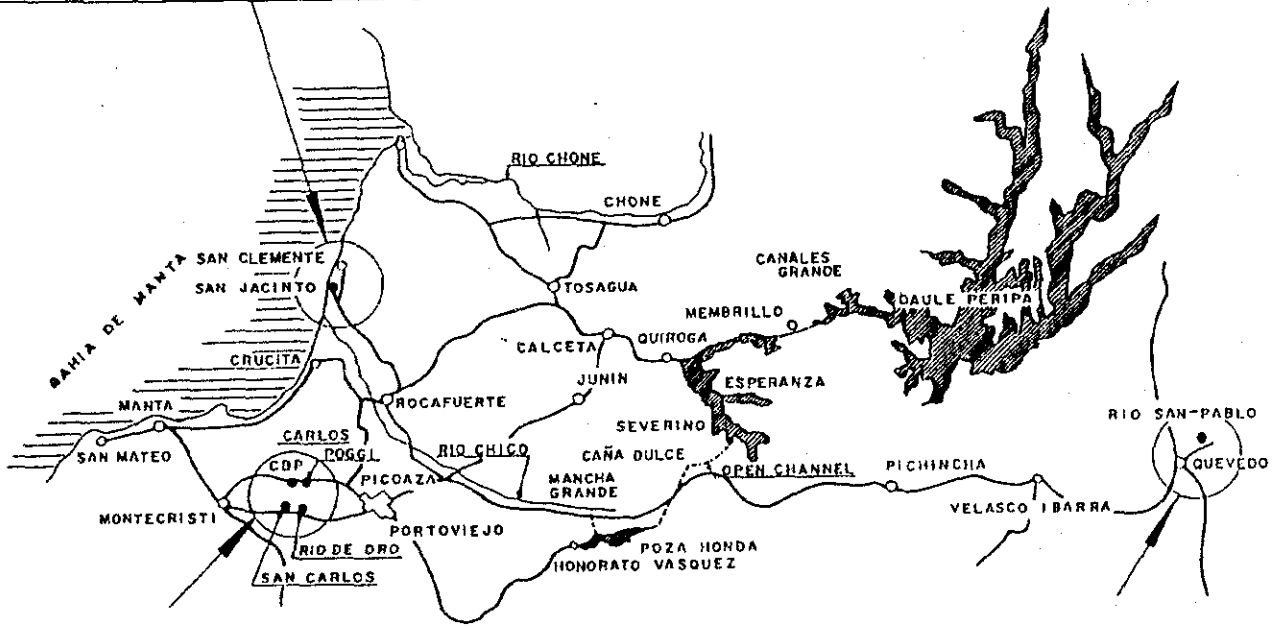
# ANEXO V

## UBICACION DE LOS AGREGADOS DEL HORMIGON

| From | To | via | Km |
|---|---|---|---|
| San Jacinto | Poza Honda Inlet | Portoviejo | 95 |
| | Poza Honda Outlet | Portoviejo | 108 |
| (Sea Sand) | Mancha Grande Outlet | Rocafuerte | 63 |
| | Membrillo Outlet | Calceta | 118 |
| | Canales Grande Inlet | Calceta | 132 |
| | Severino Pump station | R. fuerte/Delicias | 126 |
| | Open Channel | R. fuerte/Delicias | 121 |

ESCALA 1:200,000

0 10 20 30 km.




| From | To | via | Km |
|---|---|---|---|
| CBP/C.Poggi | Poza Honda Inlet | Portoviejo | 72 |
| S.Carlos | Poza Honda Outlet | Portoviejo | 59 |
| | Mancha Grande Outlet | Rodeo | 47 |
| (Quarry) | Membrillo Outlet | R. fuerte/Calceta | 104 |
| | Canales Grande Inlet | R. fuerte/Calceta | 107 |
| | Severino P. Station | Rodeo/Delicias | 79 |
| | Open Channel | Rodeo/Delicias | 74 |

| From | To | via | Km |
|---|---|---|---|
| Quevedo | Poza Honda Inlet | Portoviejo | 185 |
| R.S. Pablo | Poza Honda Outlet | Portoviejo | 193 |
| | Mancha Grande Outlet | Pichincha | 110 |
| (River Sand) | Membrillo Outlet | Rocafuerte/Calceta | 223 |
| | Canales Grande Inlet | Rocafuerte/Calceta | 237 |
| | Severino Pump station | Delicias | 95 |
| | Open Channel | Delicias | 100 |

| REV. Nº | REVISADO | APROBADO | FECHA |
|---|---|---|---|
| | | | |

CRM CENTRO DE REHABILITACION DE MANABI

Estudio de Diseño Detallado de los Trasvases de Agua para los Cauces de Los Ríos Chone - Portoviejo

The Detailed Design Study on the Water Transfer Schemes for Chone - Portoviejo River Basins

REPUBLICA DEL ECUADOR

TITULO: DISTANCIA DE TRANSPORTE PARA LOS AGREGADOS DE HORMIGON
TRANSPORT DISTANCE FOR CONCRETE AGGREGATE

LEVANTO: DIBUJO: DISEÑO: REVISO: ENTREGO: FECHA:

APROBADO: FECHA: DIBUJO Nº 2-GE-019

# ANEXO VI

## CRONOGRAMA DE USO DEL EQUIPO DE CONSTRUCCION, PAQUETE 1

## Cronograma de Uso del Equipo de Construccion,Paquete 1

| | 1997 | | | | | | 1998 | | | | | | | | | | | | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| 1 Bulldozer con escarificador,32 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Entrada y salida | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Conguillo | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso El guasmo | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Membrillo | | | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 9 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2 Bulldozer,21 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| Entrada y salida | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 Bulldozer,11 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | | | |
| Entrada y salida | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Conguillo | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso El guasmo | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Membrillo | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | |
| Tunel | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 5 | 3 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4 Pala cargadora,2.2m3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | | | |
| Entrada y salida | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Conguillo | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso El guasmo | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Membrillo | | | | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | | | | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 15 | 15 | 15 | 15 | 17 | 17 | 17 | 17 | 19 | 16 | 17 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 17 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 5 Pala cargadora,1.2m3 (3) | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | |
| 6 Retroexcavadora,0.6 m3 (1) | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | 1 | | | |
| 7 Retroexcavadora,0.3 m3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | |
| Entrada | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | |
| Camino de acceso | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | | | | | | | | | | | | | | |

