting nozzle and grouting hose for adequate tightness & ensure grouting vent are closed appropriately using approved material against ingress of dust moisture etc • Ensure that the grouting materials are mixed in appropriate proportion • Monitor grout is applied in specified pressure by using appropriate grouting pump • Check pressure gauge and monitor pressure of grouting • Erect signage and barricading to the pre-stressing points to restrict entry of unauthorized person or vehicle 	<ol style="list-style-type: none"> 4. Stopwatch 5. Plumb bob 6. Spirit level <p><u>Material & consumables required:</u></p> <ol style="list-style-type: none"> 1. Cement, 2. Water 3. HT strands/ tendon 4. Sheathing pipes/ ducts 5. Grout vent 6. Grout cap 7. Hosepipes 8. Marker pen 9. Line thread 10. Spongy 11. Binding wire 12. Hydraulic oil 13. Self-adhesive tape 14. Petrol 15. Admixture <p><u>Safety instruments:</u></p> <ol style="list-style-type: none"> 1. Safety Helmets 2. Safety goggles 3. Hand gloves 4. Safety Shoes (Assorted size) 5. Ear Plug 6. Nose mask 7. Face mask 8. Board of Safety instructions
5	<p>Work effectively in a team to deliver desired results at the workplace</p> <p>Theory Duration (06:00 hrs.)</p>	<p>Theory:</p> <ul style="list-style-type: none"> • Oral and written communication skills with respect to work, interaction with seniors & coworkers, during handling & storing of materials/components, placing stressing assembly, stressing, grouting. • Read & understand pre-stressing work methods & instruction by seniors and consulting with seniors as and when required. 	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Practical Duration (17:00 hrs.)</p> <p>Corresponding NOS Code :- CON/N8001</p>	<ul style="list-style-type: none"> Maintain expected timelines, safety precautions etc. at the construction project site. Importance of team work Risks of failure in team work <p>Practical:</p> <p>The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar with pre stressing working condition</p> <ul style="list-style-type: none"> Demonstrate handling the problems effectively and report timely if required to immediate senior technician with clarity. Selection of materials, hand/ power tools or devices for defined purpose Demonstrate effective different types of communication with team members Demonstrate handling/ carrying/ using tools and equipment/ apparatus/ components/ instruments in laboratory & site works 	
6	<p>Plan and organize work to meet expected outcomes</p> <p>Theory Duration (04:00 hrs.)</p> <p>Practical Duration (11:00 hrs.)</p> <p>Corresponding NOS Code :- CON/N8002</p>	<p>Theory:</p> <ul style="list-style-type: none"> Follow the basic concept of productivity, sequence of working and implementation of safety and organizational norms while working Optimization of resources To plan activities within defined scope of work Upkeep, storing and stacking methods of tools/materials/components used for domain specific works Requisition of resources, reporting for requirement of resources orally and in written to concerned authority Importance of housekeeping <p>Practical:</p> <p>The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar pre stressing working condition</p> <ol style="list-style-type: none"> Understand the target & set guidelines for completion of stressing/grouting work 	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		2. Prioritize all works/ activities in sequence 3. Provide guidance to the subordinates to obtain desired outcome 4. Select and employ correct tools, tackles, components and equipment for completion of desired pre stressing work & complete the work with allocated resources in an optimum manner 5. Plan housekeeping activities prior to and post completion of work list and arrange required resources prior to commencement of pre stressing work	
7	<p>Work according to personal health, safety and environment protocol at construction site</p> <p>Theory Duration (06:00 hrs.) Practical Duration (17:00 hrs.)</p> <p>Corresponding NOS Code :- CON/N9001</p>	<p>Theory:</p> <ul style="list-style-type: none"> Familiar with possible types of hazards involved in laboratory & site in pre-stressing work Emergency safety control measures and actions to be taken under emergency situation Identification of unsafe act and unsafe condition concept of :- <ul style="list-style-type: none"> ✓ First Aid process ✓ Use of fire extinguisher ✓ Classification of fires and fire extinguisher Reporting procedure/process to the concerned authority in emergency situations Safe and standard procedure of handling, storing and stacking material safe disposal of waste, type of waste and their disposal Basic ergonomic principles while handling materials. <p>Practical:</p> <p>The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar with pre-stressing working condition.</p> <ul style="list-style-type: none"> Selection of PPEs and use them appropriately as per handling, storing, stacking and shifting of material, tools and Equipments Install and apply properly all safety equipment as instructed & all follow safety 	<p>Safety instruments:</p> <ol style="list-style-type: none"> Safety Helmets Safety goggles Hand gloves Safety Shoes (Assorted size) Ear Plug Nose mask Face mask Board of Safety instructions

