Trench Reinstatement Training
HAVE YOU EVER DONE ONE OF THESE:

SHIT

JOB
6th February 2019


Dear Director of Services,

In relation to the above Guidelines for Managing Road Openings, issued by way of Department Circular RW 5 - 2017, as part of which the Department advised of phasing in arrangements. In that regard the Department now sets out the following requirements in relation to Training and Roles and their effective dates for completion.:

1. In relation to the requirement to have suitably trained personnel on site for the carrying out of works (Section 5.4) the Department now confirms that this requirement will be mandatory from Friday 27th September 2019. All required personnel shall have been trained in accordance with the LASNTG Basic Trench Reinstatement Course.

2. In relation to the requirement to have suitably trained personnel on site in relation to the carrying out of oversight/monitoring/inspection/sign of reinstatement works (Section 5.4) the Department now confirms that this will be mandatory from Friday 27th September 2019. All such personnel shall have been trained in accordance with the LASNTG Advanced Trench Reinstatement Course.

Details in relation to training are available from LASNTG (Local Authority Services National Training Group) www.lasntg.ie or your relevant Regional Training Centre.

You are asked to bring this to the attention of all those who carry out roadworks (including road openings) in your city/county.

Yours sincerely,

Paul Harrington
Roads Division

cc. All Chief Executives
    All Senior Engineers

22-25 Sráid an Chléaraigh, Baile Átha Cliath D02 HC42, Éire
22-29 Clare Street, Dublin D02 HC42, Ireland
T +353 1 6707444, info@dttse.gov.ie
www.dttse.gov.ie
• Persons working in Excavation and trench reinstatement shall be suitably trained and training is mandatory from Friday 27th September 2019 in accordance with the LASNTG (Local Authority Services National Training Group) Basic Training Course
• Persons working Overseeing /Monitoring /Inspections of Excavation and Trench Reinstatement shall be suitably trained and training is mandatory from Friday 27th September 2019 in accordance with the LASNTG (Local Authority Services National Training Group) Advance Training Course
We (Local Authority Services National Training Group) are rolling out Basic (2 Day Course) and Advanced (1 Day Course) courses in Road Opening and Reinstatement on Public Roads in all Regional Training Centres Nationwide.
Road Opening and Reinstatement – Basic (2 Days)
Road Opening and Reinstatement - Advanced (1 Day)
REASON FOR REVISION OF GUIDELINES

- National Consistency
- Updated Standards & Codes
- NRA (TII) Standards
- New Legislation
- Online Licensing (MRL)
- Compliance Required
- Reduce impact on road network
- Environmental/Economical factors
- Broadband, National Utilities
BENEFITS OF THE MRL SYSTEM

• Consistent National Approach
• Specific Authority and Applicant Responsibilities
• Communication between Applicant and Authority
• A Work Management System for Road Openings
• Unlimited capacity for Applications and Storage
• Increased Knowledge / Control of Roadworks
• Links to Local Authority Asset Management Systems
• Monitor Applicant and Authority Performance
• Reporting functionality for Applicant and Authority
• On-going development and improvement of processes
History of Roads

Macadam Roads (Design)
- Wearing course
- Base course
- Road base
- Sub-base
- Surface course
- Binder course
- Base
- Sub-base
- New Terms
- Old Terms
- Sub-grade
• Correct methods of excavation
• Material appreciation
• Reinstatement methods: Temporary / Permanent to public roads and footpaths
• Compaction equipment / methods
• Reinstatement of Ironworks, Access Chamber, Street Furniture, Edges and Joints
Consequences of Incorrect Procedures

• Road accidents
• Public liability claims
• Damage to services
• Waste of public resources
WHY IS THIS HAPPENING ON OUR ROADS
MAIN CAUSES OF DAMAGE TO OUR ROADS

- causes of damage to road structure are Heavy Goods Vehicles (HGV)
- 1 HGV = 10,000 Cars
WATER ENTERING THE ROAD STRUCTURE
6.3.5 Trench Terminology

Diagram illustrating trench depth and terminology:

- Reinstatement Width
- Trim
- Trench Depth
- Service Depth
- Trench Width
- Surface Course
- Binder Course
- Base
- Blackfill Material
- Diameter
- Clearance
- Springline
- Bedding
- Surround Material
- Foundation (if required)

Depth to Apparatus
Assessment of Ground Conditions at Base Level Penetrometer cone test
Compaction Traditional Method
MODERN COMPACTION

- Material should be compacted in layers by mechanical means using either Vibratory Rollers, Vibrating Plate, Vibrotamper
- Compaction plant should be selected carefully to give the best results on the material used
Compaction

WHY?