Cronograma de Uso del Equipo de Construccion,Paquete 1

| | 1997 | | | | | | 1998 | | | | | | | | | | | | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| 8 Volqueta,11t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | | | | | | | | | | | | | | 3 | | | | | |
| Entrada y salida | | | | | | | | | | | | | | | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Conguillo | | | | | | | | | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso El guasmo | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Membrillo | | | | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | | | | | 6 | 6 | 6 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 63 | 63 | 63 | 63 | 69 | 69 | 69 | 69 | 71 | 64 | 70 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 69 | 63 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 9 Volqueta,8t (3) | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 10 Perforadora de oruga,7m3/min (2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | |
| 11 Perforadora de oruga,10m3/min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | | | | | |
| Entrada y salida | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Conguillo | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso El guasmo | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Membrillo | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 Compresor de aire,10m3/min (2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | |
| 13 Compresor de aire,13.5m3/min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | | | | | |
| Entrada y salida | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Conguillo | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso El guasmo | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Membrillo | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 14 Apisonador,20t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Conguillo | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 Rodillo vibratorio,10t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | |
| Camino de acceso Conguillo | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | |
| Camino de acceso El Guasmo | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acces Membrillo | | | | | | | | | | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Cronograma de Uso del Equipo de Construccion,Paquete 1

| | 1997 | | | | | | | | | | | | 1998 | | | | | | | | | | | | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| 16 Rodillo vibratorio,4t (1) | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 17 Rodillo vibratorio,1t (2) | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 18 Planta de concreto,1.0m3 (2) | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 19 Camion agitador,3m3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | |
| Entrada | | | | | | | | | | | | | | | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Tunel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso | | | | | | | | | | | | | | | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 10 | 10 | 0 | 0 | 0 | | | |
| Subtotal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 Bomba de concreto,45m3/hr (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 21 Grua de camion,30t (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | |
| 22 Grua de camion,20t (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | |
| 23 Camion,20t (1) | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 24 Maquina de excavacion de tunel 110kW (3) | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | |
| 25 Cargador de escombros,clavos, 0.4m3 (2) | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 Carrito cargador de escombros, 4.5m3 (30) | | | | | | | | | | | | | 4 | 4 | 4 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | | | | | | | | | |
| 27 Locomotora a bateria,8t (6) | | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | |
| 28 Compresor de aire,16m3/min (3) | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | |
| 29 Ventilador,300m3/min (19) | | | | | | | | | | | | | | | | | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | | | | | | | | | | |
| 30 Ventilador,100m3/min (3) | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | |
| 31 Winche,150kW (3) | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | |
| 32 Winche,100kW (3) | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 33 Spray,10m3/hr (3) | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | |
| 34 Colocador de concreto,6m3 (6) | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | |
| 35 Locomotora a bateria,6t (6) | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | |
| 36 Carro agitador,4.5m3 (6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | | | | |

Cronograma de Uso del Equipo de Construccion,Paquete 1

| | 1997 | | | | | | 1998 | | | | | | | | | | | | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| 37 Encofrado deslizante,telescopico 3.7m,12m (3) | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | |
| 38 Maquina de sondeos,5.5kW (6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | | | | | | |
| 39 Bomba de lechadas,11kW (4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 4 | 4 | 4 | | | | | | |
| 40 Mezcladora de lechadas,200 x 2 (4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 4 | 4 | 4 | | | | | | |
| 41 Generador diesel,300kVA (6) | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | |
| 42 Generador diesel,150kVA (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 43 Generador diesel,100kVA (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 44 Motoniveladora,3.7m (2) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| 45 Rodillon aplanador,10t (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 46 Rodillo de llantas,20t (2) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| 47 Rociador,5.5kl (3) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| 48 Draga,200 HP (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | | | | | | |

# ANEXO VII

## CRONOGRAMA DE USO DEL EQUIPO DE CONSTRUCCION, PAQUETE 2

Cronograma de Uso del Equipo de Construccion,Paquete 2

| | 1997 | | | | | | | | | | | | 1998 | | | | | | | | | | | | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| 1 Bulldozer con escarificador,32 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estacion de bombeo | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tuberia de carga | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanque de carga | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Subestacion | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Canal abierto,excavacion | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Canal abierto,terraplen | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| Cana Dulce,entrada y salida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | | 1 | | |
| Poza-Mancha,entrada y salida | | | | | | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso La Seca | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Los Cuyuyes | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Poza Honda | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Severino | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Cana Dulce | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso La Seca | | | 1 | 0 | 0 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Los Cuyuyes | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| camino de acceso Poza Honda | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 3 | 3 | 6 | 6 | 4 | 4 | 4 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 2 Bulldozer,21 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estacion de bombeo | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tuberia de carga | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanque de carga | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Subestacion | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cana abierto,terraplen | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Cana Dulce,entrada y salida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | | | | | | | 0 | | |
| Poza-Mancha,entrada y salida | | | | | | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso La Seca | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Los Cuyuyes | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Poza Honda | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Severino | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Cana Dulce | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso La Seca | | | 1 | 0 | 0 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Los Cuyuyes | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| camino de acceso Poza Honda | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 3 | 3 | 3 | 3 | 6 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 Bulldozer,11 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estacion de bombeo | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tuberia de carga | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanque de carga | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Subestacion | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Canal abierto | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Cana Dulce,entrada y salida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | | | | | | | 0 | | |
| Poza-Mancha,entrada y salida | | | | | | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| Tunel derivacion | | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

Cronograma de Uso del Equipo de Construccion,Paquete 2

| | 1997 | | | | | | | | | | | | 1998 | | | | | | | | | | | | 1999 | | | | | | | | | | | | 2000 | | | | | | | | | | | | 2001 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| Camino de acceso Severino | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Cana Dulce | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso La Seca | | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Los Cuyuyes | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Poza Honda | | | | 4 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 19 | 23 | 23 | 19 | 26 | 27 | 25 | 25 | 17 | 17 | 43 | 43 | 32 | 32 | 32 | 32 | 18 | 18 | 12 | 12 | 10 | 10 | 17 | 17 | 17 | 17 | 24 | 24 | 20 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 9 Volqueta,8t (5) | | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | | | | | |
| 10 Perforadora de oruga,7m3/min (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | |
| 11 Perforadora de oruga,10m3/min | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estacion de bombeo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanque de carga | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subestacion | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | 1 | | | |
| Canal abierto | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cana Dulce,entrada y salida | | | | | | | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| Poza-Mancha,entrada y salida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso La Seca | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Los Cuyuyes | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Poza Honda | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Severino | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Cana Dulce | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso La Seca | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Los Cuyuyes | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Poza Honda | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 1 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 1 | 1 | 4 | 4 | 4 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 12 Compresor de aire,10m3/min (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | |
| 13 Compresor de aire,13.5m3/min | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estacion de bombeo | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tuberia de carga | | | | | | | | | | | | | | | | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanque de carga | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | 1 | | | |
| Subestacion | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Canal abierto | | | | | | | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| Cana Dulce,entrada y salida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Poza-Mancha,entrada y salida | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso La Seca | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Los Cuyuyes | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventana de acceso Poza Honda | | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Severino | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Cana Dulce | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso La Seca | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Los Cuyuyes | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Camino de acceso Poza Honda | | | | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | 0 | 0 | 1 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 1 | 1 | 4 | 4 | 4 | 4 | 4 | [illegible] | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |

Cronograma de Uso del Equipo de Construccion,Paquete 2

| | 1997 | | | | | | 1998 | | | | | | 1999 | | | | | | 2000 | | | | | | 2001 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N | D | E | F | M | A | M | J | J | A | S | O | N |
| 25 Camion,20t (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 26 Maquina de excavacion de tunel 110kW (5) | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 27 Cargador de escombros,clavos 0.4m3 (3) | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 28 Carrito cargador de escombros 4.5m3 (24) | | | | | | | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| 29 Carrito cargador de escombros 3m3 (6) | | | | | | | | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 30 Locomotora a bateria,8t (6) | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 31 Locomotora a bateria,6t (4) | | | | | | | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 32 Compresor de aire,16m3/min (5) | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 33 Ventilador,300m3/min (34) | | | | | | | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| 34 Ventilador,100m3/min (10) | | | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 35 Winche,150kW (2) | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 36 Winche,100kW (3) | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 37 Spray,10m3/hr (5) | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 38 Colocador de concreto,6m3 (6) | | | | | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 39 Colocador de concreto,4.5m3 (4) | | | | | | | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 41 Locomotorio a bateria,6t (10) | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 42 Carro agitador,4.5m3 (6) | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 4 | 4 | | | |
| 43 Encofrado deslizante,telescopico 3.5m,12m (3) | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 44 Encofrado deslizante,telescopico 2.5m,12m (2) | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 45 Maquina de sondeos,5.5kW (6) | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | | | |
| 46 Bomba de lechadas,11kW (6) | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | | | |
| 47 Mezcaladora de lechadas,200 x 2 (6) | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | | | |
| 48 Generador de diesel,300kVA (8) | | | | | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

| | 2001 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| 25 Camion,20t (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 26 Maquina de excavacion de tunel 110kW (5) | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 27 Cargador de escombros,clavos 0.4m3 (3) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 28 Carrito cargador de escombros 4.5m3 (24) | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| 29 Carrito cargador de escombros 3m3 (6) | | | | | | | | | | | | |
| 30 Locomotora a bateria,8t (6) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 31 Locomotora a bateria,6t (4) | | | | | | | | | | | | |
| 32 Compresor de aire,16m3/min (5) | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 33 Ventilador,300m3/min (34) | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| 34 Ventilador,100m3/min (10) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 35 Winche,150kW (2) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 36 Winche,100kW (3) | | | | | | | | | | | | |
| 37 Spray,10m3/hr (5) | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 38 Colocador de concreto,6m3 (6) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 39 Colocador de concreto,4.5m3 (4) | | | | | | | | | | | | |
| 41 Locomotorio a bateria,6t (10) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 42 Carro agitador,4.5m3 (6) | 6 | 6 | 6 | 6 | | | | | | | | |
| 43 Encofrado deslizante,telescopico 3.5m,12m (3) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 44 Encofrado deslizante,telescopico 2.5m,12m (2) | | | | | | | | | | | | |
| 45 Maquina de sondeos,5.5kW (6) | 6 | 6 | 6 | 6 | 6 | | | | | | | |
| 46 Bomba de lechadas,11kW (6) | 6 | 6 | 6 | 6 | 6 | | | | | | | |
| 47 Mezcaladora de lechadas,200 x 2 (6) | 6 | 6 | 6 | 6 | 6 | | | | | | | |
| 48 Generador de diesel,300kVA (8) | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

