

Part C3:

Scope of work

1 DESCRIPTION OF THE WORKS

1.1 Employers objectives

Existing timber turnout sleepers and cracked concrete sleepers on existing turnouts in track countrywide are to be replaced with concrete universal sleepers.

1.2 Overview of the works

The Contractor is required to correct the turnout geometry of each turnout to within the A-standard prior to replacing the turnout sleepers with universal concrete turnout sleepers. The sleepers are to be installed in accordance to the Universal Sleepers Installation Procedure and without damaging the formation. As a rule this all work is to be done during Between-Trains-Occupation.

1.3 Extent of the works

The Contractor would be required submit a timeous formal report to each respective Maintenance Managers (Track) based on a pre-inspection of each turnout describing the detail of preparation work to be done by Transnet Freight Rail (TFR) prior to the sleeper replacement starting on each turnout. The ballast of each turnout must be screened for the entire complete length plus 20m on either side (e.g. 1:12 turnout = 32m+20m+20m=72m) of each turnout if required. Ballast off-loading to replenish screened out ballast spoil as well as trimming, lifting aligning and tamping of each completed turnout shall be included. In the event of a shortage of rail wagons, the contractor may be called upon the transport universal concrete sleepers, pads and infra bolts by road from suppliers to point of installation.

1.4 Location of the works

Turnouts on which sleepers are to be replaced are in track and spread out on all Transnet Freight Rail (TFR) or SARCC owned or operated lines around the country. The Contractor will be required to work on site at any place within the contract area. This Contract will focus mainly on the depot areas of Empangeni, Durban, Ladysmith, Heidelberg, Isando Central, Isando East and Krugersdorp but may be required to work also on any other depot area. Some turnouts may be situated on embankments or cuttings or between multiple railway lines or with limited road access. The detail description and locations of all turnouts to be worked on are reflected in Annexure 1. This represents the total workload of turnouts for the contract.

1.5 Temporary works

Since sleeper replacement on turnouts must normally be done during Between-Trains-Occupations some temporary works are required to enable trains to pass over the turnouts safely while the work is under way and before it is completed. The nature of these temporary works must be such that it does not present a physical obstruction for the trains or result in delays for trains that are required to pass over the work site during replacement of sleepers. It shall also be allowed to remain in track only while the contractor's team under suitable supervision is physically present on site. At the end of each occupation on completion of the work it shall be completely removed before the site will be accepted by Transnet Freight Rail (TFR).

2 ENGINEERING

2.1 Design matrix and activity matrix

The Contractor will only be allowed to use Transnet Freight Rail (TFR) pre-approved designed universal sleepers, infrabolts, pads, epoxy and anti corrosive lubricant.

2.2 Employers design.

Provided that the manufacturing quality of materials and installation quality of the replacement of sleepers for each turnout have been met by the Contractor, the responsibility for the suitability of the design for these products shall rest with Transnet Freight Rail (TFR).

2.3 Drawings

The Contractor shall construct all turnout sleeper replacements in accordance with the Transnet Freight Rail (TFR) Rule Books for Building of Turnouts (yellow books) to within the A-standard for track work.

2.4 Design procedures

If the contractor would opt to secure alternative designs of the materials, then all designs shall be based on Transnet Freight Rail (TFR) prescribed design criteria and specifications. All new designs shall first be subjected to extensive laboratory and in track testing before approval. This process normally requires an extended period of time.

3 PROCUREMENT

3.1 Preferential procurement procedures

3.1.1 Universal sleepers, infrabolts may either be supplied via Transnet Freight Rail (TFR) contracts with approved suppliers or directly by the Contractor from the approved suppliers. In the former case the responsibility for manufacturing quality shall be with Transnet Freight Rail (TFR). If the latter case apply the Contractor shall be responsible for manufacturing quality. The Contractor shall do a pre-inspection of all turnouts for purpose of planning each project. The HDPE pads, epoxy and anti corrosive lubricant shall in all cases be supplied by the contractor as part of the consumables for completion of the works.

