**Ministry of Education**

**ትምህርትሚኒስቴር**

**Sector** Building Construction

**ዘርፍ:-ህንጻ ግንባታ**

**Occupation:** Bar Bending & Concreting **L-II**

**ሙያ:- ብረት አጠፋና አርማታስራ**

**Materials and Supplies (consumable materials) Per Candidate**

**ለአንድተመዛኝየሚያስፈልጉአላቂእቃዎች**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Item** | **Qty** | **Unit** | **Specification** |
| ተ.ቁ | ዓይነት | መጠን | መለኪያ | መገለጫ |
|  | Lime or cement | 31 | Kg | any lime or cement |
| ኖራወይምሲሚነቶ | ኪ.ግ | ማንኛውምሲሚንቶ/ኖራ |
|  | Sand | 0.03 | M3 | Fine River sand |
| አሸዋ | ሜትርኩብ | ደቃቅየወንዝአሸዋ |
|  | Gravel (02) | 0.06 | M3 | 02 well graded |
| ጠጠር | ሜትርኩብ | 02 ሚ.ሜውፍረትያለውበጥሩሁኔታየተፈጨጠጠር |
|  | 8mm Reinforcement bars (footing) | 8.0 | m | Local production |
| ባለ 8ሚ.ሜየመዋቅር (የፌሮ) ብረት | ሜትር | የአገርውስጥምርት |
|  | 8mm Reinforcement bars (Column) | 3.4 | m | Local production |
| ባለ 8ሚ.ሜየመዋቅር (የፌሮ) ብረት | ሜትር | የአገርውስጥምርት |
|  | 8mm reinforcement bars (for stirrup) | 1 | k.g | Local production |
| ባለ 8ሚ.ሜየመዋቅር (የፌሮ) ብረት (ለማሰሪያ) | ኪ.ግ | የአገርውስጥምርት |
|  | Black wire 1.5mm | 6 | m | Soft and ductile annealed wire |
| የመዋቅር (የፌሮ) ብረትመሰሪያብረት | ሜትር | ለስላሳናተጣጣፊብረት |
|  | Timber 3.8x0.2m  3.8mx0.2ላ | 3.8mm | Meter  ሜትር | Australian timber  ላ |

**Tools and Equipment**

**የእጅመሳሪያዎች**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Item | Qty | Unit | Specification |
| ተ.ቁ | ዓይነት | መጠን | መለኪያ | መገለጫ |
|  | Shovel | 1 | Pc |  |
| አካፋ | ቁጥር |  |
|  | Try square | 1 | Pc |  |
| አንግልመለኪያ(ሰኳድራመለኪያ)) | ቁጥር |  |
|  | Trowel | 1 | Pc |  |
| ማንኪያ | ቁጥር |  |
|  | Float | 1 | Pc |  |
| መፋስ | ቁጥር |  |
|  | Steel Tape (3m) | 1 | Pc |  |
| ሜትር | ቁጥር |  |
|  | Plumb bob | 1 | Pc |  |
| ቱምቢ | ቁጥር |  |
|  | Claw hammer | 1 | Pc |  |
| የአናፂመዶሻ | ቁጥር |  |
|  | Bucket | 1 | Pc |  |
| ሸንኬሎ (ባልዲ) | ቁጥር |  |
|  | Batching box | 1 | Pc | 50X40X18 cm timber |
| መስፈሪያሳጥን | ቁጥር | 50 X 40 X 18 ሳ.ሜጣውላ |
|  | Hack saw | 1 | Pc |  |
| የብረትመጋዝ | ቁጥር |  |
|  | Spirit level (40 cm long) | 1 | Pc |  |
| የእጅውሃልክ | ቁጥር |  |
|  | Pliers (Pincher) | 1 | Pc |  |
| የፌራዩፒንሳ (ጉጠት) | ቁጥር |  |
|  | Broom | 1 | Pc |  |
| መጥረጊያ | ቁጥር |  |
|  | Bar bender (“Bega”) | 1 | pc | For 8mm Bar |
| የብረትማጠፊያ | ቁጥር | ለባለ 8ሚ.ሜብረት |
|  | Bar bending plate | 1 | pc | 0.6cm thick ,20 x 20 cm wide metal plate |
| የብረትማጠፊያምጣድ | ቁጥር | 0.6ሳ.ሜውፍረትእና, 20 x 20 ስፋትያለው |
|  | 65cm x 65cm x 35cm w00den form work for footing pad (It would be very economical and reusable if the form work could be adjustable) | 1 | Set | This form work is to be used by the candidate for filling concrete |
| 65ሳ.ሜ x 65ሳ.ሜ x 35ሳ.ሜየአርማታማቀፊያላ | ጥቅል/እስር | ለአርማታመሙያነትየሚያገለግል |

