

## TABLE OF CONTENTS

2.13	<b>LIVESTOCK GUARDS</b> .....	1
2.13.1	<b><u>GENERAL</u></b> .....	1
2.13.1.1	<b>Description</b> .....	1
2.13.2	<b><u>MATERIALS</u></b> .....	1
2.13.2.1	<b>Concrete</b> .....	1
2.13.2.2	<b>Livestock Guards</b> .....	1
2.13.3	<b><u>CONSTRUCTION</u></b> .....	1
2.13.3.1	<b>Preparation of Base</b> .....	1
2.13.3.2	<b>Forms</b> .....	1
2.13.3.3	<b>Reinforcing Steel</b> .....	1
2.13.3.4	<b>Mixing and Placing Concrete</b> .....	2
2.13.3.5	<b>Connections</b> .....	2
2.13.3.6	<b>Backfill</b> .....	2
2.13.3.7	<b>Cleaning and Maintenance</b> .....	2
2.13.3.8	<b>Remove and Dispose of Livestock Guards</b> .....	2
2.13.3.9	<b>Remove and Reinstall Livestock Guards</b> .....	2
2.13.3.10	<b>Install and Remove Temporary Livestock Guards</b> .....	2
2.13.4	<b><u>MEASUREMENT AND PAYMENT</u></b> .....	3
2.13.4.1	<b>Supply and Installation of Livestock Guards</b> .....	3
2.13.4.2	<b>Remove and Dispose of Livestock Guards</b> .....	3
2.13.4.3	<b>Remove and Reinstall Livestock Guards</b> .....	3
2.13.4.4	<b>Install and Remove Temporary Livestock Guards</b> .....	3

**2.13 LIVESTOCK GUARDS**2.13.1 GENERAL2.13.1.1 **Description**

This work shall consist of the installation of livestock guards of the type and to the dimensions, lines, elevations and design shown on the plans and in accordance with these specifications, at locations as shown on the plans or as directed by the Consultant.

2.13.2 MATERIALS2.13.2.1 **Concrete**

All materials for the manufacture of concrete shall be supplied by the Contractor and shall comply with the requirements of Specification 5.5, Supply of Portland Cement Concrete. Class "B28" air-entrained Portland Cement Concrete shall be used unless otherwise specified or shown on the plans.

2.13.2.2 **Livestock Guards**

Livestock guards shall be fabricated and supplied by the Contractor in accordance with Specification 5.21, Supply of Livestock Guards. All materials including anchor bolts, U-bolts, protection angles, rail type or drill stem decking, treated timber and all nuts, washers and incidental hardware shall be supplied by the Contractor.

2.13.3 CONSTRUCTION2.13.3.1 **Preparation of Base**

Foundation pits for livestock guards shall be excavated to elevations established by the Consultant, and shall be of sufficient size to accommodate the entire dimensions of the structure and footing slabs. All soft and yielding or other unsuitable materials, when encountered at foundation elevation, shall be removed to depth as required and replaced with acceptable granular backfill. The backfill shall be placed in layers not exceeding 0.15 m in depth and thoroughly compacted. The base shall be finished to provide a smooth and firm surface.

2.13.3.2 **Forms**

Forms shall be of wood or metal, straight and free from distortion, and of sufficient strength to resist springing during the process of placing and tamping the concrete. All forms shall be thoroughly cleaned and oiled before placing concrete therein.

2.13.3.3 **Reinforcing Steel**

Reinforcing steel shall be accurately placed, and during placing of the concrete firmly held in the position shown on the plans by means of stays, blocks, ties, hangers, or other approved devices.

**2.13.3.4 Mixing and Placing Concrete**

Concrete for livestock guards shall be proportioned and mixed in accordance with the requirements of Specification 5.5, Supply of Portland Cement Concrete.

Concrete shall be placed in such a manner as to avoid segregation, shall be spread in horizontal layers when practicable, and shall be consolidated sufficiently to eliminate all voids.

Exposed surfaces shall be thoroughly floated and finished to produce a uniform, even surface, and edges rounded with an approved finishing tool having a radius of 5 mm.

**2.13.3.5 Connections**

All bolt connections shall be securely tightened.

**2.13.3.6 Backfill**

After the concrete has attained sufficient strength, forms shall be removed and approved backfill material shall be placed as required, and thoroughly compacted in layers not exceeding 0.15 m in depth. The backfill shall be graded flush with the top of the structure, or to elevation as directed by the Consultant, and the work left in a neat and tidy condition.

**2.13.3.7 Cleaning and Maintenance**

Upon completion, livestock guards shall be free draining, cleaned of any accumulation of soil, debris, or other foreign matter, and maintained in this condition until final acceptance of the work.

**2.13.3.8 Remove and Dispose of Livestock Guards**

Livestock guards, as shown on the plans and/or as directed by the Consultant, shall be removed and disposed of in a manner satisfactory to the Consultant. All materials shall become the property of the Contractor and the site shall be left in a neat and tidy condition.

**2.13.3.9 Remove and Reinstall Livestock Guards**

Where specified, existing livestock guards shall be removed, the materials carefully salvaged, and the livestock guards reinstalled in accordance with the plans and specifications, and at a location as directed by the Consultant. Materials damaged through the negligence of the Contractor shall be replaced at his expense.

**2.13.3.10 Install and Remove Temporary Livestock Guards**

Prior to the commencement of operations in areas as shown on the plans or defined in the special provisions, the Contractor shall supply, install and maintain temporary livestock guards in accordance with the applicable drawings. Upon completion of operations in these areas the Contractor shall remove the livestock guards and restore the areas to the satisfaction of the Consultant.

2.13.4 MEASUREMENT AND PAYMENT2.13.4.1 **Supply and Installation of Livestock Guards**

Measurement for the supply and installation of livestock guards will be made by the unit, complete in place, for the type and width specified.

Payment will be made at the applicable price bid per unit for "Standard Livestock Guard - Supply and Install", "Range Type Livestock Guard - Supply and Install" and "Off-Highway Type Livestock Guard - Supply and Install". This payment will be full compensation for supplying the livestock guard; excavating and preparing the base; driving piles and constructing plank sheathing where applicable; backfill; and installing the livestock guard.

2.13.4.2 **Remove and Dispose of Livestock Guards**

Payment for the removal and disposal of livestock guards will be made at the price bid per unit for "Remove and Dispose of Livestock Guards". This payment will be full compensation for removing, hauling, and disposing of the material at a location suitable to the Consultant and restoring the site.

2.13.4.3 **Remove and Reinstall Livestock Guards**

Payment for the removal and reinstallation of livestock guards will be made at the price bid per unit for "Remove and Reinstall Livestock Guards". This payment will be full compensation for removing the existing guards, and for loading, hauling, unloading and reinstalling the livestock guards in accordance with the plans and specifications at the location as directed by the Consultant.

2.13.4.4 **Install and Remove Temporary Livestock Guards**

Payment for this work will be made at the price bid per unit for "Install and Remove Temporary Livestock Guard". This payment will be full compensation for supplying the temporary livestock guard, installing, maintaining and removing the unit, and restoring the site to the satisfaction of the Consultant.