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>protocol and practices as laid down by site EHS department</p> <ul style="list-style-type: none"> Report any hazards, risks or breaches in site safety to the appropriate authority. Demonstration of locations, situations/ circumstances, malpractices which can be hazardous for electrical works Describe use of fire extinguisher and standard practice of storing & stacking firefighting equipment's/ materials at work locations Apply ergonomic principles wherever required 	
	<p>Total Duration</p> <p>Theory Duration 181:00 Hrs.</p> <p>Practical Duration 419:00 Hrs.</p>	<p>Classroom Requirement (for 30 students) Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts and other teaching aids</p> <p>Components required: Bearing plate, Tube unit, Wedges, Trumpet, Bearing cone, Strand coupler, Sheathing couplers</p> <p>Equipment required: Hydraulic jack, Hydraulic pump, Grouting pump, Chain pulley arrangement</p> <p>Apparatus & instruments: Cube mould, Hydrometer, Flow cone apparatus, De-coiling setup</p> <p>Hand/ Power tools: Spanner, Power cutting machine, Power drilling machine</p> <p>Measuring tools: Measuring Tape, Steel scale, Thermometer, Stopwatch, Plumb bob, Sprit level</p> <p>Material & consumables required: Cement, Water, HT strands/ tendon, Sheathing pipes/ ducts, Grout vent, Grout cap, Hosepipes, Marker pen, Line thread, Spongy, Binding wire, Hydraulic oil, Self-adhesive tape, Petrol, Admixture</p> <p>Safety instruments: Safety Helmets, Safety goggles, Hand gloves, Safety Shoes (Assorted size), Ear Plug, Nose mask, Face mask, Board of Safety instructions</p>	

Grand Total Course Duration: **600 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by Construction Skill Development Council of India)

Trainer Prerequisites for Job role: “Technician - Prestress” mapped to Qualification Pack: “CON/Q0802, v1.0”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “CON/Q0802”.
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field
3	Minimum Educational Qualifications	ITI/12th
4a	Domain Certification	Trainer/Assessor-50% in each NOS & 80% overall, Lead trainer/ Lead Assessors- 50% in each NOS and overall 90%
4b	Platform Certification	Trainer/Assessor-80% in each NOS and Lead trainer/Lead Assessors-90% in each NOS
5	Experience	<ul style="list-style-type: none"> i. Technical Degree holder with minimum three years of Field experience and preferably two years of teaching experience or, ii. In case of a Diploma Holder five years of field experience and preferably two years of teaching experience or, iii. In case of ITI/12th pass minimum eight years of field experience and preferably two years of teaching Experience.



CRITERIA FOR ASSESSMENT OF TRAINEES

<u>Job Role</u>	Technician - Prestress
<u>Qualification Pack</u>	CON/Q0802
<u>Sector Skill Council</u>	Construction

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on assessment criteria.
5. The passing percentage for each QP will be 70%. To pass the Qualification Pack, every trainee should score a minimum of 70% individually in each NOS.
6. The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome.
7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
8. After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
9. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified timeframe set by SSC.
10. Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