- Consolidates materials
- Removes air voids
- Increases density and load bearing capacity of material
- Will prevent settlement
Compaction of granular soil using a vibration plate

Note how particles become realigned closer together for greater strength.
LOAD BEARING CAPACITY INCREASES

Good compaction

Poor compaction

Good compaction
METHODS OF CHECKING COMPACTION

CBR - California Bearing Ratio

Impact Soil Tester

Nuclear density test
### Table 6.5.4 Compaction Requirements for Unbound Materials/Bituminous Mixtures

<table>
<thead>
<tr>
<th>Type of Compaction Plant</th>
<th>Weight Category</th>
<th>Minimum passes per compacted lift thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unbound Material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 mm</td>
</tr>
<tr>
<td>Vibratory roller; Single Drum</td>
<td>600 - 1000 kg/m</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>1000 - 2000 kg/m</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2000 - 3500 kg/m</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Over 3500 kg/m</td>
<td>3</td>
</tr>
<tr>
<td>Vibratory roller; Twin Drum</td>
<td>600 - 1000 kg/m</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>1000 - 2000 kg/m</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2000 - 3500 kg/m</td>
<td>2</td>
</tr>
<tr>
<td>Vibrating-plate compactor</td>
<td>1400 - 1800 kg/m²</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>1800 - 2100 kg/m²</td>
<td>5</td>
</tr>
<tr>
<td>Vibro-tamper</td>
<td>50 - 65kg</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>65 - 75kg</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>over 75kg</td>
<td>2</td>
</tr>
<tr>
<td>Power Rammer</td>
<td>100 - 500kg</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>over 500kg</td>
<td>5</td>
</tr>
</tbody>
</table>

**Alternative Compaction Plant for Areas of Restricted Access**
(including small excavations and trenches less than 200 mm width)

- **Vibrotamper** 25 kg minimum
  - Minimum of 6 compaction passes
  - Maximum of 100mm compacted lift thickness

- **Percussive Rammer** 10 kg minimum
  - Minimum of 6 compaction passes.
  - Maximum of 75mm compacted lift thickness.

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1) NR = Not Recommended
2) Twin drum vibrating rollers are preferred for compaction of bituminous mixtures
3) Single drum vibrating rollers are vibrating rollers providing vibration on only one drum
4) Twin drum vibrating rollers are vibrating rollers providing vibration on two separate drums
Target Impact Values (I. V.) for Flexible Carriageway

The Minimum at Top of Base **30 I.V.**

The Minimum at Top of Sub - Base **21 I.V.**

38 I.V. at the Top Base for Good Conditions

30 I.V. at Top of Sub - Base for Good Conditions

10mm Pea Gravel to IS. 505
Reinstatement Temporary and Permanent
Additional Areas of Reinstatement

For transverse roadway crossings within the Protected Period:

Full width reinstatement is required for a distance of 5m either side of the crossing.

10 m Wide
Additional Areas of Reinstatement

For transverse crossings within the Protected Period

Full footway bay reinstatement is required
JOINTING / OVERBANDING TAPE

- Joints sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value and shall not exceed 3mm depth and 50mm width or other method approved by the road authority.
QUALITY CONTROL
(INTervention CRITERIA/TOLERANCES)

- Edge Depression
- Reinstatement Width
- Surface Depression
- Reinstatement Width
- Surface Crowning
- Reinstatement Width
## Intervention Limits for Bituminous Surfaces