**Materials and Supplies (consumable materials) Per Candidate**

**ለአንድተመዛኝየሚያስፈልጉአላቂእቃዎች**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Item | Qty | Unit | Specification |
| ተ.ቁ | ዓይነት | መጠን | መለኪያ | መገለጫ |
|  | Lime or cement | 10 | Kg | any lime or cement |
| ኖራወይምሲሚነቶ | ኪ.ግ | ማንኛውምሲሚንቶ/ኖራ |
|  | Sand | 0.02 | M3 | Fine River sand |
| አሸዋ | ሜትርኩብ | ደቃቅየወንዝአሸዋ |
|  | Gravel (02) | 0.05 | M3 | 02 well graded |
| ጠጠር | ሜትርኩብ | 02 ሚ.ሜውፍረትያለውበጥሩሁኔታየተፈጨጠጠር |
|  | 10mm Reinforcement barfor g.beam | 5.4 | m | Local production |
| ባለ 10ሚ.ሜየመዋቅር (የፌሮ) ብረት | ሜትር | የአገርውስጥምርት |
|  | 10mm Reinforcement bars (Column) | 3.5 | m | Local production |
| ባለ 10ሚ.ሜየመዋቅር (የፌሮ) ብረት | ሜትር | የአገርውስጥምርት |
|  | 6mm reinforcement bars (for stirrup) | 3 | k.g | Local production |
| ባለ 6ሚ.ሜየመዋቅር (የፌሮ) ብረት (ለማሰሪያ) | ኪ.ግ | የአገርውስጥምርት |
|  | Black wire 1.5mm | 6 | m | Soft and ductile annealed wire |
| የመዋቅር (የፌሮ) ብረትመሰሪያብረት | ሜትር | ለስላሳናተጣጣፊብረት |
|  | Timber 3.4\*0.2mላ | 3.4 | Meter  ሜትር | Australian timber  ላ |

**Tools and Equipment**

**የእጅመሳሪያዎች**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Item** | **Qty** | **Unit** | **Specification** |
| **ተ.ቁ** | **ዓይነት** | **መጠን** | **መለኪያ** | **መገለጫ** |
|  | Shovel | 1 | Pc |  |
| አካፋ | ቁጥር |  |
|  | Try square | 1 | Pc |  |
| አንግልመለኪያ(ሰኳድራመለኪያ)) | ቁጥር |  |
|  | Trowel | 1 | Pc |  |
| ማንኪያ | ቁጥር |  |
|  | Float | 1 | Pc |  |
| መፋስ | ቁጥር |  |
|  | Steel Tape (3m) | 1 | Pc |  |
| ሜትር | ቁጥር |  |
|  | Plumb bob | 1 | Pc |  |
| ቱምቢ | ቁጥር |  |
|  | Claw hammer | 1 | Pc |  |
| የአናፂመዶሻ | ቁጥር |  |
|  | Bucket | 1 | Pc |  |
| ሸንኬሎ (ባልዲ) | ቁጥር |  |
|  | Batching box | 1 | Pc | 50X40X18 cm timber |
| መስፈሪያሳጥን | ቁጥር | 50 X 40 X 18 ሳ.ሜጣውላ |
|  | Hack saw | 1 | Pc |  |
| የብረትመጋዝ | ቁጥር |  |
|  | Spirit level (40 cm long) | 1 | Pc |  |
| የእጅውሃልክ | ቁጥር |  |
|  | Pliers (Pincher) | 1 | Pc |  |
| የፌራዩፒንሳ (ጉጠት) | ቁጥር |  |
|  | Broom | 1 | Pc |  |
| መጥረጊያ | ቁጥር |  |
|  | Bar bender (“Bega”) | 1 | pc | For 8mm Bar |
| የብረትማጠፊያ | ቁጥር | ለባለ 8ሚ.ሜብረት |
|  | Bar bending plate | 1 | pc | 0.6cm thick ,20 x 20 cm wide metal plate |
| የብረትማጠፊያምጣድ | ቁጥር | 0.6ሳ.ሜውፍረትእና, 20 x 20 ስፋትያለው |
|  | 450cm x20cm x2.5cm w00den form work for grade beam and column (It would be very economical and reusable if the form work could be adjustable) | 1 | Set | This form work is to be used by the candidate for filling concrete |
| 450ሳ.ሜ x 20ሳ.ሜ x 2.5ሳ.ሜየአርማታማቀፊያላ | ጥቅል/እስር | ለአርማታመሙያነትየሚያገለግል |