Assessment outcomes	Assessment Criteria for outcomes	Total Mark	Marks Allocation		
			Out Of	Theory	Skills Practical
CON/N0804: Fix anchorage and lay ducts for installing pre-stressing systems	PC1. carry out necessary measurements to mark location of inserts on the formwork shutters	100	4	1	3
	PC2. mark location of the inserts, embedded components using appropriate marking tools/ paints		4	1	3
	PC3. cut opening in the shutter panels by using power cutting tools		5	2	3
	PC4. make wooden templates as pockets as per drawing within dimensional tolerance limit for fixing guide cones		5	2	3
	PC5. cut holes/ grooves to the templates as per guide cone's dimension wooden appropriate hand and power tools		5	1.5	3.5
	PC6. check shape of reinforcement bars, centre to centre distance, covers, tying of bars at the location of fixing anchorages in reference to applicable drawing		5	1.5	3.5
	PC7. fix pockets, anchorage guide cones, inserts to the formwork shutters as per marking by using suitable hand tools		5	1.5	3.5
	PC8. fix foam sheets, stoppers to the inserts for making pockets as per applicability		5	1.5	3.5
	PC9. carry out suitable adjustments to the anchorage cones to maintain its alignment and level as per drawing		5	1.5	3.5
	PC10. ensure water tightness and leakage through the embedded components		4	1	3
	PC11. carry out measurement of distance among multiple anchorage cones to cross check the locations as per drawing		5	1.5	3.5
	PC12. use appropriate PPEs while working at height/ night		4	1	3
	PC13. check sheathing ducts visually for diameter, corrosion, distortion and cracks prior to laying		5	1.5	3.5
	PC14. check duct laying location for completion of preparatory works (reinforcement/ shuttering works, cleaning etc.) prior to start placing sheathing ducts		5	1.5	3.5
	PC15. place tendon/ duct supports at specified interval		5	1.5	3.5
	PC16. lock supports by tying with reinforcement or by suitable means as per approved method		5	1.5	3.5
	PC17. ensure supports are rigidly fixed and secured against movements		5	1.5	3.5
	PC18. lay ducts through the supports and join the duct terminals to the anchorage guide cones as per drawing/ specification		5	1.5	3.5
	PC19. tie sheathing ducts to the supports ensuring adequate tightness and rigidity		5	1.5	3.5
	PC20. connect sheathing ducts by screwing or sealant tapes as per applicability ensuring water tightness		5	1.5	3.5
	PC21. apply appropriate sealant to the joint of duct and anchorage cone		4	1	3

		Total	100	30	70
CON/N0805: Lay pre-stressing tendons through anchorages and bearing plates	PC1. check exposed tendons for corrosion and any visible deviation	100	5	1.5	3.5
	PC2. monitor uncoiling and expansion of tendons		5	1.5	3.5
	PC3. place one or multiple tendons together and fix them at appropriate location		5	1.5	3.5
	PC4. carry out necessary measurements and mark required cutting lengths using appropriate marking tools		8	2.5	5.5
	PC5. cut tendons using abrasive cutting tools		5	1.5	3.5
	PC6. ensure smooth edge of tendons after completion of cutting		5	1.5	3.5
	PC7. use appropriate PPEs while unwinding coils and carry out cutting works		5	1.5	3.5
	PC8. pull and push tendons through sheathing ducts		5	1.5	3.5
	PC9. ensure no harm is caused to sheathing ducts during insertion and passing of tendons through the same		5	1.5	3.5
	PC10. place specified number of tendons of specified grade through each duct		6	1.5	4.5
	PC11. carry out threading of tendons using appropriate threading tools as and when necessary		8	2.5	5.5
	PC12. pass the tendons through anchorage cones and bearing plates and expose them out of the ducts		5	1.5	3.5
	PC13. insert the 'Bearing Ring' over the 'Bearing Plate' at both ends of the Tendon and press to fully to sit properly over the 'Guide Ring'		8	2.5	5.5
	PC14. insert the 'Pressure Plate' as per the orientation of the Bearing Plate Hole		5	1.5	3.5
	PC15. mount steel grips to the bearing plate holes and tighten them in prior to start tensioning		5	1.5	3.5
	PC16. prepare bulbs in tendon terminals using appropriate tools, in case of laying in blind (dead) end anchorage zone		5	1.5	3.5
	PC17. lock tendons by putting swaged sleeves and distribution plates in case of blind end anchorage (if applicable)		5	1.5	3.5
	PC18. close all the opening in ducts by using suitable/ approved material as per instruction		5	1.5	3.5
	Total	100	30	70	
CON/N 0806: Assist in stressing of tendons and monitor pressure grouting works	PC1. check stressing equipments(jacks/ power packs) visually for any visible damage or leakage prior to shifting	100	6	1	5
	PC2. shift stressing jacks, power packs and their accessories to the appropriate location of stressing		6	1	5
	PC3. erect signage and barricading to the pre-stressing points to restrict entry of unauthorized person or vehicle		6	2	4
	PC4. pass tendons through the jack as per instruction		6	2	4