### Table 6.8.2 Intervention Limits

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Reinstatement Width (mm)</th>
<th>≤400</th>
<th>&gt;400 &amp; ≤500</th>
<th>&gt;500 &amp; ≤600</th>
<th>&gt;600 &amp; ≤700</th>
<th>&gt;700 &amp; ≤800</th>
<th>&gt;800 &amp; ≤900</th>
<th>&gt;900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edge Depression</td>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Surface Depression</td>
<td></td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Surface Crowning</td>
<td></td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Combined Defect</td>
<td></td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>22</td>
</tr>
</tbody>
</table>
Defects

Surface Defect
- Ravelling
- Bleeding
- Wear and Polishing
- Pop-outs
- Scaling

Pavement Deformation
- Rutting
- Surface Distortion
- Faulting
# Basic Trench Reinstatement – Site Record Sheet

**Note:** This record should be completed to demonstrate and record compliance with the requirements of the Guidelines for Managing Openings in Public Roads. To ensure that adequate records are retained for the Approved Certifier, at least one site record sheet should be completed per: Licence □ Day □ Surface Type □ Single trench □ 20 metres of trench □ Other

<table>
<thead>
<tr>
<th>Record Sheet Completed by</th>
<th>Date of Backfill</th>
<th>Date of Permanent Reinstatement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Weather Conditions</td>
<td>Wet □ Dry □ Freezing □</td>
</tr>
<tr>
<td>Licence Number</td>
<td>Additional Information: Location of cutting changes, Other Services, Underground structures</td>
<td></td>
</tr>
<tr>
<td>Client</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Drawing No. (Purple Book)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Trench/Opening Dimensions

<table>
<thead>
<tr>
<th>Length(m)</th>
<th>Width(m)</th>
<th>Depth(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Record of Materials Used on Site

<table>
<thead>
<tr>
<th>Layer</th>
<th>Date</th>
<th>Material</th>
<th>Supplier</th>
<th>Docket Ref</th>
<th>Quantity</th>
<th>Temperature</th>
<th>Moisture content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backfill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moisture content</td>
</tr>
<tr>
<td>Apparatus Surround</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Correct Yes □ No □</td>
</tr>
</tbody>
</table>

## Record of Site Tests

<table>
<thead>
<tr>
<th>Test Location</th>
<th>Test Type</th>
<th>Chainage (m)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation</td>
<td>Penetrometer</td>
<td>1)</td>
<td>1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2)</td>
<td>2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3)</td>
<td>3)</td>
</tr>
<tr>
<td>During Backfill</td>
<td>Clegg Test</td>
<td>1)</td>
<td>1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2)</td>
<td>2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3)</td>
<td>3)</td>
</tr>
<tr>
<td>Top of Backfill</td>
<td>Clegg Test</td>
<td>1)</td>
<td>1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2)</td>
<td>2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3)</td>
<td>3)</td>
</tr>
</tbody>
</table>

## Comments

Signed: ___________________________ Date: ___________________________
14 STANDARD DRAWINGS

Roadways: Longitudinal Openings at Heavy Duty Locations
Permanent Reinstatement

Seal Joints (See Note 23 & 24)

HRA 30/14 F surf 40/60 des (20mm precoated chippings) to Cl. 911
HRA 35/14 F surf 40/60 des (20mm uncoated chippings) to Cl. 911 (See Note 25)

AC 20 HDM bin 40/60 rec to Cl. 906

Cement Bound Granular Mixture B (CBGM B) to SRW Series 800

Marker Tape to be placed in accordance with Table 6.2.1

Service laid in Clause 503 material

Depth of service layer to be kept to a safe minimum

Adequate Access for compaction equipment +100mm -450mm minimum width

Cl. 804/808 (GN Note 12) compacted in layers in accordance with Cl. 802
or subject to the agreement of the Road Authority

Bond Coat to Clause 920 (See Note 22)
## General Reinstatement Notes (GN1)