# ANEXO VIII

## CALCULO DE LAS CONTIDADES REQUERIDAS DE EQUIPO DE CONSTRUCCION, PAQUETE 1

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Tunel de Derivacion | | | | | | | | | | | |
| Conguillo, Entrada | Excavacion, comun | Nivelacion | m3 | 6,020 | Bulldozer | 21 t | 127.0 | 47 | 2 meses | 260 | 0.18 |
| | | Carga | m3 | 6,020 | Tractor para | 2.2 m3 | 71.0 | 85 | (40*6.5) | 260 | 0.33 |
| | | Acarreo,2km | m3 | 6,020 | Volqueta | 11 t | 18.2 | 331 | | 260 | 1.27 |
| | | Escombros | m3 | 6,020 | Bulldozer | 11 t | 175.0 | 34 | | 260 | 0.13 |
| | Excavacion,roca meteorizada | Escarificacion | m3 | 18,870 | Bulldozer | 32 t | 114.0 | 166 | 2 meses | 260 | 0.64 |
| | | Carga | m3 | 18,870 | Tractor para | 2.2 m3 | 51.0 | 370 | (40*6.5) | 260 | 1.42 |
| | | Acarreo,2km | m3 | 18,870 | Volqueta | 11 t | 16.6 | 1,137 | | 260 | 4.37 |
| | | Escombros | m3 | 18,870 | Bulldozer | 11 t | 323.0 | 58 | | 260 | 0.22 |
| Membrillo, Salida | Excavacion, comun | Nivelacion | m3 | 4,690 | Bulldozer | 21 t | 127.0 | 37 | 1 mes | 130 | 0.28 |
| | | Carga | m3 | 4,690 | Tractor para | 2.2 m3 | 71.0 | 66 | (20*6.5) | 130 | 0.51 |
| | | Acarreo,2km | m3 | 4,690 | Volqueta | 11 t | 18.2 | 258 | | 130 | 1.98 |
| | | Escombros | m3 | 4,690 | Bulldozer | 11 t | 175.0 | 27 | | 130 | 0.21 |
| | Excavacion,roca meteorizada | Escarificacion | m3 | 2,580 | Bulldozer | 32 t | 114.0 | 23 | 1 mes | 130 | 0.17 |
| | | Carga | m3 | 2,580 | Tractor para | 2.2 m3 | 51.0 | 51 | (20*6.5) | 130 | 0.39 |
| | | Acarreo,2km | m3 | 2,580 | Volqueta | 11 t | 16.6 | 155 | | 130 | 1.20 |
| | | Escombros | m3 | 2,580 | Bulldozer | 11 t | 323.0 | 8 | | 130 | 0.06 |
| | Excavacion,roca | Perforacion | m3 | 400 | Barreno de oruga | 10 m3/min | 23.0 | 17 | 1 mes | 130 | 0.13 |
| | | | m3 | 400 | Compresor de aire | 13.5 m3/min | 23.0 | 17 | (20*6.5) | 130 | 0.13 |
| | | Recoleccion | m3 | 400 | Bulldozer | 32 t | 167.0 | 2 | | 130 | 0.02 |
| | | Carga | m3 | 400 | Tractor para | 2.2 m3 | 47.0 | 9 | | 130 | 0.07 |
| | | Acarreo,2km | m3 | 400 | Volqueta | 11 t | 14.3 | 28 | | 130 | 0.22 |
| | | Escombros | m3 | 400 | Bulldozer | 11 t | 375.0 | 1 | | 130 | 0.01 |
| Conguillo, Pozo de Entrada | Acarreo segundo, escombros | Carga | m3 | 8,570 | Tractor para | 2.2 m3 | 47.0 | 182 | 4 meses | 520 | 0.35 |
| | | Acarreo,2km | m3 | 8,570 | Volqueta | 11 t | 14.3 | 599 | (80*6.5) | 520 | 1.15 |
| | | Escombros | m3 | 8,570 | Bulldozer | 11 t | 375.0 | 23 | | 520 | 0.04 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conguillo Tunel de entrada | Acarreo segundo, escombros | Carga | m3 | 440 | Tractor para | 2.2 m3 | 47.0 | 9 | 1 mes | 130 | 0.07 |
| | | Acarreo,2km | m3 | 440 | Volqueta | 11 t | 14.3 | 31 | (20*6.5) | 130 | 0.24 |
| | | Escombros | m3 | 440 | Bulldozer | 11 t | 375.0 | 1 | | 130 | 0.01 |
| Conguillo Entrada, Dragado | Acarreo segundo, escombros | Carga | m3 | 3,000 | Tractor para | 2.2 m3 | 71.0 | 42 | 7 meses | 910 | 0.05 |
| | | Acarreo,2km | m3 | 3,000 | Volqueta | 11 t | 18.2 | 165 | (140*6.5) | 910 | 0.18 |
| | | Escombros | m3 | 3,000 | Bulldozer | 11 t | 175.0 | 17 | | 910 | 0.02 |
| Tunel, Excavacion | Acarreo segundo, roca del tunel Sta.0-166 | Carga | m3 | 3,100 | Tractor para | 1.2 m3 | 25.0 | 124 | 1.5 meses | 621 | 0.20 |
| | | Acarreo,2km | m3 | 3,100 | Volqueta | 8 t | 9.7 | 320 | (34.5*18) | 621 | 0.51 |
| | | Apilado | m3 | 3,100 | Bulldozer | 11 t | 375.0 | 8 | | 621 | 0.01 |
| | Acarreo segundo, roca del tunel Sta.166-3000 | Carga | m3 | 52,730 | Tractor para | 1.2 m3 | 25.0 | 2,109 | 25.5 meses | 10,566 | 0.20 |
| | | Acarreo,2km | m3 | 52,730 | Volqueta | 8 t | 9.7 | 5,436 | (587*18) | 10,566 | 0.51 |
| | | Apilado | m3 | 52,730 | Bulldozer | 11 t | 375.0 | 141 | | 10,566 | 0.01 |
| | Acarreo segundo, roca de tunel Sta.3000-5500 | Carga | m3 | 46,700 | Tractor para | 1.2 m3 | 25.0 | 1,868 | 26 meses | 10,764 | 0.17 |
| | | Acarreo,1km | m3 | 46,700 | Volqueta | 8 t | 12.5 | 3,736 | (598*18) | 10,764 | 0.35 |
| | | Apilado | m3 | 46,700 | Bulldozer | 11 t | 375.0 | 125 | | 10,764 | 0.01 |
| | Acarreo segundo, roca de tunel Sta.5500-8170 | Carga | m3 | 49,640 | Tractor para | 1.2 m3 | 25.0 | 1,986 | 26 meses | 10,764 | 0.18 |
| | | Acarreo,2km | m3 | 49,640 | Volqueta | 8 t | 9.7 | 5,118 | (598*18) | 10,764 | 0.48 |
| | | Apilado | m3 | 49,640 | Bulldozer | 11 t | 375.0 | 132 | | 10,764 | 0.01 |
| | Acarreo segundo, roca de tunel Sta.8170-8305 | Carga | m3 | 2,470 | Tractor para | 1.2 m3 | 25.0 | 99 | 1 mes | 414 | 0.24 |
| | | Acarreo,2km | m3 | 2,470 | Volqueta | 11 t | 9.7 | 255 | (23*18) | 414 | 0.62 |
| | | Apilado | m3 | 2,470 | Bulldozer | 11 t | 375.0 | 7 | | 414 | 0.02 |
| 2 Ventana de Acceso Conguillo | Excavacion, comun | Nivelacion | m3 | 3,070 | Bulldozer | 21 t | 127.0 | 24 | 1 mes | 130 | 0.19 |