	PC5. lock the tendons by using master grips prior to start stressing		6	2	4
	PC6. connect power pack, hydraulic jack through hose		6	2	4
	PC7. connect pre-stressing jacks and power pack units to electrical outlets		8	2	6
	PC8. monitor storing and stacking of grouting materials from store to work site		6	2	4
	PC9. check grouting material visually to ensure their usability		6	2	4
	PC10. check grouting pump visually for visible damages and dislocation/ breakage of accessories		6	2	4
	PC11. monitor fixing of grouting nozzles as per specification		6	2	4
	PC12. check connections of grouting nozzle and grouting hose for adequate tightness		6	2	4
	PC13. check and ensure grouting vent are closed appropriately using approved material against ingress of dust, moisture etc.		6	2	4
	PC14. ensure grouting materials are mixed in appropriate proportion		6	2	4
	PC15. monitor grout is applied in specified pressure by using appropriate grouting pump		8	2	6
	PC16. check pressure gauge and monitor pressure of grouting		6	2	4
		Total	100	30	70
CON/N8001: Work effectively in a team to deliver desired results at the workplace	PC1. pass on work related information/ requirement clearly to the team members	100	10	3	7
	PC2. inform co-workers and superiors about any kind of deviations from work		5	1.5	3.5
	PC3. address the problems effectively and report if required to immediate supervisor appropriately		5	1.5	3.5
	PC4. receive instructions clearly from superiors and respond effectively on same		5	1.5	3.5
	PC5. communicate to team members/subordinates for appropriate work technique and method		5	1.5	3.5
	PC6. seek clarification and advice as per requirement and applicability		10	3	7
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams		30	9	21
	PC8. work together with co-workers in a synchronized manner		30	9	21
	Total	100	30	70	
CON/N8002: Plan and organize work to meet expected outcomes	PC1. understand clearly the targets and timelines set by superiors	100	10	3	7
	PC2. plan activities as per schedule and sequence		10	3	7
	PC3. provide guidance to the subordinates to obtain desired outcome		10	3	7
	PC4. plan housekeeping activities prior to and post completion of work		10	3	7
	PC5. list and arrange required resources prior to commencement of work		10	3	7
	PC6. select and employ correct tools, tackles and equipment for completion of desired work		10	3	7

	PC7. complete the work with allocated resources		10	3	7
	PC8. engage allocated manpower in an appropriate manner		10	3	7
	PC9. use resources in an optimum manner to avoid any unnecessary wastage		5	1.5	3.5
	PC10. employ tools, tackles and equipment with care to avoid damage to the same		5	1.5	3.5
	PC11. organize work output, materials used, tools and tackles deployed,		5	1.5	3.5
	PC12. processes adopted to be in line with the specified standards and instructions		5	1.5	3.5
		Total	100	30	70
CON/N9001: Work according to personal health, safety and environment protocol at construction site	PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority	100	5	1.5	3.5
	PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities		5	1.5	3.5
	PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable		10	3	7
	PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site		5	1.5	3.5
	PC5. identify near miss , unsafe condition and unsafe act		5	1.5	3.5
	PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: • Head Protection (Helmets) • Ear protection • Fall Protection • Foot Protection • Face and Eye Protection • Hand and Body Protection • Respiratory Protection (if required)		10	3	7
	PC7. handle all required tools, tackles , materials & equipment safely		5	1.5	3.5
	PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines		5	1.5	3.5
	PC9. install and apply properly all safety equipment as instructed		15	4.5	10.5
	PC10. follow safety protocol and practices as laid down by site EHS department		15	4.5	10.5
	PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes		10	3	7
	PC12. apply ergonomic principles wherever required		10	3	7
	Total	100	30	70	