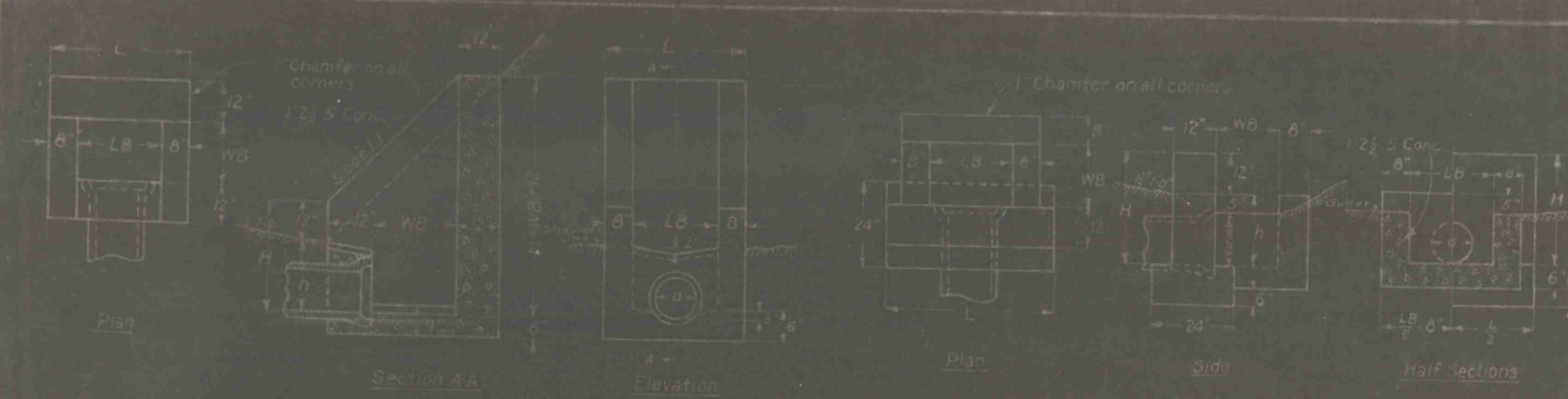
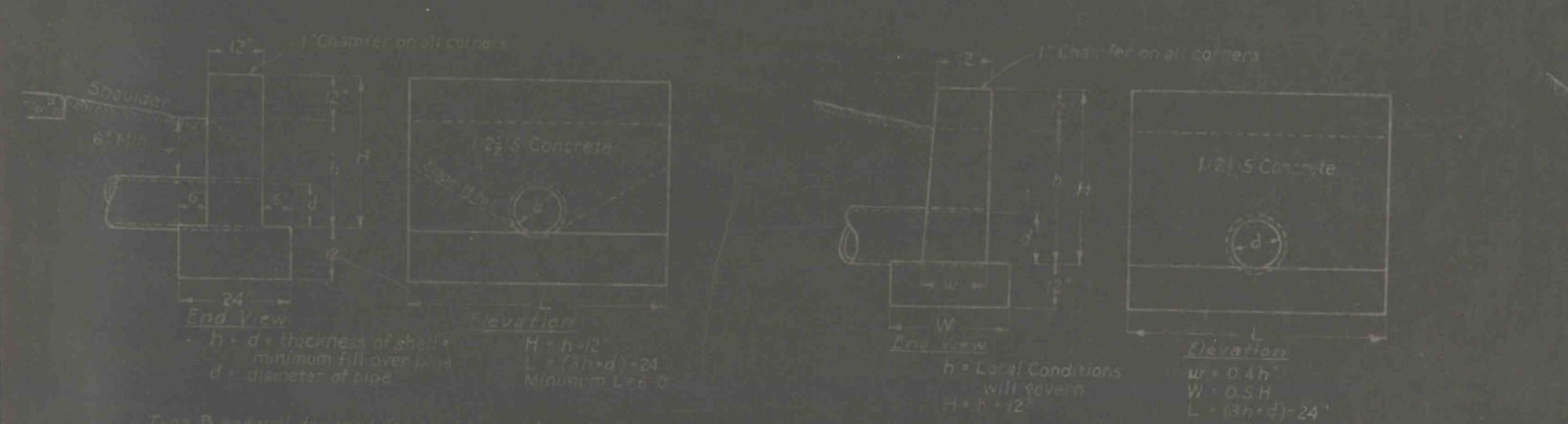