3.2 Procurement process

- 3.2.1 A pre-inspection shall be performed by the contractor for each turnout for purpose of pre-planning each project. It shall include for determining the exact material details required for replacement of the turnout sleepers as well as determining other preparation aspects to be attended to by Transnet Freight Rail (TFR) for the successful completion of each project. Recording all relevant information from the pre-inspection on the set evaluation form as per ANNEXURE 3 and making all relevant info available to Transnet Freight Rail (TFR) shall complete the pre-inspection.
- 3.2.2 The requirement for sleepers, bolts, HDPE pads and Epoxy thus determined, shall be used by the Contractor to procure all materials for the proper completion of each project either by ordering it directly from suppliers or to order the universal sleepers and infra bolts against Transnet Freight Rail (TFR) supply contracts. On request by the Contractor Transnet Freight Rail (TFR) will make available a Free-on-Rail facility for the transport of these materials and equipment to the station nearest to point of installation
- 3.2.3 The requirements for preparation by Transnet Freight Rail (TFR) shall be made available to the Maintenance Manager (Track), copy to the Technical Officer, in writing to enable the depot to timeously complete all preparations before date of installation. In the event of Transnet Freight Rail (TFR) supply contracts beings used then the Transnet Freight Rail (TFR) depot must place the orders on the SAP system. All co-ordination, expediting and follow-up work to ensure correct and timeous delivery of material to installation sites shall be the responsibility of the contractor.

3.3 Subcontracting

3.3.1 Subcontracting procedures

No part of the contract may be sub contracted without written approval from Transnet Freight Rail (TFR).

4 CONSTRUCTION

4.1 Works Specification

4.1.1 Generic Specifications:

- 4.1.1.1 E10: Specification for Railway Trackwork.
- 4.1.1.2 E10/1: Specification for laying of rails
- 4.1.1.3 E10/2: Specification for laying of sleepers
- 4.1.1.4 E10/3: Specification for ballast cleaning
- 4.1.1.5 E10/4: Specification for ballasting & tamping
- 4.1.1.6 E10/6: Specification for building and replacement of sets
- 4.1.1.7 E10/9: Specification for slewing and alignment
- 4.1.1.8 E10/10: Specification for drain cleaning
- 4.1.1.9 E4B (November 1996): Minimum Communal Health Requirements in areas outside the jurisdiction of Local Authority

- 4.1.1.10 E4E (January 2004) – Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act
- 4.1.1.11 Addendum No 1 to Specification E7/1 (Jul1998)
- 4.1.1.12 Specification E7/1 (Jul 1998): Specification for works on, over, under or adjacent to railway lines and near high voltage
- 4.1.1.13 Manual for Track Maintenance (2000)
- 4.1.1.14 Track Welding Manual (2007)
- 4.1.2 Particular Specifications
 - 4.1.2.1 Project Specification
- 4.2 Plant and Materials
 - 4.2.1 Contrary to practice in previous and existing contracts, TFR will no longer make available rail wagons for general use by the Contractor for the duration of the contract. Subject to availability some wagons may still be provided to be modified where such wagon will form an inherent part of the machine process for on-track machines. However wagons required for general transporting the contractor's accommodation, stores, plant and equipment, vehicles etc will no longer be available from TFR. The contractor will therefore be required for this contract to provide his own means of transport for all of his accommodation, stores, plant and equipment, vehicles etc necessary for the execution of the contract. Such means may be rail wagons belonging to the contractor. If the contractor provides his own wagons then all the TFR VIT regulations and testing as before will still be applicable to all of the contractor's wagons. The maintenance of the wagons in every respect will be the contractor's responsibility and for his own account. These wagons will be moved "free on rail" for the contractor in accordance with the requirements and processes applicable to normal train traffic. Transnet Freight Rail (TFR) rail traffic is very unpredictable at this stage and no claims regarding delays or standing time resulting from the use of this wagons will be entertained by Transnet Freight Rail (TFR).
 - 4.2.2 The preferred way of material supply shall be via Transnet Freight Rail (TFR) contracts with suppliers. However the supply of infra bolts and universal sleepers may be done either via the contractor buying directly from suppliers or by using Transnet Freight Rail (TFR) contracts with suppliers for this purpose. Depending on the case either the Contractor-Supply-and-Fit or Transnet Freight Rail (TFR)-Supply-and-Contractor-Fit rates will apply.
 - 4.2.3 Transnet Freight Rail (TFR) shall supply and control all flags and detonators for protection of the work sites.
 - 4.2.4 Transnet Freight Rail (TFR) shall provide Free on Rail (FOR) rail transport for the supply of the blank universal sleepers, infrabolts from suppliers to the station nearest to point of installation in accordance with the Contractors programme.
 - 4.2.5 The Contractor shall unload and transport the new sleepers and infrabolts to point of installation and perform the complete process of replacement which shall include boxing out of ballast, loosen existing fastenings, removing the existing sleepers, rectifying geometry, measuring fastening positions, coring for infra-bolts and install the new sleepers and fasten the rails to the sleepers, all ballast work, lift, align, tamp to the A-standard and restore ballast profile to correct standard and remove the released material from section to be stacked at a designated site or loaded into DZ type trucks at nearest station.

