1. FORWARD

The objectives of the Sewer Renovation Federation are:

1. To maintain high levels of safety and to improve standards of technical competence, performance and innovation throughout the industry.
2. To issue, maintain and review documents providing practical assistance in relation to the compliance with Objective 1.
3. To require, by the rules of the Federation, that all members comply fully with Objectives 1 and 2 above.

Working in confined spaces can be lethal if the proper precautions are not taken. In sewers and wells there is always a risk of oxygen deficiency, or of toxic or explosive atmospheres being present or developing whilst working is in progress. Should a man collapse in a confined space, it is impossible to carry out a rescue without trained and properly equipped personnel. Indeed, many rescues attempted without proper equipment and training have resulted in multiple fatalities.

In addition to the above problems, a variety of organisms originating from human or animal waste are found in sewers, and these can cause serious illness or even death if adequate protective measures are not applied.

The SRF Manual of Working Practice is published as aid for members of the Sewer Renovation Federation, their employees and subcontractors. It is not a comprehensive list of procedures or equipment required, but all members have agreed to full compliance with its recommendations in conjunction with their own Health and Safety Policies and procedures. The Manual is designed to promote good working practice with particular regard to operations in confined spaces, and to emphasise contractors' responsibility for the health, safety and welfare of all personnel.

Most contracts involving renovation work will be subject to the CDM Regulations, and as such all works will require the drafting of detailed method statements, safe systems of work and risk assessments as part of the contract safety plan. Whilst this Manual may assist in the preparation of such documents, it is not intended to replace them. Members are reminded to consider carefully the contents of any site safety plan drawn up by the Planning Supervisor alongside the current Statutory Acts, Regulations and Codes of Practice.

The manual will be reviewed annually or as new legislation, products, safety equipment and methods became available. Comments are welcomed, as a fundamental objective of the SRF is to offer practical assistance at the business end of the renovation industry.

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2. TRAINING

SRF Members are required to ensure that all personnel involved in sewer renovation work have received appropriate training on an approved training course. The general categories of training are as follows:-

1	Safety Awareness	Appropriate for personnel working in support of or supervising work in confined spaces, but who are not required or permitted to enter a confined space.
2	Working in a Confined Space	Required for anyone working in a confined space or in a supervisory or support role which requires them to enter a confined space.
3	Use of Breathing Apparatus	Required for anyone who has successfully completed training to allow them to enter or work in a confined space, and where the use of breathing apparatus is necessary to do so.
4	Rescue Training	Necessary for emergency rescue. Personnel must have successfully completed training as described in 2 and 3 above.

Further information on training is provided in Appendix 2, including course outlines/profiles in relation to SRF approval.

Training courses providers are invited to submit for approval details of any training courses which comply with the relevant SRF course profile.

Current training course approved lists are available from the General Secretary.

3. SEWER ENTRY

!!! **It must be stressed that First Time Entry is the time when the majority of fatalities and serious accidents have occurred.**

Responsibility for safe entry, working, exit and rescue procedures must be clearly established. The system must be specific to the confined space entry being considered, and prior to entry must be approved by a member of the employing organisation's management who is competent to make this decision.

First time entry refers, of course, to first time Man Entry, and it is in this situation that risk may be at a maximum. In order to eliminate the risks or minimise the effect of them as far as possible, it is of critical importance to obtain as much information as possible about the confined space which it is proposed to enter. Some factors requiring establishment and consideration are:-

a. Accessibility of entry and exit points

b. Distance between entry and exit points

c. Determination of likely atmosphere and atmospheric contamination

d. Possible presence of harmful discharges or residues

e. Possibility of flooding (establish catchment area) and isolation of work area

f. Other potential hazards

g. The nature of the work to be undertaken, and the materials and equipment to be used.

4 FIRST TIME ENTRY PROCEDURE

4.1 Obtain the following information from the operator of the system:-

a) Size, depth and condition of all culverts, sewers and manholes; distance between manholes; means of egress, etc.

b) Hazards likely to be encountered, and the risks arising from them.

c) Probable or possible harmful discharges from factories, dry cleaners, etc.

d) Risk of surcharge or flooding, including definition of catchment area and run-off times.

4.2 A physical surface inspection of all works areas (including defined catchment area) must be made in order to obtain personal assessment of potential hazards, and to confirm, if possible, the above information or identify any possible errors.

4.3 Draw up method statements and safe systems of work, including a permit to enter/work system.

4.4 Draw up a procedure for emergency rescue. Inform all emergency services of the arrangements made.

4.5 All personnel must be made familiar with a ground level survey over the full length of the underground works before entry is made underground.

4.6 Ensure that all safety and testing equipment is available and in good order.

4.7 All members of the work team should have been trained in confined space awareness. Those entering should be trained in entry and working, and should be medically fit to undertake the work (see Appendix 2).

!!! **Logging systems for the above must ensure that there is positive response to each point. The work team should consist of sufficient men deployed as appropriate, and the competence and previous experience of new employees must have been confirmed by a senior manager familiar with the requirements of this manual.**

Where catchment area and flood risk dictate, arrange for detailed meteorological reports to be obtained by the survey team (see Appendix 9).

Mobile telephones or equivalent communications systems are to be available at all times, tested to ensure immediacy of communication in emergency situations, and back-up facilities arranged (land line).

5. WORKING ENTRY PROCEDURE

The entry and working conditions relating to the day-to-day maintenance, repair or renovation of man-entry sewerage systems may differ from first time entry conditions, as generally the sewer length in question will have been cleaned, isolated lit and well ventilated prior to the commencement of day-to-day working.