TYPE A ENDWALL

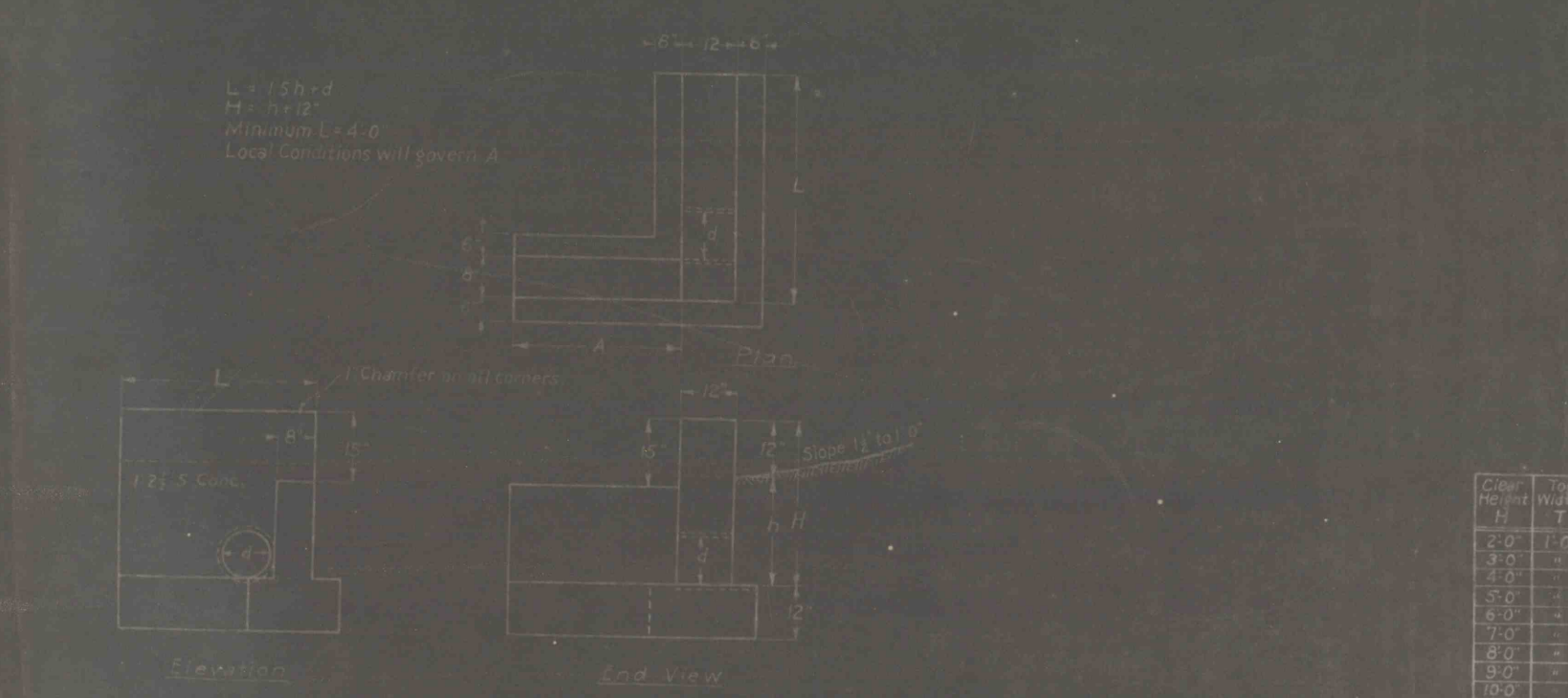
TYPE A-1 ENDWALL



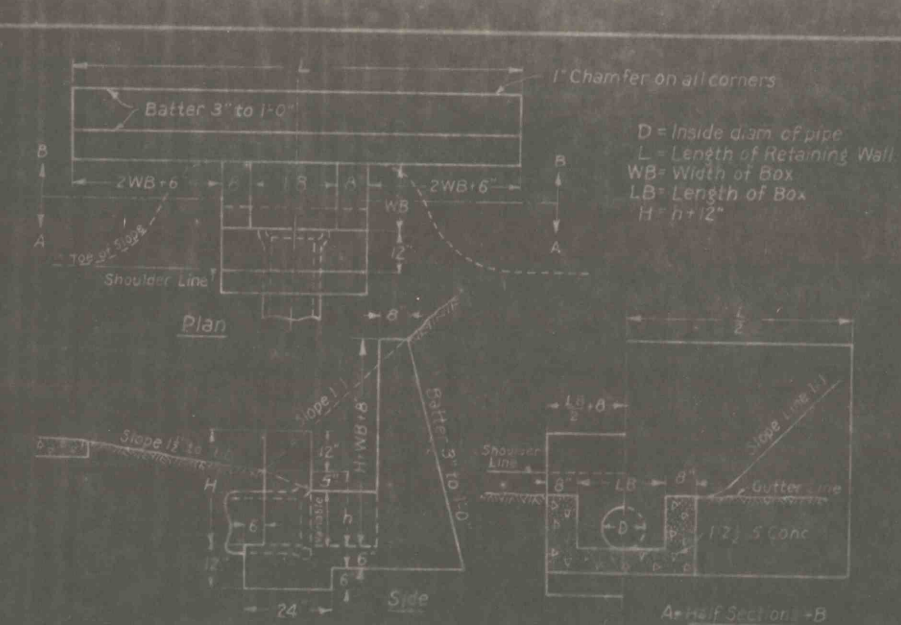
TYPE B ENDWALL

TYPE C ENDWALL

TYPE D ENDWALL

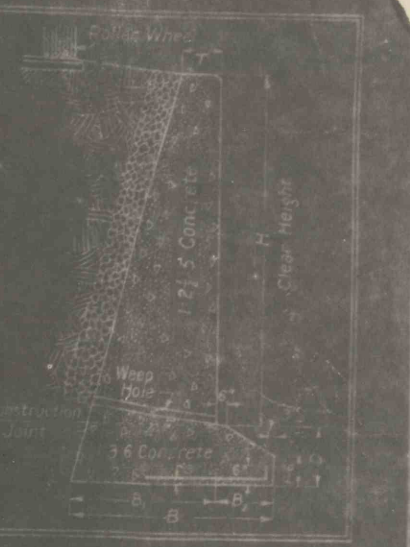


TYPE E ENDWALL



TYPE A-2 ENDWALL

| Clear Height H | Top Width T | Base B | B <sub>1</sub> | B <sub>2</sub> | Footing Depth D | Reinforcement | Concrete per lin. ft. Cu. Yds. | Steel per lin. ft. Lbs. | Toe Press. per sq. ft. Lbs. |
|----------------|-------------|--------|----------------|----------------|-----------------|---------------|--------------------------------|-------------------------|-----------------------------|
| 2'-0"          | 2'-0"       | 3'-6"  | 2'-0"          | 1'-6"          | 2'-0"           |               | 1.14                           | 118                     | 1100                        |
| 3'-0"          | 3'-0"       | 4'-6"  | 3'-0"          | 2'-0"          | 3'-0"           |               | 1.32                           | 139                     | 1644                        |
| 4'-0"          | 4'-0"       | 5'-6"  | 4'-0"          | 3'-0"          | 4'-0"           |               | 1.50                           | 159                     | 1975                        |
| 5'-0"          | 5'-0"       | 6'-6"  | 5'-0"          | 4'-0"          | 5'-0"           |               | 1.68                           | 179                     | 2305                        |
| 6'-0"          | 6'-0"       | 7'-6"  | 6'-0"          | 5'-0"          | 6'-0"           |               | 1.86                           | 199                     | 2635                        |
| 7'-0"          | 7'-0"       | 8'-6"  | 7'-0"          | 6'-0"          | 7'-0"           |               | 2.04                           | 219                     | 2965                        |
| 8'-0"          | 8'-0"       | 9'-6"  | 8'-0"          | 7'-0"          | 8'-0"           |               | 2.22                           | 239                     | 3295                        |
| 9'-0"          | 9'-0"       | 10'-6" | 9'-0"          | 8'-0"          | 9'-0"           |               | 2.40                           | 259                     | 3625                        |
| 10'-0"         | 10'-0"      | 11'-6" | 10'-0"         | 9'-0"          | 10'-0"          |               | 2.58                           | 279                     | 3955                        |
| 11'-0"         | 11'-0"      | 12'-6" | 11'-0"         | 10'-0"         | 11'-0"          |               | 2.76                           | 299                     | 4285                        |