4.3 Construction equipment

- 4.3.1 All tools/equipment, perway small plant, earthworks plant, cranes, lifting equipment and vehicles of every description necessary for the execution of the works shall be supplied by the contractor complete with fuel, spares, maintenance, competent operators and legally compliant with safety legislation.
- 4.3.2 All joggle plates and clamps necessary for the work shall be supplied, fitted, removed, controlled and transported between points of usage by the contractor.
- 4.3.3 Complete sets consisting of three two-way radios for each site complete with battery chargers and spare batteries shall be supplied by the contractor for use in the protection process between the work site and the flagmen posted +1500m from the worksite.
- 4.3.4 The contractor shall supply fit, remove, control and transport between points of usage all jumper cables required for the safe working on each site.
- 4.3.5 The contractor shall supply lighting equipment to provide light of a sufficient intensity and spread to light up the whole of the worksite in order to allow work to proceed safely and efficiently after sun set and before sunrise.
- 4.3.6 The contractor shall provide a cellphone with Talk 500 or equivalent airtime to each worksite for the exclusive use of Transnet Freight Rail (TFR) for logistical and operational arrangements. Should the Talk 500 be exceeded during any month Transnet Freight Rail (TFR) will reimburse the contractor subject to authentic prove been submitted by the contractor. Should the phone be damaged or lost the contractor shall immediately replace it and invoice Transnet Freight Rail (TFR) for the cost.

4.4 Existing services

- 4.4.1 The contractor shall take note of all OHTE equipment, red and other electrical bonds on the worksite and shall not interfere, damage or work on them unless under direct supervision of a designated and competent Transnet Freight Rail (TFR) electrical officer.
- 4.4.2 The contractor shall take note of all signalling equipment on the work site e.g. signals, signal cables, blockjoints, signal bonds, axle counters, hotbox detectors etc and shall not interfere, damage or work on them unless under direct supervision of designated and competent Transnet Freight Rail (TFR) signal technicians.
- 4.4.3 Before doing excavation work anywhere on a work site the contractor shall be sure to consult on the presence of existing electrical/signal/telekom cables, water pipes or other services with the Maintenance Manager (Track). Only on his specific and written authorization shall any excavation work be carried out.
- 4.4.4 In the event of contact or damage to any overhead or under ground cable on the worksite, work shall be stopped and the worksite evacuated. The Electrical Officer Contracts shall be notified immediately. Only subject to him or other competent Transnet Freight Rail (TFR) Electrical officer certifying the worksite safe, shall work be allowed to proceed again.

4.5 Site establishment

- 4.5.1 Subject only to the descretion of the Depot Engineer, areas within the railway reserve may be made available to the contractor for accommodation, offices/workshops or stores.

- 4.5.2 Where not allowed the contractor shall make his own arrangements elsewhere.
- 4.5.3 If the contractor is allowed by the Depot Engineer to utilize areas within railway reserve for his purposes of what ever nature, it shall be noted that normally electrical, water supply and sanitation will not be available. In such an instance the contractor shall be required to make his own provisions in order to comply with Environmental Health and Safety legislation. On vacating the site, the site shall be cleared up and re-instated to the acceptance of the Depot Engineer.
- 4.5.4 Security of the contractor's property, equipment, materials, vehicles and workforce shall at all times during the course of the contract be his sole responsibility. No claims will be entertained by Transnet Freight Rail (TFR) in this regard.
- 4.5.5 The contractor shall be required for each work site to have available for his work force suitable sanitation in accordance with the Act 85 Construction Regulations.
- 4.6 *Water for construction purposes*
- 4.6.1 Where existing water supply is available within the railway reserve and is deemed sufficient by the Depot Engineer to also supply the construction process, this supply may be made available to the contractor for use in the construction process. If not allowed by the Depot Engineer or where not available the contractor shall make his own arrangements to obtain suitable supplies.