Typically, isolation of the sewer may have be undertaken by diversion of main flow, provision of stanks or overpumping. It is essential to ensure that the effectiveness of the isolation procedures is monitored continuously, that it has back-up, and that all checks are recorded.

With two people at the top of the manhole suitably trained and equipped:-

5.1 Complete check list of permit to enter/work form.

5.2 Inform all emergency services of working positions on site.

5.3 Extinguish naked lights and establish a no-smoking area.

5.4 Erect barriers and road signs to the standards prescribed in Chapter 8 of the Traffic Signs Manual. Post notices in prominent positions to warn the public and other workers of the permit to enter regime.

5.5 Lift manhole covers as necessary for ventilation to carry out the work (minimum three where possible), and establish mechanical ventilation where appropriate.

5.6 Erect safety barriers around open manholes. Ensure that manhole covers cannot be replaced by unauthorised personnel.

5.7 Ventilate sewer for a minimum period of ten minutes, testing throughout. Do not enter the sewer to carry out tests.

5.8 Visually check the condition of ladders, step irons, platforms and landings before use.

5.9 If possible, check the depth and velocity of flow.

5.10 Test the atmosphere at all entry and egress points / levels.

5.11 If a dangerous atmosphere is detected, continue ventilation and re-test at intervals. If the atmosphere does not improve after a pre-arranged time, contact control for further instructions. No person is to enter the confined space.

5.12 Record all gas test results on a record sheet.

5.13 Set our and prepare rescue equipment as detailed in the method statement. Check personal safety equipment for all team members.

!!! **Fatalities and near-fatalities have been caused by the use of naked lights. The use of unprotected electrical equipment is totally prohibited.**

Similarly, smoking at or near the site of a confined space is totally prohibited.

Failure to observe these instructions shall be grounds for immediate dismissal, and all employees must be notified in writing of this condition of employment.

!!! **You must at all times be aware of the environment you are entering. In additional to the above, use your normal senses and be aware of any unusual or unexpected conditions (smell, noise, etc). Any suspected problem should be reported to the competent person who issued the permit, who will then review the document in the light of the report.**

6. ENTRY

6.1 Appoint and brief as many top, intermediate and bottom men as may be necessary.

6.2 Establish a communications arrangement. This should be well understood by all personnel involved with the entry, both on the surface and below.

6.3 Ensure that the first man descends on a winch line and remains attached until joined by another person.

6.4 If the first man down discovers any defects on descent, he should inform the top man, evacuate the sewer and report the findings to a competent person.

6.5 On arriving at a landing or benching, stand clear of the ladder and call the next man down. Only one person should be on a ladder or step irons at a time. Support all personnel with a winch line during entry and exit.

6.6 Fix safety chains or barriers and, where necessary, running lines.

6.7 Sewer access can be gained from step irons or ladder from a standard 600 x 600 mm manhole opening.

6.8 Only in exceptional circumstances should access be attempted via openings less than 600 x 600 mm.

6.9 In all cases, personnel entering must wear a full rescue harness and be connected to a man-riding winch.

!!!

1. **Survey teams should consist of seven trained operatives.**
2. **Teams working in known environments should consist of five trained operatives.**

The above numbers can be reduced only if a safety hoist is in use.

7. IN THE SEWER

7.1 The work team must inform the top man when ready to move off.

7.2 Members of the working team must maintain visual or oral contact with the top man as conditions dictate (maximum interval three minutes) by using the agreed procedures.

7.3 Continuous atmosphere monitoring equipment must be checked at predetermined intervals (usually three minutes – see 7.2).

7.4 In the sewer, the team must set off slowly and carefully, taking care to minimise disturbance to any sludge or sediment which may be present.

7.5 In response to pre-arranged calls from the tope man, the team leader must check the atmosphere and with each team member before answering.

7.6 On arrival at the benching of the exit manhole, the team leader must inform the top man at the manhole.

7.7 The team layout will be reconstituted if required.

8. ACCIDENT PROCEDURES IN THE SEWER

8.1 If a man collapses in the sewer and gassing is suspected, don escape sets, check monitor, prop the man up if possible and leave the sewer immediately.

8.2 Do not attempt to recover the collapsed man until trained operatives are present.

8.3 The rescue procedure should be commenced immediately by alerting the rescue crew. The top man should inform the emergency services and control immediately with details of the occurrence.

8.4 If the Fire Service is used to recover the collapsed man, the top man should give details of the sewer layout, the position of the collapsed man, and other use of specialised equipment if required.

9. SITUATIONS REQUIRING IMMEDIATE EVACUATION

Evacuations should take place if:-

9.1 The gas monitor indicates a dangerous atmosphere, in which gas escape sets should be utilised immediately;

9.2 Any member of the team feels unwell, or is injured;

9.3 Depth or velocity of flow increases, or weather conditions change in a way that could affect flows;

9.4 The top man calls the sewer team to leave;

9.5 The communications system fails;

9.6 The forced ventilation system fails.

!!! **You must at all times be aware of the environment you are entering. In additional to the above, use your normal senses and be aware of any unusual or unexpected conditions (smell, noise, etc). Any suspected**

problem should be reported to the competent person who issued the permit, who will then review the document in the light of the report.

!!! **Do not try to recover equipment during an emergency evacuation. (A more detailed procedure for emergency action can be found in Appendix 3.)**

10. FINAL INSPECTION

The following final inspection should be made be the Site Manager before leaving the site at the end of the shift:-

10.1 Ensure that all manhole covers have been replaced. If this is not possible, manholes must be secured and adequately fenced.