| 12'-0"         | 12'-0"      | 13'-6" | 12'-0"         | 11'-0"         | 12'-0"          |               | 2.94                           | 319                     | 4615                        |
| 13'-0"         | 13'-0"      | 14'-6" | 13'-0"         | 12'-0"         | 13'-0"          |               | 3.12                           | 339                     | 4945                        |
| 14'-0"         | 14'-0"      | 15'-6" | 14'-0"         | 13'-0"         | 14'-0"          |               | 3.30                           | 359                     | 5275                        |
| 15'-0"         | 15'-0"      | 16'-6" | 15'-0"         | 14'-0"         | 15'-0"          |               | 3.48                           | 379                     | 5605                        |
| 16'-0"         | 16'-0"      | 17'-6" | 16'-0"         | 15'-0"         | 16'-0"          |               | 3.66                           | 399                     | 5935                        |
| 17'-0"         | 17'-0"      | 18'-6" | 17'-0"         | 16'-0"         | 17'-0"          |               | 3.84                           | 419                     | 6265                        |
| 18'-0"         | 18'-0"      | 19'-6" | 18'-0"         | 17'-0"         | 18'-0"          |               | 4.02                           | 439                     | 6595                        |
| 19'-0"         | 19'-0"      | 20'-6" | 19'-0"         | 18'-0"         | 19'-0"          |               | 4.20                           | 459                     | 6925                        |
| 20'-0"         | 20'-0"      | 21'-6" | 20'-0"         | 19'-0"         | 20'-0"          |               | 4.38                           | 479                     | 7255                        |
| 21'-0"         | 21'-0"      | 22'-6" | 21'-0"         | 20'-0"         | 21'-0"          |               | 4.56                           | 499                     | 7585                        |
| 22'-0"         | 22'-0"      | 23'-6" | 22'-0"         | 21'-0"         | 22'-0"          |               | 4.74                           | 519                     | 7915                        |
| 23'-0"         | 23'-0"      | 24'-6" | 23'-0"         | 22'-0"         | 23'-0"          |               | 4.92                           | 539                     | 8245                        |
| 24'-0"         | 24'-0"      | 25'-6" | 24'-0"         | 23'-0"         | 24'-0"          |               | 5.10                           | 559                     | 8575                        |
| 25'-0"         | 25'-0"      | 26'-6" | 25'-0"         | 24'-0"         | 25'-0"          |               | 5.28                           | 579                     | 8905                        |