| | | Carga | m3 | 3,070 | Tractor para | 2.2 m3 | 71.0 | 43 | (20*6.5) | 130 | 0.33 |
| | | Hauling,2km | m3 | 3,070 | Volqueta | 11 t | 18.2 | 169 | | 130 | 1.30 |
| | | Escombros | m3 | 3,070 | Bulldozer | 11 t | 175.0 | 18 | | 130 | 0.13 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Excavacion,roca meteorizada | Escarificacion | m3 | 10,800 | Bulldozer | 21 t | 114.0 | 95 | 1 mes | 130 | 0.73 |
| | | Carga | m3 | 10,800 | Tractor para | 2.2 m3 | 51.0 | 212 | (20*6.5) | 130 | 1.63 |
| | | Acarreo,2km | m3 | 10,800 | Volqueta | 11 t | 16.6 | 651 | | 130 | 5.00 |
| | | Escombros | m3 | 10,800 | Bulldozer | 11 t | 323.0 | 33 | | 130 | 0.26 |
| | Excavacion, roca | Perforacion | m3 | 570 | Barreno de oruga | 10 m3/min | 23.0 | 25 | 1 mes | 130 | 0.19 |
| | | | m3 | 570 | Compresor de aire | 13.5 m3/min | 23.0 | 25 | (20*6.5) | 130 | 0.19 |
| | | Recoleccion | m3 | 570 | Bulldozer | 32 t | 167.0 | 3 | | 130 | 0.03 |
| | | Carga | m3 | 570 | Tractor para | 2.2 m3 | 47.0 | 12 | | 130 | 0.09 |
| | | Acarreo,2km | m3 | 570 | Volqueta | 11 t | 14.3 | 40 | | 130 | 0.31 |
| | | Escombros | m3 | 570 | Bulldozer | 11 t | 375.0 | 2 | | 130 | 0.01 |
| | Acarreo segundo, tunel inclinado | Carga | m3 | 3,560 | Tractor para | 1.2 m3 | 25.0 | 142 | 2 meses | 828 | 0.17 |
| | | Acarreo,2km | m3 | 3,560 | Volqueta | 8 t | 9.7 | 367 | (46*18) | 828 | 0.44 |
| | | Apilado | m3 | 3,560 | Bulldozer | 11 t | 375.0 | 9 | | 828 | 0.01 |
| 3 Ventana de Acceso El Guasmo | Excavacion, comun | Nivelacion | m3 | 3,730 | Bulldozer | 21 t | 127.0 | 29 | 1 mes | 130 | 0.23 |
| | | Carga | m3 | 3,730 | Tractor para | 2.2 m3 | 71.0 | 53 | (20*6.5) | 130 | 0.40 |
| | | Acarreo,1km | m3 | 3,730 | Volqueta | 11 t | 24.8 | 150 | | 130 | 1.16 |
| | | Escombros | m3 | 3,730 | Bulldozer | 11 t | 175.0 | 21 | | 130 | 0.16 |
| | Excavacion,roca meteorizada | Escarificacion | m3 | 7,300 | Bulldozer | 21 t | 114.0 | 64 | 1 mes | 130 | 0.49 |
| | | Carga | m3 | 7,300 | Tractor para | 2.2 m3 | 51.0 | 143 | (20*6.5) | 130 | 1.10 |
| | | Acarreo,1km | m3 | 7,300 | Volqueta | 11 t | 22.0 | 332 | | 130 | 2.55 |
| | | Escombros | m3 | 7,300 | Bulldozer | 11 t | 323.0 | 23 | | 130 | 0.17 |
| | Excavation, roca | Perforacion | m3 | 390 | Barreno de oruga | 10 m3/min | 23.0 | 17 | 1 mes | 130 | 0.13 |
| | | | m3 | 390 | Compresor de aire | 13.5 m3/min | 23.0 | 17 | (20*6.5) | 130 | 0.13 |
| | | Recoleccion | m3 | 390 | Bulldozer | 32 t | 167.0 | 2 | | 130 | 0.02 |
| | | Carga | m3 | 390 | Tractor para | 2.2 m3 | 47.0 | 8 | | 130 | 0.06 |
| | | Acarreo,1km | m3 | 390 | Volqueta | 11 t | 18.9 | 21 | | 130 | 0.16 |
| | | Escombros | m3 | 390 | Bulldozer | 11 t | 375.0 | 1 | | 130 | 0.01 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Acarreo segundo, tunel inclinada | carga | m3 | 6,560 | Tractor para | 1.2 m3 | 25.0 | 262 | 5 mes | 2,070 | 0.13 |
| | | Acarreo,1km | m3 | 6,560 | Volqueta | 8 12.5 | 18.9 | 347 | (115*18) | 2,070 | 0.17 |
| | | Apilado | m3 | 6,560 | Bulldozer | 11 t | 375.0 | 17 | | 2,070 | 0.01 |
| 4 Ventana de Acceso Membrillo | Excavacion, comun | Nivelacion | m3 | 2,560 | Bulldozer | 21 t | 127.0 | 20 | 1 mes | 130 | 0.16 |
| | | Carga | m3 | 2,560 | Tractor para | 2.2 m3 | 71.0 | 36 | (20*6.5) | 130 | 0.28 |
| | | Acarreo,2km | m3 | 2,560 | Volqueta | 11 t | 18.2 | 141 | | 130 | 1.08 |
| | | Escombros | m3 | 2,560 | Bulldozer | 11 t | 175.0 | 15 | | 130 | 0.11 |
| | Excavacion,roca meteorizada | Escarificacion | m3 | 4,040 | Bulldozer | 21 t | 114.0 | 35 | 1 mes | 130 | 0.27 |
| | | Carga | m3 | 4,040 | Tractor para | 2.2 m3 | 51.0 | 79 | (20*6.5) | 130 | 0.61 |
| | | Acarreo,2km | m3 | 4,040 | Volqueta | 11 t | 16.6 | 243 | | 130 | 1.87 |
| | | Escombros | m3 | 4,040 | Bulldozer | 11 t | 323.0 | 13 | | 130 | 0.10 |
| | Excavacion, roca | Perforacion | m3 | 210 | Barreno de oruga | 10 m3/min | 23.0 | 9 | 1 mes | 130 | 0.07 |
| | | | m3 | 210 | Compresor de aire | 13.5 m3/min | 23.0 | 9 | (20*6.5) | 130 | 0.07 |
| | | Recoleccion | m3 | 210 | Bulldozer | 32 t | 167.0 | 1 | | 130 | 0.01 |
| | | Carga | m3 | 210 | Tractor para | 2.2 m3 | 47.0 | 4 | | 130 | 0.03 |
| | | Acarreo,2km | m3 | 210 | Volqueta | 11 t | 14.3 | 15 | | 130 | 0.11 |
| | | Escombros | m3 | 210 | Bulldozer | 11 t | 375.0 | 1 | | 130 | 0.00 |
| | Acarreo segundo tunel inclinada | Carga | m3 | 2,550 | Tractor para | 1.2 m3 | 25.0 | 102 | 2 meses | 828 | 0.12 |
| | | Acarreo,2km | m3 | 2,550 | Volqueta | 8 t | 9.7 | 263 | (46*18) | 828 | 0.32 |
| | | Apilado | m3 | 2,550 | Bulldozer | 11 t | 375.0 | 7 | | 828 | 0.01 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 Camino de Acceso Conguillo | Terraplen, comun | Nivelacion | m3 | 246,100 | Bulldozer | 32 t | 188.0 | 1,309 | 13 meses | 1,690 | 0.77 |
| | | Carga | m3 | 246,100 | Tractor para | 2.2 m3 | 64.0 | 3,845 | (260*6.5) | 1,690 | 2.28 |