10.2 Ensure that all offices and containers are secure, and that LPG canisters have been returned to locked storage.

10.3 Ensure that all lamps, gas detectors and other equipment requiring charging have been put on charge.

10.4 Ensure that all gas test results have been logged (see Appendix 7).

10.5 Ensure that all warning signs and traffic control measure that are no longer required have been removed.

11. EMERGENCY RESCUE SITUATIONS

Where the risk assessment has established the need for emergency rescue procedures (other than self rescue), member companies should have a trained rescue team on site. The team should consist of four operatives who have completed and passed the SRF Emergency Rescue Training Course.

Stringent requirements are necessary for work of this nature, and special consideration must be given to the following:-

11.1 Size, age and fitness of personnel.

11.2 Ventilation of confined space to be entered.

11.3 Amount of equipment that personnel can carry to ensure personal survival or escape.

11.4 In an emergency, ‘means of rescue’ winches, drag blankets, stretchers, ropes and harnesses must be provided.

11.5 Prevention of drowning – installation of stop chains etc or stanking; closing of flap valves.

11.6 Communications – although the recommended distance from the access may vary, a constant and direct communication system between the top man and persons working in the sewer is essential. Mobile telephone / radio communications must be on site to enable contact with the emergency services by the top man, and a land line back-up must be available.

11.7 Provision of a special, fully-equipped vehicle is a requirement for work in sewers. Rescue will be carried out by personnel trained in accordance with SRF requirements, assisted by the emergency services if necessary. A list of the equipment to be carried is given in Appendix 4.

11.8 There must always be a competent and responsible person in the team, able to take full control in the event of an emergency. He should never be in a position where he could be out of action. If he enters a confined space, he must have passed responsibility to another nominated competent person.

12. EMERGENCY RESCUE PROCEDURES

12.1 A rescue team that has undertaken SRF-approved emergency rescue training, and comprising no less than four personnel, must be available at the site, and must have the following items of equipment:-

Full rescue harness
Intrinsically safe lighting equipment
SRF-approved man-riding winch
Air-line or self-contained breathing apparatus
Escape sets
Mobile telephone
Oxygen resuscitator
First Aid equipment
Fire fighting equipment
Safety ropes

12.2 At least one member of the team must have a current First Aid qualification and be trained in resuscitation techniques including CPR (Cardio Pulmonary Resuscitation).

12.3 The persons descending into the sewer must be attached by their safety harness to the winch rope. Full breathing apparatus must be worn by the rescue team. The casualty must be removed from the confined space supported by the winch rope attached to his safety harness. Safety ropes may be required for horizontal pulling of the casualty, but should not be used for vertical lifting.

12.4 The access to and egress from the sewer must be large enough to accommodate a person wearing full breathing apparatus. A more detailed procedure can be found in Appendix 3.

13. PERMIT TO ENTER/WORK SYSTEMS

13.1 Before issue of any permit to enter or work, the most important step is the assessment of the situation by a competent person who must carry out a risk assessment. Questions which must be considered include:-

Consider the work to be done. Is there an alternative?
Is entry really necessary?
What are the methods by which it is being done or can be done?

What are the hazards in relation to the methods of work proposed?
How can these risks be eliminated, reduced or controlled?

13.2 A Permit to Work system is an essential link in the protection of personnel working in situations or on plant where the co-ordination of activities is a prerequisite of safe working. It is of the utmost importance that all persons involved in the use of the Permit to Work system are instructed in its purpose and application. It is essential to ensure that contractors who may be engaged to carry out specific tasks comply with the Permit to Work system in operation. Permits to Work must be devised to take into account the relevant local conditions for specific activities. They can be used for electrical systems, mechanical pressure systems, confined space working, sewerage operations, and other construction or repair activities.

13.3 A vital component is the preparation of a set of adequate procedures which must involve consideration in advance of foreseeable hazards and appropriate precautions. These should be set out in a clear statement indicating the separate tasks, the order in which they are to be accomplished, by whom they are to be done, and on whose authority each stage is to be commenced and controlled.

13.4 A Permit to Work certificate must be based on comprehensive, up-to-date information in order that the operation may be carried out safely, and it must state exactly what work is to be carried out. The certificate must state the safety measures to be taken (e.g. isolation, cleaning, purging, testing, etc), the precautions which are mandatory, the method of work and the time of expiry of the permit.

13.5 The limitations of the Permit, with regard to the type of plant etc to which it refers and the type of operation to be carried out, should be stated clearly on the certificate, and explained to those who are affected by it. While current, the Permit must be considered as the principal instruction (emergencies excepted) until it expires or is cancelled.

It overrides other instructions issued in connections with specific operations to the extent specified in the permit. Only the authorised person who issues the Permit to Work certificate may amend or cancel it, with the exception of an authorised person who assumes responsibility at the beginning of a new shift and who has made himself familiar with the situation.

SRF members must ensure that such authorised persons have the appropriate training and experience to enable them to carry out their task competently.

13.6 Any authorised person who does take over, in either a routine or an emergency situation, shall assume complete responsibility.

13.7 The person in control of the work which is subject to a Permit to Work will be required to sign the Permit and to satisfy themselves that the procedures have been prepared properly.

13.8 If work has not been completed before the expiry of the Permit, and a re-issue is therefore required, a competent person should visit the place of work and satisfy himself by all necessary means that conditions have not altered materially since the first certificate was issued. If conditions have changed, the competent person should re-assess the situation and specify what further

precautions are needed to ensure safety. Duplicate records of all Permit to Work certificates should be maintained.