5 MANAGEMENT

- 5.1 Management of works
- 5.1.1 The Transnet Freight Rail (TFR) E10 Specification for Track Work
- 5.1.2 Project Specification
- 5.1.3 SANS 1921-1-2004 Part 1
- 5.1.4 An initial works programme shall be submitted with the tender by the contractor detailing the exact location, detail of work, starting date and completion date. This programme shall be updated as regularly as needed, distributed to all role players and used at monthly project meetings to monitor progress.
- 5.1.5 All track work shall be completed to comply with the A-standard. Should the contractor observe conditions which may prohibit him from completing a project to the A-standard then he shall bring this timeously to the attention of the Maintenance Manager (Track) prior to starting work on a specific project. Unless the Maintenance Manager (Track) is prepared to make a concession the A-standard shall still apply and may the contractor then refuse to continue with the specific project if he deems it impossible to achieve the A-standard on final quality.
- 5.1.6 In the event that the sleeper supply and installation on the first 5 turnouts completed under the Contract by the Contractor does not meet with the Contract Specifications then work on further turnouts shall be halted by the Contractor until such time that quality problems on the first 5 (five) turnouts has been addressed to the satisfaction of the Project Manager. For the remainder of the Contract period and work the same condition shall apply to any 5 consecutive turnouts worked upon. During the remainder of the contract period this condition shall also apply to any subsequent 5 (five) turnouts.

- 5.1.7 A Site Instruction Book with triplicate pages shall be provided by the contractor. The format for written communication on site shall be the Site Instruction Book. One page shall be used for each day. Site Instructions shall be deemed to have been noted by the other party at the end of each work day. For this purpose the Site Instruction Book shall be signed-off by both Transnet Freight Rail (TFR) and the contractor at the end of each work day.
- 5.1.8 Monthly Project Meetings will be conducted to monitor progress and discuss contractual issues. These meetings shall be attended by all Depot Representatives and the contract's manager. A register will be kept of attendance and a minute of the proceedings will be recorded and distributed afterwards.
- 5.1.9 A Daily Diary Book with triplicate pages shall be provided by the contractor and be available on site at all times. The number of staff and plant on site for every day shall be recorded. The hours of actual work and the accurate amount of work measured per item as in the Schedule of Quantities completed for each day shall also be recorded and signed off by both Transnet Freight Rail (TFR) and the contractor at the end of each day. This shall be the source document for monthly payment certificates.
- 5.1.10 On some lines or for some yards of Transnet Freight Rail (TFR) the contractor's staff will be required to obtain permits from Transnet Freight Rail (TFR) before being allowed to work there. The permits will be issued free of charge.

5.2 Health and safety

- 5.2.1 The contractor shall at all time comply with safety rules, regulations and legislation, as well as Transnet Freight Rail (TFR) Safety Guidelines for Infrastructure (Latest Edition).
- 5.2.2 The contractor shall at all times comply with the Basic Conditions of Employment Act as well as all other relevant labour legislation. Three safety critical risks relating to the process have been identified. The contractor must conduct his own formal risk assessment to identify all other risks. The contractor is to clearly indicate in his tender submission the processes and procedures he intends implementing to mitigate all these risks:
- Material handling and sleeper replacement work in close proximity of live OHTE
 - Sleeper replacement work during between-trains-occupation
 - Executing work on one line while a normal train service is running on adjacent line/s
- 5.2.3 The contractor shall prepare and implement a comprehensive safety case covering all relevant legal safety aspects for their work teams. It shall include details of the site management structures, all safety legal appointments as well as the written safe working procedures for all equipment used on site taking into account the above risk assessments.
- 5.2.4 The contractor shall be responsible to ensure the use of only technically competent trained staff on all types of work.
- 5.2.5 The Safety Case together with all supporting documentation shall at all times be available for compliance audit.
- 5.2.6 The contractor shall ensure that all site staff are trained and inducted in the written safe working procedures for all equipment used on site.
- 5.2.7 The contractor shall ensure that all workers are appropriately equipped and wearing Personal Protective Equipment (PPE) and that Safety Talks are conducted and noted in the Site Diary before the start of every shift.