| | | Acarreo,0.5km | m3 | 246,100 | Volqueta | 11 t | 27.3 | 9,015 | | 1,690 | 5.33 |
| | | Distribucion | m3 | 246,100 | Bulldozer | 21 t | 231.0 | 1,065 | | 1,690 | 0.63 |
| | | Compactacion | m3 | 246,100 | Apisonador | 20 t | 373.0 | 660 | | 1,690 | 0.39 |
| | Terraplen,roca meteorizada | Escarificacion | m3 | 246,100 | Bulldozer | 32 t | 125.0 | 1,969 | 13 meses | 1,690 | 1.16 |
| | | Carga | m3 | 246,100 | Tractor para | 2.2 m3 | 59.0 | 4,171 | (260*6.5) | 1,690 | 2.47 |
| | | Acarreo,0.5km | m3 | 246,100 | Volqueta | 11 t | 33.4 | 7,368 | | 1,690 | 4.36 |
| | | Distribucion | m3 | 246,100 | Bulldozer | 21 t | 231.0 | 1,065 | | 1,690 | 0.63 |
| | | Compactacion | m3 | 246,100 | Apisonador | 20 t | 373.0 | 660 | | 1,690 | 0.39 |
| | Terraplen, comun | Nivelacion | m3 | 116,500 | Bulldozer | 32 t | 188.0 | 620 | 13 meses | 1,690 | 0.37 |
| | | Carga | m3 | 116,500 | Tractor para | 2.2 m3 | 64.0 | 1,820 | (260*6.5) | 1,690 | 1.08 |
| | | Acarreo,1km | m3 | 116,500 | Volqueta | 11 t | 27.3 | 4,267 | | 1,690 | 2.53 |
| | | Distribucion | m3 | 116,500 | Bulldozer | 21 t | 231.0 | 504 | | 1,690 | 0.30 |
| | | Compactacion | m3 | 116,500 | Apisonador | 20 t | 373.0 | 312 | | 1,690 | 0.18 |
| | Terraplen,roca meteorizada | Escarificacion | m3 | 116,500 | Bulldozer | 32 t | 125.0 | 932 | 13 meses | 1,690 | 0.55 |
| | | Carga | m3 | 116,500 | Tractor para | 2.2 m3 | 59.0 | 1,975 | (260*6.5) | 1,690 | 1.17 |
| | | Acarreo,1km | m3 | 116,500 | Volqueta | 11 t | 33.4 | 3,488 | | 1,690 | 2.06 |
| | | Distribucion | m3 | 116,500 | Bulldozer | 21 t | 231.0 | 504 | | 1,690 | 0.30 |
| | | Compactacion | m3 | 116,500 | Apisonador | 20 t | 373.0 | 312 | | 1,690 | 0.18 |
| | Escombros, comun | Nivelacion | m3 | 398,000 | Bulldozer | 21 t | 127.0 | 3,134 | 13 meses | 1,690 | 1.85 |
| | | Carga | m3 | 398,000 | Tractor para | 2.2 m3 | 71.0 | 5,606 | (260*6.5) | 1,690 | 3.32 |
| | | Acarreo,5km | m3 | 398,000 | Volqueta | 11 t | 10.1 | 39,406 | | 1,690 | 23.32 |
| | | Escombros | m3 | 398,000 | Bulldozer | 11 t | 175.0 | 2,274 | | 1,690 | 1.35 |
| | Escombros,roca meteorizada | Escarificacion | m3 | 398,000 | Bulldozer | 32 t | 114.0 | 3,491 | 13 meses | 1,690 | 2.07 |
| | | Carga | m3 | 398,000 | Tractor para | 2.2 m3 | 51.0 | 7,804 | (260*6.5) | 1,690 | 4.62 |
| | | Acarreo,5km | m3 | 398,000 | Volqueta | 11 t | 9.6 | 41,458 | | 1,690 | 24.53 |
| | | Escombros | m3 | 398,000 | Bulldozer | 11 t | 323.0 | 1,232 | | 1,690 | 0.73 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equipo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Escombros, roca | Perforacion | m3 | 8,000 | Barreno de oruga | 10 m3/min | 23.0 | 348 | 13 meses | 1,690 | 0.21 |
| | | | m3 | 8,000 | Compresor de aire | 13.5 m3/min | 23.0 | 348 | (260*6.5) | 1,690 | 0.21 |
| | | Recoleccion | m3 | 8,000 | Bulldozer | 32 t | 167.0 | 48 | | 1,690 | 0.03 |
| | | Carga | m3 | 8,000 | Tractor para | 2.2 m3 | 47.0 | 170 | | 1,690 | 0.10 |
| | | Acarreo,5km | m3 | 8,000 | Volqueta | 11 t | 8.2 | 976 | | 1,690 | 0.58 |
| | | Escombros | m3 | 8,000 | Bulldozer | 11 t | 375.0 | 21 | | 1,690 | 0.01 |
| | Excavacion, para estructura | Nivelacion | m3 | 16,293 | Bulldozer | 21 t | 127.0 | 128 | 2 meses | 260 | 0.49 |
| | | Carga | m3 | 16,293 | Retroexcavadora | 0.6 m3 | 35.0 | 466 | (40*6.5) | 260 | 1.79 |
| | | Acarreo,1km | m3 | 16,293 | Volqueta | 11 t | 18.2 | 895 | | 260 | 3.44 |
| | | Escombros | m3 | 16,293 | Bulldozer | 11 t | 175.0 | 93 | | 260 | 0.36 |
| | Relleno, del apilado | Carga | m3 | 9,581 | Tractor para | 2.2 m3 | 59.0 | 162 | 2 meses | 260 | 0.62 |
| | | Acarreo,1km | m3 | 9,581 | Volqueta | 11 t | 27.3 | 351 | (40*6.5) | 260 | 1.35 |
| | | Distribucion | m3 | 9,581 | Bulldozer | 11 t | 280.0 | 34 | | 260 | 0.13 |
| | | Compactacion | m3 | 9,581 | Rodillo vibrador | 4 t | 36.0 | 266 | | 260 | 1.02 |
| | Subbase,acarreo desde cantera | Material de compra | | | | | | | | | |
| | Subbase | Distribucion | m3 | 20,470 | Bulldozer | 11 t | 140.0 | 146 | 6 meses | 780 | 0.19 |
| | | Compactacion | m3 | 20,470 | Rodillo vibrador | 10 t | 98.0 | 209 | (120*6.5) | 780 | 0.27 |
| 6 Camino de Acceso El Guasmo | Terraplen, comun | Nivelacion | m3 | 10,900 | Bulldozer | 32 t | 188.0 | 58 | 4 meses | 520 | 0.11 |
| | | Carga | m3 | 10,900 | Tractor para | 2.2 m3 | 64.0 | 170 | (80*6.5) | 520 | 0.33 |
| | | Acarreo,0.5km | m3 | 10,900 | Volqueta | 11 t | 27.3 | 399 | | 520 | 0.77 |
| | | Diastribucion | m3 | 10,900 | Bulldozer | 21 t | 231.0 | 47 | | 520 | 0.09 |
| | | Compactacion | m3 | 10,900 | Apisonador | 20 t | 373.0 | 29 | | 520 | 0.06 |
| | Terraplen,roca meteorizada | Escarificacion | m3 | 10,900 | Bulldozer | 32 t | 125.0 | 87 | 4 meses | 520 | 0.17 |
| | | Carga | m3 | 10,900 | Tractor para | 2.2 m3 | 59.0 | 185 | (80*6.5) | 520 | 0.36 |