13.9 A Permit to Work certificate should be properly cancelled when operations to which it refers have been completed. It should be returned to the responsible person by the person to whom it was issued, who should sign a declaration that all personnel and equipment have been removed from the area, and personnel warned that the space is no longer safe for entry. Failure to carry out such a procedure can lead to accidents if an operative returns to the confined space to retrieve tools etc when the proper measures are not in place and the area is no longer safe.

13.10 When work has been completed and the Permit to Work certificate has been cancelled, the plant can be returned to service. The person in charge of the process should check that the Permit has been properly cancelled, and should make the final entry on the certificate to the effect that he accepts responsibility for the operation of the plant.

13.11 It is recommended that managers or safety officers should personally carry out sample checks on the operation of the Permit to Work system, to ensure that no laxity develops in the way Permits are completed, or in the carrying out of specific isolation or other precautions. Reports of these checks should be brought to the attention of senior management.

13.12 A sample Permit to Work is included in Appendix 6.

!!! **The basic Permit to Work form may have to be altered to suit individual contracts, locations and contractors on a particular project.**

APPENDICES

1. Duties and responsibilities of SRF members' management for Health and Safety at Work
2. Training for sewer renovation
3. Typical emergency procedures plan
4. SRF rescue procedures and equipment
5. Check-list for site management
6. Permit to Work outline
7. Gas test record
8. Minimum working space dimensions and recommendations
9. Meteorological Office – outline of facilities available
10. Letter – Weil's Disease precautions
11. Visitor's permit to enter a sewer

APPENDIX 1

DUTIES AND RESPONSIBILITIES OF SRF MEMBERS' MANAGEMENT FOR HEALTH AND SAFETY AT WORK

HEALTH AND SAFETY AT WORK ACT 1974

!!! **It is the policy of the Sewer Renovation Federation to foster positive co-operation and discussions and exchange of information with the Health and Safety Executive at all times, and to ensure comprehensive compliance with Health & Safety at Work Act, all Codes of Practice, Guidance Notes and other Acts or Regulations which apply to the sewer renovation industry.**

The Health and Safety at Work Act places responsibility for Health and Safety at Work on employers, employees and the self-employed to ensure the Health and Safety of all persons employed by or working with them, and other persons who may be affected by work being carried out, including employees of other companies and members of the general public.

All contracts must be investigated by a member of the organisation's senior management who is competent to determine and identify potential hazards. Those hazards involving variations to standard procedures must be discussed fully with all interested parties before proceeding with work on site.

All contracts must be the subject of a written Method Statement, this statement to be agreed with interested parties before commencement of the works.

Summary of Main Points

Section 2 covers the general duties of employers to employees – these include the responsibility to:-

Provide safe access to, at and from place of work;
Provide safe tools, plant, materials and equipment;
Provide competent supervision and instruction;
Provide safety training;
Provide a safe system of work and to maintain the provisions outlined.

Section 3 covers the general duties of employers and the self-employed to persons other than employees.

Section 4 covers the general duties of persons in control of premises (including civil engineering sites etc) to persons other than those employed.

Section 5 covers the duty to prevent harmful emissions into the atmosphere.

Section 6 – covers the duties of suppliers and manufacturers for the provision of safe articles, substances, plant and equipment.

Sections 7 and 8 cover the duties of employees.

The following Acts of Parliament, Statutory Regulations and Codes of Practice apply to aspects of work in confined spaces:-

Confined Spaces Regulations 1997

Health and Safety at Work etc Act 1974

Construction (Health Safety and Welfare) Regulations 1996

Management of Health and Safety at Work Regulations 1992

BS 8005: Part 1: 1987 – Guide to New Sewerage Construction

Provision and Use of Work Equipment Regulations 1992

Control of Substances Hazardous to Health (C.O.S.H.H.) Regulations 1994

Workplace Health Safety and Welfare Regulations 1992

Personal Protective Equipment at Work Regulations 1992

Factories Act 1961

Manual Handling Regulations 1992

Occupational Exposure Limits Document EH 40

Health and Safety Executive Guidance Note 53 – Respiratory Protective Equipment – Practical Guide for Users

First Aid at Work Regulations

Construction Design and Management Regulation 1994

Electricity at Work Regulations 1989.

APPENDIX 2

TRAINING FOR SEWER RENOVATION

Confined Space Awareness

Any person who may become involved in confined space working, whatever their role, must receive training in *Confined Space Awareness*. However, members are encouraged to adopt a policy of training to a minimum level of *Safe Working in Confined Spaces*. To date this recommendation has been complied with, and no approval process in relation to awareness training has been necessary. A course profile and approval arrangement will be introduced on demand.

Working in a Confined Space

Personnel must have successfully completed an approved training course. SRF approval will be given to a training course which complies with the course profile below.

Training certificates will be issued which will be valid for three years during which the certificate can be renewed by the completion of a minimum 7-hour 'refresher' course. Refresher training is not permitted outside the three-year validity period. Members are reminded that personnel not regularly involved in working in a confined space should have skills training at a maximum of six-monthly intervals.

Use of (Self Contained) Breathing Apparatus

Although training in the *Use of Breathing Apparatus* is independent of *Safe Working in Confined Spaces* and can be taken separately, the Federation recommends that, in respect of sewer renovation works, *Safe Working in Confined Spaces* training should have been successfully completed prior to training in the *Use of Breathing Apparatus*.

Use of Breathing Apparatus training must be undertaken on an approved course which complies with the profile below.

Emergency Rescue

The SRF Emergency Rescue training course is run by appointed course providers. Full details of this training are given below.