- 5.2.8 The contractor shall be responsible to ensure that site staffs are always competently trained with regards to Electrical Awareness Training.
- 5.2.9 The contractor shall be responsible to ensure that workers working on machines (high risk areas), operators, machine fitters, area supervisors and contract supervisors site staff are always competently trained with regards to PWC Electrical Educational Training.
- 5.2.10 The contractor shall also be responsible to ensure that contract managers in charge of sites are always competently trained with regards to COM Competency Electrical Training (to follow PWC Training).
- 5.2.11 Non compliance with safety requirements will result in an immediate suspension of work without payment.
- 5.3 Protection
- 5.3.1 The method of sleeper replacement shall be such that work may proceed either under "total occupation" or "between trains occupation" and shall at all times comply with Transnet Freight Rail (TFR) Specification E7/1.
- 5.3.2 Normal protection measures in accordance with the Transnet Freight Rail (TFR) Protection Manual shall apply.
- 5.3.3 All protection arrangements shall at all times remain under the supervision and responsibility of a Transnet Freight Rail (TFR) track master or track inspector.
- 5.3.4 The contractor will be required to supply own flagmen as required per work site for protection duties. The cost for these flagmen will be deemed included in the rates tendered and no separate payment shall be made.
- 5.3.5 The contractor will be required to supply six of his employees to be trained and certificated in performance of protection duties. The contractor shall appoint at each work site a person whose sole task shall be to be on the lookout for approaching rail traffic. This employee shall operate an audible warning device to timeously warn all people on the work site of approaching rail traffic. See clause 5.3.8 for Safety Procedure.
- 5.3.6 The contractor shall not allow any persons on the work site to venture within the structure gauge when this warning procedure is not operating effectively.
- 5.3.7 The warning device shall be such that it's sound can be clearly and effectively heard above the noise on the work site by all personnel within a radius of 100m around the center of each work site. The cost to the contractor of providing the lookout as well as the warning device shall be deemed to be included in the rates tendered and no separate payment shall be made.
- 5.3.8 An effective safety procedure to be followed by all personnel on any work site in the case of approaching rail traffic shall be compiled by the contractor and implemented before any work commences. This procedure shall be updated whenever the need arises and any changes shall be communicated to all employees on a works site before work proceeds.
- 5.3.9 Transnet Freight Rail (TFR) shall make available a Track Master to be in charge of the protection arrangements on site and to declare the track safe for the passage of trains during the work and on completion of work. He may use flagmen provided either by Transnet Freight Rail (TFR) or the contractor.

5.3.10 A Transnet Freight Rail (TFR) Track Inspector shall on completion of each project inspect and measure each turnout for purposes of verifying quality for payment purposes.

5.4 Training

5.4.1 The Contractor shall ensure that all staff working on or with the contract are adequately trained, so as to comply with any relevant safety and quality requirements.

5.4.2 It is the Contractor's responsibility to ensure that his staff is trained. At the commencement of the contract, Transnet Freight Rail (TFR) shall assist the contractor with the initial on-the-job training for the staff as specified below, so as to assist the Contractor to qualify the worker's / staff. The Contractor shall ensure that he has a core group of workers with sufficient previous experience to take the lead in undertaking maintenance tasks.

5.4.3 Where training is required by the Contractor and Transnet Freight Rail (TFR) is committed to provide training, the contractor shall qualify his tender as to what and how many staff, training will be required for. After award of the contract, the contractor shall then arrange with the appropriate Transnet Freight Rail (TFR) Perway Production manager, through the technical officer, for this training / testing.

5.4.4 Training of Track Workers

5.4.4.1 At the commencement of the contract, assistance with the training, to qualify the Contractor's workers to perform the following tasks shall be given:

5.4.4.2 Track work (Level crossing blocks, cattle guards, sleeper & Clip replacement / fastening, lubricators, flagmen, ballast boxing etc.).

5.4.4.3 Quality measurements as required for track work.

5.4.4.4 Training of Track Inspectors, Track Masters and or Tradehands (Perway):

5.4.4.5 This training shall be solely the responsibility of the contractor. Only fully qualified people shall be used by the Contractor for these positions. The Contractor shall ensure that staff used, do comply with requirements for the industry.