| | | Acarreo,0.5km | m3 | 10,900 | Volqueta | 11 t | 33.4 | 326 | | 520 | 0.63 |
| | | Distribucion | m3 | 10,900 | Bulldozer | 21 t | 231.0 | 47 | | 520 | 0.09 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|
| | Compactacion | m3 | 10,900 | Apisonador | 20 t | 373.0 | 29 | | 520 | 0.06 |
| Terraplen, comun | Nivelacion | m3 | 10,350 | Bulldozer | 32 t | 188.0 | 55 | 4 meses | 520 | 0.11 |
| | Carga | m3 | 10,350 | Tractor para | 2.2 m3 | 64.0 | 162 | (80*6.5) | 520 | 0.31 |
| | Hauling,3km | m3 | 10,350 | Volqueta | 11 t | 12.9 | 802 | | 520 | 1.54 |
| | Diastribucion | m3 | 10,350 | Bulldozer | 21 t | 231.0 | 45 | | 520 | 0.09 |
| | Compactacion | m3 | 10,350 | Apisonador | 20 t | 373.0 | 28 | | 520 | 0.05 |
| Terraplen,roca meteorizada | Escarificacion | m3 | 10,350 | Bulldozer | 32 t | 125.0 | 83 | 4 meses | 520 | 0.16 |
| | Carga | m3 | 10,350 | Tractor para | 2.2 m3 | 59.0 | 175 | (80*6.5) | 520 | 0.34 |
| | Acarreo,3km | m3 | 10,350 | Volqueta | 11 t | 15.8 | 655 | | 520 | 1.26 |
| | Distribucion | m3 | 10,350 | Bulldozer | 21 t | 231.0 | 45 | | 520 | 0.09 |
| | Compactacion | m3 | 10,350 | Apisonador | 20 t | 373.0 | 28 | | 520 | 0.05 |
| Escombros, comun | Nivelacion | m3 | 200 | Bulldozer | 21 t | 127.0 | 2 | 4 meses | 520 | 0.00 |
| | Carga | m3 | 200 | Tractor para | 2.2 m3 | 71.0 | 3 | (80*6.5) | 520 | 0.01 |
| | Acarreo,1km | m3 | 200 | Volqueta | 11 t | 24.8 | 8 | | 520 | 0.02 |
| | Escombros | m3 | 200 | Bulldozer | 11 t | 175.0 | 1 | | 520 | 0.00 |
| Escombros,roca meteorizada | Escarificacion | m3 | 200 | Bulldozer | 32 t | 114.0 | 2 | 4 meses | 520 | 0.00 |
| | Carga | m3 | 200 | Tractor para | 2.2 m3 | 51.0 | 4 | (80*6.5) | 520 | 0.01 |
| | Acarreo,1km | m3 | 200 | Volqueta | 11 t | 22.0 | 9 | | 520 | 0.02 |
| | Escombros | m3 | 200 | Bulldozer | 11 t | 323.0 | 1 | | 520 | 0.00 |
| Escombros, roca | Perforacion | m3 | 100 | Barreno de oruga | 10 m3/min | 23.0 | 4 | 4 meses | 520 | 0.01 |
| | | m3 | 100 | Compresor de aire | 13.5 m3/min | 23.0 | 4 | (80*6.5) | 520 | 0.01 |
| | Recoleccion | m3 | 100 | Bulldozer | 32 t | 167.0 | 1 | | 520 | 0.00 |
| | Carga | m3 | 100 | Tractor para | 2.2 m3 | 47.0 | 2 | | 520 | 0.00 |
| | acrreo,1km | m3 | 100 | Volqueta | 11 t | 18.9 | 5 | | 520 | 0.01 |
| | Escombros | m3 | 100 | Bulldozer | 11 t | 375.0 | 0 | | 520 | 0.00 |
| Excavacion,para estructura | Nivelacion | m3 | 905 | Bulldozer | 21 t | 127.0 | 7 | 1 mes | 130 | 0.05 |
| | Carga | m3 | 905 | Retroexcavadora | 0.6 m3 | 35.0 | 26 | (20*6.5) | 130 | 0.20 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Acarreo,1km | m3 | 905 | Volqueta | 11 t | 18.2 | 50 | | 130 | 0.38 |
| | | Spoil bank | m3 | 905 | Bulldozer | 11 t | 175.0 | 5 | | 130 | 0.04 |
| | Relleno, del apilado | Carga | m3 | 341 | Tractor para | 2.2 m3 | 59.0 | 6 | 1 mes | 130 | 0.04 |
| | | Acarreo,1km | m3 | 341 | Volqueta | 11 t | 27.3 | 12 | (20*6.5) | 130 | 0.10 |
| | | Distribucion | m3 | 341 | Bulldozer | 11 t | 280.0 | 1 | | 130 | 0.01 |
| | | Compactacion | m3 | 341 | Rodillo vibrador | 4 t | 36.0 | 9 | | 130 | 0.07 |
| | Subbase,acarreo desde cantera | Material de compra | | | | | | | | | |
| | Subbase | Distribucion | m3 | 943 | Bulldozer | 11 t | 140.0 | 7 | 6 meses | 780 | 0.01 |
| | | Compactacion | m3 | 943 | Rodillo vibrador | 10 t | 98.0 | 10 | (120*6.5) | 780 | 0.01 |
| 7 Camino de Acceso Hembrillo | Terraplen,roca comun | Nivelacion | m3 | 3,600 | Bulldozer | 32 t | 188.0 | 19 | 4 meses | 520 | 0.04 |
| | | Carga | m3 | 3,600 | Tractor para | 2.2 m3 | 64.0 | 56 | (80*6.5) | 520 | 0.11 |
| | | Acarreo,0.5km | m3 | 3,600 | Volqueta | 11 t | 27.3 | 132 | | 520 | 0.25 |
| | | Distribucion | m3 | 3,600 | Bulldozer | 21 t | 231.0 | 16 | | 520 | 0.03 |
| | | Compactacion | m3 | 3,600 | Apisonador | 20 t | 373.0 | 10 | | 520 | 0.02 |
| | Terraplen,roca meteorizada | Escarificacion | m3 | 3,600 | Bulldozer | 32 t | 125.0 | 29 | 4 meses | 520 | 0.06 |
| | | Carga | m3 | 3,600 | Tractor para | 2.2 m3 | 59.0 | 61 | (80*6.5) | 520 | 0.12 |
| | | Acarreo,0.5km | m3 | 3,600 | Volqueta | 11 t | 33.4 | 108 | | 520 | 0.21 |
| | | Distribucion | m3 | 3,600 | Bulldozer | 21 t | 231.0 | 16 | | 520 | 0.03 |
| | | Compactacion | m3 | 3,600 | Apisonador | 20 t | 373.0 | 10 | | 520 | 0.02 |
| | Escombros, comun | Nivelacion | m3 | 1,120 | Bulldozer | 21 t | 127.0 | 9 | 4 meses | 520 | 0.02 |
| | | Carga | m3 | 1,120 | Tractor para | 2.2 m3 | 71.0 | 16 | (80*6.5) | 520 | 0.03 |
| | | Acarreo,1km | m3 | 1,120 | Volqueta | 11 t | 24.8 | 45 | | 520 | 0.09 |
| | | Escombros | m3 | 1,120 | Bulldozer | 11 t | 175.0 | 6 | | 520 | 0.01 |
| | Escombros,roca meteorizada | Escarificacion | m3 | 1,120 | Bulldozer | 32 t | 114.0 | 10 | 4 meses | 520 | 0.02 |
| | | Carga | m3 | 1,120 | Tractor para | 2.2 m3 | 51.0 | 22 | (80*6.5) | 520 | 0.04 |