Members are reminded that:-

1. The Federation does not, at this time, approve any alternative to its own Emergency Rescue training course.
2. Stringent pre-qualification conditions need to be met in respect of trainees.
3. The circumstances in which Emergency Rescue facilities are required are detailed in Section 11 of the Manual of Working Practice.

SAFE WORKING IN CONFINED SPACES

TRAINING COURSE PROFILE

Typical Course Title	Safe Working in Confined Spaces (including Escape Breathing Apparatus)
Target Group	Any person who may have to work, support a worker or has a responsibility for workers in a Confined Space
Aim of Training	To enable clear evaluation of and safe entry to a Confined Space to take place
Course Duration	Minimum 14 hours
Training Objectives	Following the satisfactory completion of a course, each delegate must be able to:-

a) Identify a Confined Space;

b) Recognise their responsibility to themselves and others when entering a Confined Space;

c) Use modem gas detection equipment;

d) Use a safety harness, lifeline and/or man-riding winch;

e) Identify the major component parts, make pre-use checks and operate escape breathing apparatus;

f) Enter into, exit from and work in a Confined Space, in compliance with a recognised Safe System of Work;

g) Describe and maintain necessary hygiene procedures for Confined Space work;

h) Instigate emergency procedures.

BREATHING APPARATUS

TRAINING COURSE PROFILE

Typical Course Title	The use of breathing apparatus
Target Group	Any person who may have to use breathing apparatus or has responsibility for those who do
Aim of Training	To enable clear identification of the need for the use breathing apparatus and the competent and confident use of it
Course Duration	Minimum 7 hours
Training Objectives	Following the satisfactory completion of a course, each delegate must be able to:- a) Identify the need for the use of breathing apparatus; b) Recognise their responsibilities to themselves and others when using it; c) Identify component parts and carry out pre-use checks; d) Understand and be able to implement hygiene requirements; e) Understand the relationship between respiration and work rates; f) Clean check and maintain equipment; g) Use breathing apparatus in a working environment.

SRF EMERGENCY RESCUE TRAINING

The Sewer Renovation Federation specifies and approves Emergency Rescue training, principally for its members. Training can, however, be made available to other organisations if all pre-qualification conditions and requirements are met.

Course Profile	A full course profile is included later in this Appendix, giving details of duration, pre-qualification, training aim and course objectives.
Pre-qualification	Delegates must have been previously trained (and hold current, valid certificates) in *Safe Working in Confined Spaces* and the *Use of Breathing Apparatus*. All training must have been undertaken by an approved course provider and on an approved course. A current approvals listing for both *Safe Working in Confined Spaces* and *Use of Breathing Apparatus* is given in Appendix 2. It is possible for delegates without the necessary pre qualification training to combine all training into a composite five-day course at an SRF-approved training centre:- *Safe Working in Confined Spaces* (2 days) *Use of Breathing Apparatus* (1 day) *Emergency Rescue* (2 days)
Procedure	Requests for *Emergency Rescue* training must be made to the SRF Safety Co-ordinator (normally by telephone). A provisional booking acknowledgement will be sent, which has to be completed and returned within 72 hours, together with documentation and pre-payment, in order to confirm the provisional booking.
Certificates	Delegates can obtain type ‘A’ or type ‘B’ Certificates (‘A’ being a qualification to be an above-ground member of a rescue team and ‘B’ being a qualification to be any member of a rescue team). Certificates will normally be issued to ‘employing’ organisations (not delegates) within two weeks of successful training.
Pre-qualification Training	A full list of approved providers and courses is given in Appendix 2. Any training provider can apply to the SRF for approval of a suitable course. Suitability will be judged by reference to the SRF Pre-qualification Training Course Profile for the appropriate course (see Appendix 3).

EMERGENCY RESCUE COURSE

GENERAL INFORMATION

Duration	Two days
Target Group	Experienced operatives from SRF member organisations who have to enter confined spaces, including small bore pipes, for the purpose of construction, maintenance, inspection and in the event of accident or rescue.
Pre-qualification	Delegates will have previously been trained in working in confined spaces and the use of breathing apparatus. Only training from an approved source will be acceptable (See Appendix 2)
Course Instructors	This course will be conducted by an experienced instructor, in line with the Health and Safety Executive regulations and guidelines for confined space entry.
Delegate Health	Organisations who send delegates to this course should ensure that delegates are advised that parts of the course involve strenuous work in extremely confined spaces, underground. (Delegates will be required to supply a letter, signed by either a qualified medical practitioner or a Director of the sponsoring company, confirming that the delegate is physically fit. The sponsoring company must also provide written assurance that its employer's liability insurance provides cover for the delegate whilst undertaking the training.)
Hygiene	The field simulator may be located outside and is often in a wet condition. In the interest of comfort and personal hygiene, delegates should bring their own work clothing. This kit should include: coveralls, regular work boots, work gloves, several pairs of work socks, and one large, bath-size, towel. (Shower facilities will be available.)
Equipment	All equipment, with the above exceptions, necessary to complete the course will be available on site.
Code	The Federation's *Manual of Working Practice* will be used as the basis for working and safety practices on the course, and delegates should therefore be familiar with this document before joining. Reference will be made to other applicable legislation, regulations and guidance, as well as manufacturers' information on specific items of equipment.

EMERGENCY RESCUE COURSE

COURSE OUTLINE

Day One:

09.00-11.00	General discussion and review of pre qualification training with emphasis on description of confined spaces, breathing apparatus and the use of gas testing equipment.
11.00-11.15	Break
11.15-12.30	Safe systems of work and use of permits to work under emergency conditions. Tools and equipment required.
12.30- 13.30	Lunch
13.30-14.00	Delegates prepare a safe system of work proposal for working under emergency conditions.
14.00-16.30	Field simulator / exercise using escape breathing apparatus and / or working breathing apparatus. (As all Delegates are not fully engaged during this exercise a rotating break period is operated.)
16.30-17.00	Review the day's training and outline the plan of training for day two.