5.4.4.6 The Contractor's Track Master/Track Inspector shall take full charge of the Contractor's resources on the work site. An employee/agent appointed by the contractor, will not act as, or be allowed to take on any responsibility as, the *person-in-charge-of-the-occupation*. The function of *person-in-charge-of-the-occupation* is restricted to competent Transnet Freight Rail (TFR) employees only.

5.4.4.7 The *person-in-charge-of-the-occupation for an on-track machine* shall be a competent Transnet Freight Rail (TFR) employee, reporting to the Transnet Freight Rail (TFR) Depot Engineer. This person shall be responsible for the following on a work site:

- Taking occupations
- Placing and controlling the flagmen
- Declaring the track safe for the passage of trains
- Cancelling the occupation and recalling the flagmen
- Communication with train traffic control with regard to occupation matters.
- The issue and control of all flags and detonators

5.4.4.8 Training of Flagmen:

5.4.4.9 *Flagmen* used, may be either Transnet Freight Rail (TFR) employees or employees of the Contractor.

5.4.4.10 Where flagmen are required to be provided by the contractor, the appropriate training for the flagmen can be provided by Transnet Freight Rail (TFR) at the start of the contract.

5.4.4.11 Where Transnet Freight Rail (TFR) requires flagmen to be trained, the pre-requisites for such persons to qualify to be trained, shall be basic literacy skills and Basic English language ability.

5.4.4.12 *Flagmen* must be officially trained, evaluated and certified competent, (Transnet Freight Rail (TFR) 407 – Item Number 37/270451 - "Certificate of Competency") by a designated competent person, before being used on protection duties. This certificate of competency shall remain valid for one (1) year only after, which re-testing and re-certification of competency will be required.

5.4.4.13 In cases where a person was not performing flagmen duties for a period of 6 months or longer, he must be re-tested and again be re-certified competent, before he may be re-used for Protection Duties.

5.4.4.14 The Transnet Freight Rail (TFR) Depot Engineer remains ultimately responsible in terms of the requirements of Act 85 for the safe working environment of his own personnel as well as contractor's personnel within the track maintenance environment on his depot.

5.4.4.15 The Depot Engineer is therefore also responsible for ensuring that any changes in the Protection Procedures that may occur over time are effectively communicated to any flagmen prior to them being used for Protection Duties

Electrical awareness, Educational and competency training:

The following training shall be arranged for the following Contractors staff:

Course	Objective	Duration & trainer	Grade to attend
A) Awareness (Electrical)	To inform all contractors staff working near a machine and on the line on electrified sections of the dangerous situations of high voltage OHTE	Two hour on-the-job lecture and training. Accredited Electrical trainer / Depot's Electrical technical officer.	<ul style="list-style-type: none"> All workers and staff working on the contract
B) PWC Educational (Electrical)	For the safe working on and with On-track machinery in the vicinity or near exposed High voltage OHTE.	Lecture room training = 1,25 d On-the-job training = 0,25 d Criterion test = 0,5 d Total = 2 days Accredited Electrical trainer	<ul style="list-style-type: none"> Workers working on a machine (High risk area's) Operators Machine fitters Area supervisors Contract supervisors
C) COM Competency (Electrical) (To follow A) (PWC)	Work permits safe working procedures under the direct supervision of a responsible representative.	Lecture room training = 0,25 d On-the-job training = 0,25 d Criterion test = 0,5 days Total = 1 day Accredited Electrical trainer	Supervisor (Responsible person in charge at machine working)

The electrical awareness training must be arranged for beforehand on-the-job.

The electrical educational and competency training may be arranged for at either a depot's lecture room's (Transnet Freight Rail (TFR) property), or at a venue of the Contractors choice (Contractors cost).

The Accredited Electrical trainer from Transnet Freight Rail (TFR) will be provided by Transnet Freight Rail (TFR) at Transnet Freight Rail (TFR) cost, provided that an arrangement for the training session required, is done beforehand and will fit in with the trainers training program for the year.

6 ANNEXES

- Annexure 1 – Detail of workload for this Contract
- Annexure 2 - Detail Installation Procedure for Universal Sleepers
- Annexure 3 - Pre-Inspection and Evaluation of Turnouts

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