Equipo de Construccion para Obras de Tierra,Paquete 1

| Description | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|
| | Acarreo,1km | m3 | 1,120 | Volqueta | 11 t | 22.0 | 51 | | 520 | 0.10 |
| | Escombros | m3 | 1,120 | Bulldozer | 11 t | 323.0 | 3 | | 520 | 0.01 |
| Escombros, roca | Perforacion | m3 | 100 | Barreno de oruga | 10 m3/min | 23.0 | 4 | 4 meses | 520 | 0.01 |
| | | m3 | 100 | Compresor de aire | 13.5 m3/min | 23.0 | 4 | (80*6.5) | 520 | 0.01 |
| | Recoleccion | m3 | 100 | Bulldozer | 32 t | 167.0 | 1 | | 520 | 0.00 |
| | Carga | m3 | 100 | Tractor para | 2.2 m3 | 47.0 | 2 | | 520 | 0.00 |
| | Acarreo,1km | m3 | 100 | Volqueta | 11 t | 18.9 | 5 | | 520 | 0.01 |
| | Escombros | m3 | 100 | Bulldozer | 11 t | 375.0 | 0 | | 520 | 0.00 |
| Excavacion,para estructura | Nivelacion | m3 | 3,295 | Bulldozer | 21 t | 127.0 | 26 | 1 mes | 130 | 0.20 |
| | Carga | m3 | 3,295 | Retroexcavador | 0.6 m3 | 35.0 | 94 | (20*6.5) | 130 | 0.72 |
| | Acrreo,1km | m3 | 3,295 | Volqueta | 11 t | 18.2 | 181 | | 130 | 1.39 |
| | Escombros | m3 | 3,295 | Bulldozer | 11 t | 175.0 | 19 | | 130 | 0.14 |
| Relleno, del apilado | Carga | m3 | 2,767 | Tractor para | 2.2 m3 | 59.0 | 47 | 1 mes | 130 | 0.36 |
| | Acarreo,1km | m3 | 2,767 | Volqueta | 11 t | 27.3 | 101 | (20*6.5) | 130 | 0.78 |
| | Distribucion | m3 | 2,767 | Bulldozer | 11 t | 280.0 | 10 | | 130 | 0.08 |
| | Compactacion | m3 | 2,767 | Rodillo vibrador | 4 t | 36.0 | 77 | | 130 | 0.59 |
| Subbase,acarreo desde cantera | Material de compra | | | | | | | | | |
| Subbase | Distribucion | m3 | 212 | Bulldozer | 11 t | 140.0 | 2 | 6 meses | 780 | 0.00 |
| | Compactacion | m3 | 212 | Rodillo vibrador | 10 t | 98.0 | 2 | (120*6.5) | 780 | 0.00 |

Equipo de Construccion para Obras de Drenaje en el Tunel, Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Agujero de drenaje | Tunel de derivacion | Perforacion | m | 6,310 | Maquina peroradora | 5.5 kW | 0.65 | 9,708 | 5.5 month (126*18) | 2,268 | 4.28 |

Equipo de Construccion para Obras de Hormigon,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equipo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Tunel de Derivacion | Estructura de Entrada | Transporte | m3 | 50 | Camion agitador | 3 m3 | 12.0 | 4 | 1day(6.5hr) | 6.5 | 0.64 |
| | | Colocacion | m3 | 50 | Balde/Camion grua | 1 m3 | 14.0 | 4 | | 6.5 | 0.55 |
| | Revestimiento Sta.0-166 | Transporte | m3 | 72 | Camion agitador | 3 m3 | 12.0 | 6 | 1day(4hr) | 4.0 | 1.50 |
| | Revestimiento Sta.166-3000 | Transporte | m3 | 72 | Camion agitador | 3 m3 | 12.0 | 6 | 1day(4hr) | 4.0 | 1.50 |
| | Revestimiento Sta.3000-8170 | Transporte | m3 | 72 | Camion agitador | 3 m3 | 3.1 | 23 | 1day(4hr) | 4.0 | 5.81 |
| | Revestimiento Sta.8170-8305 | Transporte | m3 | 72 | Camion agitador | 3 m3 | 12.0 | 6 | 1day(4hr) | 4.0 | 1.50 |
| 2 Ventana de Acceso Conguillo | Revestimiento | Transporte | m3 | 20 | Camion agitador | 3 m3 | 12.0 | 2 | 1day(4hr) | 4.0 | 0.42 |
| | Hormigon de entrada | Transporte | m3 | 20 | Camion agitador | 3 m3 | 12.0 | 2 | 1day(6.5hr) | 6.5 | 0.26 |
| | | Colocacion | m3 | 20 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.22 |
| 3 Ventana de Acceso El Guasmo | Revestimiento | Transporte | m3 | 20 | Camion agitador | 3 m3 | 3.1 | 6 | 1day(4hr) | 4.0 | 1.61 |
| | Estructura de portal | Transporte | m3 | 20 | Camion agitador | 3 m3 | 3.1 | 6 | 1day(6.5hr) | 6.5 | 0.99 |
| | | Colocacion | m3 | 20 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.22 |
| 4 Ventana de Acceso Membrillo | Revestimiento | Transporte | m3 | 20 | Camion agitador | 3 m3 | 12.0 | 2 | 1day(4hr) | 4.0 | 0.42 |
| | Estructura de portal | Transporte | m3 | 20 | Camion agitador | 3 m3 | 12.0 | 2 | 1day(6.5hr) | 6.5 | 0.26 |
| | | Colocacion | m3 | 20 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.22 |

Equipo de Construccion para Obras de Hormigon,Paquete 1

| Description | | Detalle de Obras | Unidad | Cantidad | Equpo | Espec | Produccion Horaria | Horas de Operacion | Periodo de Construccion | Horas Programadas | Num de Equipo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.Camino de Acceso Conguillio | Puente | Transporte | m3 | 10 | Camion agitador | 3 m3 | 5.2 | 2 | 1day(6.5hr) | 6.5 | 0.30 |
| | | Colocacion | m3 | 10 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.11 |
| | Alcantarillas | Transporte | m3 | 20 | Camion agitador | 3 m3 | 5.2 | 4 | 1day(6.5hr) | 6.5 | 0.59 |
| | | Colocacion | m3 | 20 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.22 |
| 6 Camino de Acceso El Guasmo | Puente | Transporte | m3 | 10 | Camion agitador | 3 m3 | 5.2 | 2 | 1day(6.5hr) | 6.5 | 0.30 |
| | | Colocacion | m3 | 10 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.11 |
| | Alcantarillas | Transporte | m3 | 20 | Camion agitador | 3 m3 | 5.2 | 4 | 1day(6.5hr) | 6.5 | 0.59 |
| | | Colocacion | m3 | 20 | Balde/Camion grua | 1 m3 | 14.0 | 1 | | 6.5 | 0.22 |