Day Two:

09.00-12.30	Review the specific requirements of the Federations rescue procedure and the legal background for operations with the Emergency Services. Perform rescue simulations and timed exercises for two man rescue teams. (As all Delegates are not fully engaged during this exercise a rotating break period is operated.)
1230- 1330	Lunch
1330- 1530	Perform large scale rescue exercise using four man teams with both working breathing apparatus and airline apparatus.
1530- 1545	Break
1545-1700	Clean up equipment. Written (theory) exercise. Recap course. Delegate questions. Delegates complete course critique.

ON SATISFACTORY COMPLETION OF THIS COURSE A CERTIFICATE OF COMPETENCE, VALID FOR THREE YEARS, WILL BE ISSUED TO DELEGATES

EMERGENCY RESCUE COURSE

TRAINING AIMS

Delegates will:-

Day One **(Morning – Classroom)**

- be able to describe what a confined space is;
- identify particular hazards of confined space entry;
- identify the various elements of a confined space entry permit, and how they relate to emergency action;
- study the methods and means of rescue team organisation;
- devise a simple safe system of work;
- compile a list of equipment necessary for a confined space entry;
- review the legal requirements for confined space entry work and how they interact with the demands of an emergency.

(Afternoon – Field Simulator)

- set up a job based on a safe system of work, and operate that system;
- during a practical field exercise;
- perform an escape exercise, using escape breathing sets.

Day Two **(Morning and Afternoon – Field Simulator)**

- review the Federation's system for search and rescue;
- perform a rescue from underground in the simulator, using a two man entry team (timed performance);
- perform a large scale rescue exercise using the entire class group (four man entry team);
- complete a rescue simulation, while functioning in each team position from rescuer to leader.

(Afternoon – Classroom)

- complete an exercise in the theory of confined space rescue;
- review the course and exercises;
- participate in a course review and critique, and be able to offer comments on the course and the instructor(s).

EMERGENCY RESCUE COURSE

COURSE OBJECTIVES

On successful completion of the course delegates will be able to:-

- demonstrate a general knowledge of confined Space entry techniques for rescue;
- organise a team and equipment to make an entry for rescue;
- function as a team member during an entry to a confined space;
- set up and operate rescue support equipment for confined space entry, including airline and self contained breathing apparatus;
- demonstrate skills in confined space entry techniques during a rescue simulation.

APPENDIX 3

TYPICAL EMERGENCY PROCEDURES PLAN

1. Emergency Action Procedure

1.1 Top man to dial 999 and inform operator of nature of emergency.

1.2. Give location and contract name.

1.3. Notify assembly point (1, 2 or 3) at which emergency services should meet.

1.4. If there is any difficulty with communication on 999, call Control Centres as follows:

Fire Brigade (*Enter here local telephone number*)

Ambulance (*Enter here local telephone number*)

Police (*Enter here local telephone number*)

1.5. Send somebody to the Assembly Point as soon as possible in order to meet Emergency Services.

1.6. Notify your organisation's head office: (*Enter here contact number which will be manned at all times when work is taking place*)

2. Situations Requiring Emergency Action

2.1 In the event of an injury to a member of the team, the injured member will be evacuated by the team, if it is considered safe to undertake such movement of the casualty, to the nearest designated assembly point. The top man will have been informed and will request emergency services as necessary to attend at the agreed assembly point.

2.2 In the event of an injury to a member of the team precluding evacuation by the team, one member of the team will remain with the injured member and the others will proceed to the nearest assembly point to await and brief the emergency services. The top man will have been informed and will request emergency services as necessary to enter the confined space to evacuate the injured persons. The first representative of the Emergency Services on site will immediately take responsibility for co-ordination of the rescue attempt.

2.3 In the event of loss of primary communication contact between the work team and the top man, and failure to establish a secondary communication system within 15 minutes, the top man will summon the assistance of the emergency services to the nearest assembly point to the last known position of the team. The top man will be responsible for informing the emergency services of possible position of team, nature of last communication, likely exit point, etc.

2.4 In the event of a major incident communicated by the team, the top man will ascertain details and then summon emergency services assistance as appropriate.

2.5 The top man must confirm that all personnel listed on the Permit to Work are accounted for.

APPENDIX 4

SRF RESCUE PROCEDURES AND EQUIPMENT

When entry takes place into sewers where risk assessments have identified the need for rescue arrangements (other than self rescue), at least four members of the team working at the site must be in a position to undertake a rescue if required. One of the team must have a current First Aid qualification (approved for the purposes of the Health and Safety (First Aid) Regulations). All the equipment mentioned later in this Appendix must be available on site, checked and working. The four team members referred to above must have undertaken an SRF-approved *Emergency Rescue* course within the previous three years.

In the event of an accident requiring a rescue from the confined space, one of the trained rescue team will take control of the situation and direct the operation. His primary role will be that of top man (officer in charge), operating the winch and supervising the entry to the confined space. The other rescue team roles are likely to be those of:-

- Rescuer who will enter the sewer in order to rescue the casualty;
- Air line supply operator (Breathing Apparatus Control Officer). If close to the shaft entrance, he may also assist the controller in his top man role of winch operator.
- Bottom man who will assist with the removal of the casualty from the shaft, and act as the link between rescuer, controller and air line supply operator.