**Materials and Supplies (consumable materials) Per Candidate**

**ለአንድ ተመዛኝ የሚያስፈልጉ አላቂ እቃዎች**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Item** | **Qty** | **Unit** | **Specification** |
| **ተ.ቁ** | **ዓይነት** | **መጠን** | **መለኪያ** | **መገለጫ** |
|  | Lime or cement | 9 | Kg | any lime or cement |
| ኖራ ወይም ሲሚነቶ | ኪ.ግ | ማንኛውም ሲሚንቶ/ኖራ |
|  | Sand | 0.013 | M3 | Fine River sand |
| አሸዋ | ሜትርኩብ | ደቃቅ የወንዝ አሸዋ |
|  | Gravel (02) | 0.02 | M3 | 02 well graded |
| ጠጠር | ሜትርኩብ | 02 ሚ.ሜ ውፍረት ያለው በጥሩ ሁኔታ የተፈጨ ጠጠር |
|  | 8mm Reinforcement bars (footing) | 3.45 | m | Local production |
| ባለ 8ሚ.ሜ የመዋቅር (የፌሮ) ብረት | ሜትር | የአገር ውስጥ ምርት |
|  | 8mm Reinforcement bars (Column) | 2.1 | m | Local production |
| ባለ 8ሚ.ሜ የመዋቅር (የፌሮ) ብረት | ሜትር | የአገር ውስጥ ምርት |
|  | 8mm reinforcement bars (for stirrup) | 2.1 | m | Local production |
| ባለ 8ሚ.ሜ የመዋቅር (የፌሮ) ብረት (ለማሰሪያ) | ሜትር | የአገር ውስጥ ምርት |
|  | Black wire 1.5mm | 3 | m | Soft and ductile annealed wire |
| የመዋቅር (የፌሮ) ብረት መሰሪያ ብረት | ሜትር | ለስላሳና ተጣጣፊ ብረት |

**Tools and Equipment**

**የእጅ መሳሪያዎች**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Item** | **Qty** | **Unit** | **Specification** |
| **ተ.ቁ** | **ዓይነት** | **መጠን** | **መለኪያ** | **መገለጫ** |
|  | Shovel | 1 | Pc |  |
| አካፋ | ቁጥር |  |
|  | Try square | 1 | Pc |  |
| አንግል መለኪያ(ሰኳድራ መለኪያ)) | ቁጥር |  |
|  | Trowel | 1 | Pc |  |
| ማንኪያ | ቁጥር |  |
|  | Float | 1 | Pc |  |
| መፋስ | ቁጥር |  |
|  | Steel Tape (3m) | 1 | Pc |  |
| ሜትር | ቁጥር |  |
|  | Plumb bob | 1 | Pc |  |
| ቱምቢ | ቁጥር |  |
|  | Claw hammer | 1 | Pc |  |
| የአናፂ መዶሻ | ቁጥር |  |
|  | Bucket | 1 | Pc |  |
| ሸንኬሎ (ባልዲ) | ቁጥር |  |
|  | Batching box | 1 | Pc | 50X40X18 cm timber |
| መስፈሪያ ሳጥን | ቁጥር | 50 X 40 X 18 ሳ.ሜ ጣውላ |
|  | Hack saw | 1 | Pc |  |
| የብረት መጋዝ | ቁጥር |  |
|  | Spirit level (40 cm long) | 1 | Pc |  |
| የእጅ ውሃ ልክ | ቁጥር |  |
|  | Pliers (Pincher) | 1 | Pc |  |
| የፌራዩ ፒንሳ (ጉጠት) | ቁጥር |  |
|  | Broom | 1 | Pc |  |
| መጥረጊያ | ቁጥር |  |
|  | Bar bender (“Bega”) | 1 | pc | For 8mm Bar |
| የብረት ማጠፊያ | ቁጥር | ለባለ 8ሚ.ሜ ብረት |
|  | Bar bending plate | 1 | pc | 0.6cm thick ,20 x 20 cm wide metal plate |
| የብረት ማጠፊያ ምጣድ | ቁጥር | 0.6ሳ.ሜ ውፍረት እና, 20 x 20 ስፋት ያለው |
|  | 50cm x 45cm x 15cm steel form work for footing pad (It would be very economical and reusable if the form work could be adjustable) | 1 | Set | This form work is to be used by the candidate for filling concrete |
| 50ሳ.ሜ x 45ሳ.ሜ x 15ሳ.ሜ የአርማታ ማቀፊያ ብረት | ጥቅል/እስር | ለአርማታ መሙያነት የሚያገለግል |