**Guidelines for Managing Openings in Public Roads**

<table>
<thead>
<tr>
<th>General Reinstatement Notes</th>
<th>General Reinstatement Notes GN1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Compliance with these drawings and details are mandatory. Where a utility has an approved equivalent detail for bedding and surround this may be substituted for the bedding and surround detail shown in the Standard Drawings, provided it is agreed with the road authority in advance.</td>
<td></td>
</tr>
<tr>
<td><strong>2.</strong> Full width/plan bay reinstatements works shall be machine laid with materials used in accordance with TII Specification for Road Works and use materials and depths of reconstruction to match the existing surface. <strong>Note:</strong> Surface Dressing does not constitute full width reinstatement unless the structural Asphalitic Concrete (AC) layer is provided over the full width.</td>
<td></td>
</tr>
<tr>
<td><strong>3.</strong> On approach to the works site, the name of the contractor and Licence Holder must be clearly displayed with a 24 hour contact number.</td>
<td></td>
</tr>
<tr>
<td><strong>4.</strong> All works shall have a temporary traffic management plan, which shall be available for inspection on site, and shall comply with the Traffic Signs Manual and health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td><strong>5.</strong> Prior to any excavation works taking place, the location of all underground and over ground services must be identified and marked by a competent person trained in the use of cable detectors. Contact shall be made with all relevant service providers in this regard.</td>
<td></td>
</tr>
<tr>
<td><strong>6.</strong> All works and materials shall comply with the TII Specification for Road Works. Series 900 of that specification will be the March 2011 version. All other Series will be to the current version.</td>
<td></td>
</tr>
<tr>
<td><strong>7.</strong> Excavation on a road should not be closer than 500mm to the kerb line in order to prevent undermining of the adjacent surface. The trench should be located so as to avoid surface joints being isolated in the wheel track as far as reasonably practicable.</td>
<td></td>
</tr>
<tr>
<td><strong>8.</strong> All bound (or concrete) edges shall be saw cut to expose the full vertical thickness of each layer prior to excavation. All edges shall be essentially straight, smooth and vertical.</td>
<td></td>
</tr>
<tr>
<td><strong>9.</strong> Excavated soil shall be suitably protected to avoid harmful effects caused by weather or adjacent wheel loading.</td>
<td></td>
</tr>
<tr>
<td><strong>10.</strong> Refer to Chapter 5 for requirements on pipe/duct type/colour and marker tape.</td>
<td></td>
</tr>
<tr>
<td><strong>11.</strong> The method of work shall ensure proper compaction and such compaction may be tested by the road authority. To ensure adequate compaction, minimum clearances must be maintained vertically and horizontally between individual ducts or services installed in a group.</td>
<td></td>
</tr>
<tr>
<td><strong>12.</strong> Cl.038 to be used within 500mm of cement bound materials, concrete pavements, concrete structures or concrete products. Otherwise Cl. 041 may be used. Foamed concrete to Cl. 1043 may only be used as a bedding material or backfill material with prior approval of the road authority. Cement Bound Granular Material B shall have a minimum strength class of C3/10, unless otherwise directed.</td>
<td></td>
</tr>
<tr>
<td><strong>13.</strong> Where steel plates or other trench covers are used, they must comply with Section 0.9.7</td>
<td></td>
</tr>
<tr>
<td><strong>14.</strong> Hand laying of hot bituminous mixtures shall be restricted to the following circumstances: i. At the edges of the layers of material and at gullies, manholes and other ironwork. ii. In confined spaces where it is impracticable for a paver to operate. iii. At the approaches to expansion joints at bridges, viaducts or other structures. iv. Transverse reinstatements less than 4 metres in width. v. Longitudinal reinstatements less than 20 metres in length. vi. Surface course reinstatements of longitudinal excavations less than 1 metre in width. vii. Temporary reinstatement The method of laying shall be such that the finished surface is free from dragging, tearing and segregation of the material.</td>
<td></td>
</tr>
<tr>
<td><strong>15.</strong> All surface course aggregate shall have a minimum PSV of 60 declared unless otherwise specified by the road authority. Temporary surfaces to be managed in accordance with HSE/13/2007.</td>
<td></td>
</tr>
<tr>
<td><strong>16.</strong> Any damage to the road structure or areas adjacent to the opening and resulting from the works shall be repaired and included within the area to be reinstated.</td>
<td></td>
</tr>
<tr>
<td><strong>17.</strong> Where there are exceptional circumstances not covered by the drawings, the reinstatement specification must be agreed with the road authority.</td>
<td></td>
</tr>
</tbody>
</table>
4. All works shall have a temporary traffic management plan, which shall be available for inspection on site, and shall comply with the Traffic Signs Manual and health and safety requirements.