One of the operators at the surface also likely to be the First Aider, as he will have the first contact with the casualty at the surface.

If there is any possibility of gas build up in the confined space, the rescuer and bottom man will enter, supported by winch rope attached to their safety harness, and wearing air-line breathing apparatus. Each will be wearing his normal working equipment for confined spaces, including approved type safety harness, intrinsically safe lighting (probably cap lamp), and chemical air self rescuer.

The casualty will be lifted from the confined space by man-riding winch attached to his safety harness. Horizontal pulling of the casualty by the rescuer may be carried out, using a safety rope, by the bottom man from his position at the base of the manhole.

The situation controller / top man will alert the rescue and ambulance services if required using his mobile telephone. He will remain in charge of the rescue until all the rescue team have exited from the confined space.

Equipment Check List

Safety Harness
Lighting Equipment (intrinsically safe)
Main Riding Winch
Air Line Breathing Apparatus
Chemical Air Self-Rescuers
Mobile Telephone
Resuscitator
First Aid Equipment (in line with current regulations)
Fire Fighting Equipment (dependant on local situation - seek local Fire Officer Guidance)
Safety Ropes

APPENDIX 5

CHECK LIST FOR SITE MANAGEMENT

The following is a suggested check list of questions which managers may find helpful when undertaking work in a confined space.

1. Are all operatives trained in policies, procedures and the correct use of relevant safety equipment – before they start the job? Remember that regular retraining could save lives.
2. Do we have SRF certificates for operatives who may be involved in search and rescue work. Are they correct?
3. Have I instituted a Permit to Work system and do I ensure that it is rigorously enforced?
4. Have I provided an efficient means of multiple gas detection – for use before, during and after entry into the workplace?
5. Have I provided escape breathing apparatus for operatives and equipment suitable for rescue purposes when an emergency occurs?
6. Have I ensured that resuscitation and first aid equipment is available should an accident happen?
7. Have I ensured that all electrical apparatus to be used by operatives is intrinsically safe?
8. Do operatives have an efficient means of communication between themselves in the workplace, to colleagues outside the workplace, and from the workplace to the emergency services?
9. Have emergency services been advised of (a) working location, (b) access points, and (c) working conditions. Have they visited the site?
10. Is anything capable of producing a spark when used by operatives? e.g. tools, lighting, footwear, etc?
11. Have operatives been issued with appropriate protective clothing to be worn in the workplace?
12. Am I sure that all the equipment issued to operatives is thoroughly checked to be in full working order before it is used? Is all the equipment checked at predetermined intervals even when not in use? Have I a record to show HSE or Federation officers who may visit the site to monitor compliance?
13. Have test certificates been obtained for all safety and lifting equipment?
    a) Crane – 4 yearly (including details of 14 month examination)
    b) Lifting tackle – 6 monthly
    c) Lifting winches – 14 monthly

APPENDIX 6

PERMIT TO ENTER/WORK IN A CONFINED SPACE

Authorised person (Confined Spaces) Signature _____

Identity and description of Confined Space _____

_____

Reason for entry 1 work to be done (the task) _____

_____

Expected duration of task _____hours

Starting at (time) _____ on (date) _____

Permit expires at (time) _____ on (date) _____

Names of Persons Entering	**Signature**
_____	_____
_____	_____
_____	_____

Name of outside operative(s) _____

Total number of operatives in team _____

Please Tick as Appropriate	**YES**	**NO**	**N/A**
Warnings signs / barriers			
Liquid flow stopped / sealed			
Will rainfall affect the space?			
Has atmosphere been checked?			
Is it safe to enter?			
Will the atmosphere be continually monitored?			
Will full breathing apparatus be used?			
Will escape breathing apparatus be used?			
Safety ropes / tripod and winch			
Safety harnesses			
Safety helmets			
Lamps			
Gloves			
Overalls, etc			

Completion of Work

The work has been completed and all persons, material and equipment have been removed.

Team Leader Signature _____ Authorised Person Signature _____

Date & Time _____ Date & Time _____

APPENDIX 7

GAS TEST RECORD

Record of tests undertaken at (location) _____
whilst the following operation was in progress:-

(describe operation in outline) _____

DATE	TIME	INSTRUMENT USED	READING	OPERATOR	SIGNED

APPENDIX 8

MINIMUM WORKING SPACE DIMENSIONS AND RECOMMENDATIONS

HEIGHT (MM) MIN	WIDTH (MM) MIN	MAXIMUM DISTANCE FROM ACCESS POINT	FORCED VENTILATION	DRAG BLANKET
1) EGG				
900	600	75.0 metres	No	No
800	435	50.0 metres	No	No
700	435	25.0 metres	Yes	No
600	430	7.5 metres	Yes	Yes
2) CIRCULAR				
900	75.0 metres	No	No	
600	37.5 metres	No	No	
550	10. 0 metres	Yes	Yes	

APPENDIX 9

METEOROLOGICAL OFFICE

Your local Meteorological Office provides forecasting in a number of ways: telephone, fax, the internet, etc.

For a reasonable fee, which is negotiable dependent upon usage and information provided, they will provide site specific forecasts. These are available in a number of formats and can be designed to suit your requirements.

Site specific scripted forecasts are normally provided by fax and on either a 24-hour or 5-day forecast basis.

Typical example forecasts are attached.

In conjunction with the above they operate a Direct Access Telephone Service for immediate response providing the most up to date information at any time (24 hrs).

Your local Meteorological Office can provide information for any site in the UK.

Weather Centre	**Tel**	**Fax**
Aberdeen	01224 210572	01224 210575
Glasgow	0141 248 7272	0141 303 0101
Newcastle	0191 232 3808	0191 261 4965
Leeds	0113 244 0186	0113 242 0716
Norwich	01603 763898	01603 623531
London	0171 405 4356	0171 404 4314
Belfast	01232 312353	01232 313981
Manchester	0161 477 1017	0161 476 0714
Birmingham	0121 717 0572	0121 717 0577
Bristol	0117 927 6265	0117 927 9060
Cardiff	01222 225746	01222 390564
Southampton	01703 233139	01703 233143
International	01344 854672	01344 854156

FORECAST FOR (SITE 1 LOCATION)

Issued by the (Loca4 Weather Centre at 9:57, Tuesday 22109198.

1000 hr to 1700 hr today:

Weather: Dry and misty with fog patches and low cloud, becoming brighter during the morning with sunny spells developing well inland. Low cloud may well linger along coast.
Rainfall Total: 0.0 mm today
Wind: Easterly 5 mph increasing to 10 to 15 mph later.
Max. Temp: 160C

1700 hr tonight to 0700 hr:

Weather: Dry and misty with fog patches and low cloud, becoming brighter during the morning with sunny spells developing well inland. Low cloud may well linger along coast.
Rainfall Total: 0.0 mm tonight
Wind: Easterly 5 mph increasing to 10 to 15 mph later.
Min. Temp: 1 OOC

0700 - 1700 hr Overnight (1700 - 0700 hr)
Wednesday 23109198

Weather: Low cloud breaking to give sunny spells. Dry.
Weather: Dry. Becoming cloudy.
Maximum: 20*C
Minimum: 1 O*C
Wind: East 10 mph
Wind: East 10 to 15 mph

Thursday 24109198

Weather: Mainly cloudy. Small chance of an afternoon shower.
Weather: Sunshine and showers.
Maximum: 22`C
Minimum: 1 OOC
Wind: Southeast 10 mph
Wind: Southeast 15 mph

Friday 25109198

Weather: Rather cloudy. A little
Weather: Mainly cloudy. Isolated

sunshine. Mainly dry. showers.

Maximum: 22`C Minimum: 1 'I'C

Wind: Southeast 15 mph Wind: East 10 mph

Saturday 26109198

Weather: Bands of showers, some heavy and prolonged. Weather: Thundery showers.

Minimum: 12'C

Maximum: 21'C Wind: Southeast 5 mph

Wind: East 15 mph

MANUAL OF WORKING PRACTICE

FORECAST FOR (SITE/ LOCATION)

Issued by the (Locao Weather Centre at 10:02 on Tuesday 22109198.

0700 to 2000 hr TODAY

WIND Easterly 5 mph increasing to 10 to 15 mph later.

WEATHER Dry and misty with fog patches and low cloud, becoming brighter during the morning with sunny spells developing well inland. Low cloud may well linger along coast.

RAINFALL

TOTAL 0600-1800 hr TODAY 0.0 mm

MAXIMUM TEMPERATURE 160C

TOTAL 1800-0600 hr TONIGHT 0.0 mm

MINIMUM TEMPERATURE 1 WC

THE OUTLOOK FOR TOMORROW

WIND Easterly 10 to 15 mph

WEATHER Dry with low cloud covering east facing hills and coasts.
Becoming brighter with sunny spells developing inland, hill fog may well persist on hills with low cloud staying near the coast.

RAINFALL

TOTAL 0600-1800 hr0.0

MAXIMUM TEMPERATURE 1WC

TOTAL 1800-0600 hr0.0

MINIMUM TEMPERATURE 90C

APPENDIX 10

LETTER TO BE SENT TO EMPLOYEES' GPs: WEILS DISEASE PRECAUTIONS

Your Ref: _____

Our Ref: _____

Date: _____

Dear Sir,

HEALTH AND SAFETY AT WORK ACT 1974
SECTION 2(2)(c)
WEILS DISEASE PRECAUTIONS

We wish to advise you that during the course of his employment with the company, Mr _____ may be in contact with sewage. He is employed on our site at _____.

In accordance with our duty under section 2(2)(c) of the Health and Safety at Work Act 1974, we have issued a card containing instructions relating to Weils Disease to all employees who may be at risk.

Would you please make us aware if you feel that there is any reason why Mr _____ should not be employed in confined spaces work.

Yours faithfully,

(Agent)

APPENDIX 11

VISITOR'S PERMIT TO ENTER A SEWER

Date: .....

Location of sewer .....

Purpose of visit .....

Name of visitor .....

Date of visit .....

Permission is given for the above visit

Authorised officer

WARNING

No person shall enter a sewer chamber except under the close supervision of experienced employees who are authorised persons proficient in implementing the safety procedures and their instructions must be followed.

Training in confined space awareness must have been received by anyone wishing to enter a confined space in the previous three years (See appendix 2).

Persons not used to entering sewers and sewage are advised that:-

(a) Sewers are confined spaces and the atmosphere contained in them may be unpleasant and may present problems particularly to anyone who suffers or has suffered from bronchial illness.

(b) Sewers may also be deep and poorly lighted and change direction and shape, to enter, traverse and vacate them may require agility and fitness.

(c) The confined nature of sewers has been known to induce claustrophobic fears or distress to inexperienced persons.

If you suffer from bronchial or other respiratory illness or angina or have any doubt about your fitness to. withstand conditions likely to be encountered you should consult your Medical Practitioner and show him this Warning before attempting to enter a sewer or similar confined space.

1 have read and understood this warning.

Signature of Visitor.....