5. Prior to any excavation works taking place, the location of all underground and over ground services must be identified and marked by a competent person trained in the use of cable detectors. Contact shall be made with all relevant service providers in this regard.
5 General Arrangements

Transverse Opening

GA2 p85
Advanced Course will consist of:

- Key Elements of the Guidelines and Relevant Legislation
- MapRoad Roadworks Licensing System (MRL)
- Site Records
- Site Inspection(s)
- Dealing with Non-compliance and Unauthorised Work
- Completion of MRL Sign-off Actions at T5
Overview of Entire Process

Role of T5

Approved Certifier
# Licence Holder Inspections:

**Shall** be done by Applicant <4.5.7, 4.5.10, 5.2.1, Table 5.3>

<table>
<thead>
<tr>
<th>Task</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>To identify existing defects</td>
<td>Pre-works</td>
</tr>
<tr>
<td>To record type and condition of Road Assets</td>
<td></td>
</tr>
<tr>
<td>To check existing services</td>
<td></td>
</tr>
<tr>
<td>Photographic Record</td>
<td></td>
</tr>
<tr>
<td>For Quality Assurance</td>
<td>During Works</td>
</tr>
<tr>
<td>To support T5 signoff</td>
<td></td>
</tr>
<tr>
<td>To record any services or culverts encountered</td>
<td></td>
</tr>
<tr>
<td>To provide as-built records (inc line and level)</td>
<td></td>
</tr>
<tr>
<td>Re-measure reinstatements</td>
<td>Post Works</td>
</tr>
<tr>
<td>To certify reinstatement has been completed in accordance with the licence</td>
<td>MapRoad</td>
</tr>
<tr>
<td>Condition of services is satisfactory</td>
<td></td>
</tr>
<tr>
<td>For Quality Assurance (During)</td>
<td>During and at end of Guarantee Period</td>
</tr>
<tr>
<td>To closeout the licence</td>
<td></td>
</tr>
</tbody>
</table>
Defects – Road Authority

- The Road Authority may carry out inspections on the performance standards during the Works and Guarantee Period, including an inspection at the end of the Guarantee Period.
- Any defect identified during these inspections will require corrective action on the part of the Licence Holder prior to any take-over of responsibility by the Road Authority.
- Any defect identified during the guarantee period will require corrective action on the part of the Licence Holder.
SITE INSPECTION CHECK LIST

- Location
- Geometry

Trench
Point Excavations

Excavation Code: PMY83Q
Footway / Off Road Cycleway - Concrete
Length (m): 2.00 | Width (m): 1.00 | Depth (m): 2.00
Kerb Affected (m): 2.00
Reinstatement Incomplete

Manage Reinstatement
The details provided here must reflect the actual works that took place. Please update any excavations where the specifications have changed during the works. To proceed click 'Complete' on any excavation that has been reinstated. You can 'Reopen' a completed excavation to update the specifications.

* Length x Width x Depth – [Kerb] (Metres)

Footway / Off Road Cycleway - Concrete
Measured: 2.00 x 1.00 x 2.00 – (2.00)
Conclusion

➢ Improve on current standards
➢ Consistent implementation
➢ Better compliance
➢ Reduced costs
➢ Everyone trained to a basic standard
So let's keep the Cowboys out!
Get Trained on the Basic and Advance Reinstatement Courses
Roscrea Training Centre
Monastery Road, Roscrea, Co. Tipperary
0505 23425
roscreartc@tipperarycoco.ie

Ballycoolin Training Centre
IDA Business Park, Ballycoolin, Dublin 15
01 8097173
ballycoolintraining@fingal.ie

Castlebar Training Centre
Mayo County Council, Aras an Chontae, The Mall, Castlebar, Co. Mayo
094 9064080
crtc@mayococo.ie

Ballincollig Training Centre
Innishmore, Ballincollig, Co. Cork
021 4876253
brtc@corkcoco.ie

Stranorlar Training Centre
Railway Road, Stranorlar, Co. Donegal F93 HY64
074 9130208 or 074 9130209
stranorlarrtc@donegalcoco.ie
Thanks Larry Carey DLR Co.Co. Keep on Rocking!!