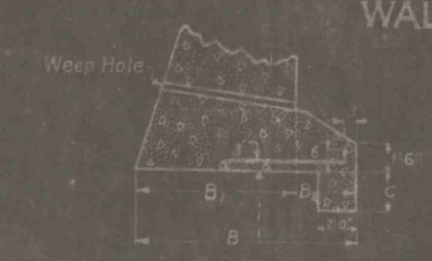


TYPE 1 RETAINING WALL WALLS SUSTAINING ROADWAY AND 20 TON ROLLER

| Clear Height H | Top Width T | Base B | B <sub>1</sub> | B <sub>2</sub> | Footing Depth D | Reinforcement | Concrete per lin. ft. Cu. Yds. | Steel per lin. ft. Lbs. | Toe Press. per sq. ft. Lbs. |
|----------------|-------------|--------|----------------|----------------|-----------------|---------------|--------------------------------|-------------------------|-----------------------------|
| 2'-0"          | 2'-0"       | 3'-6"  | 2'-0"          | 1'-6"          | 2'-0"           |               | 1.11                           | 118                     | 1100                        |
| 3'-0"          | 3'-0"       | 4'-6"  | 3'-0"          | 2'-0"          | 3'-0"           |               | 1.29                           | 139                     | 1644                        |
| 4'-0"          | 4'-0"       | 5'-6"  | 4'-0"          | 3'-0"          | 4'-0"           |               | 1.47                           | 159                     | 1975                        |
| 5'-0"          | 5'-0"       | 6'-6"  | 5'-0"          | 4'-0"          | 5'-0"           |               | 1.65                           | 179                     | 2305                        |
| 6'-0"          | 6'-0"       | 7'-6"  | 6'-0"          | 5'-0"          | 6'-0"           |               | 1.83                           | 199                     | 2635                        |
| 7'-0"          | 7'-0"       | 8'-6"  | 7'-0"          | 6'-0"          | 7'-0"           |               | 2.01                           | 219                     | 2965                        |
| 8'-0"          | 8'-0"       | 9'-6"  | 8'-0"          | 7'-0"          | 8'-0"           |               | 2.19                           | 239                     | 3295                        |
| 9'-0"          | 9'-0"       | 10'-6" | 9'-0"          | 8'-0"          | 9'-0"           |               | 2.37                           | 259                     | 3625                        |
| 10'-0"         | 10'-0"      | 11'-6" | 10'-0"         | 9'-0"          | 10'-0"          |               | 2.55                           | 279                     | 3955                        |
| 11'-0"         | 11'-0"      | 12'-6" | 11'-0"         | 10'-0"         | 11'-0"          |               | 2.73                           | 299                     | 4285                        |
| 12'-0"         | 12'-0"      | 13'-6" | 12'-0"         | 11'-0"         | 12'-0"          |               | 2.91                           | 319                     | 4615                        |
| 13'-0"         | 13'-0"      | 14'-6" | 13'-0"         | 12'-0"         | 13'-0"          |               | 3.09                           | 339                     | 4945                        |
| 14'-0"         | 14'-0"      | 15'-6" | 14'-0"         | 13'-0"         | 14'-0"          |               | 3.27                           | 359                     | 5275                        |
| 15'-0"         | 15'-0"      | 16'-6" | 15'-0"         | 14'-0"         | 15'-0"          |               | 3.45                           | 379                     | 5605                        |
| 16'-0"         | 16'-0"      | 17'-6" | 16'-0"         | 15'-0"         | 16'-0"          |               | 3.63                           | 399                     | 5935                        |
| 17'-0"         | 17'-0"      | 18'-6" | 17'-0"         | 16'-0"         | 17'-0"          |               | 3.81                           | 419                     | 6265                        |
| 18'-0"         | 18'-0"      | 19'-6" | 18'-0"         | 17'-0"         | 18'-0"          |               | 3.99                           | 439                     | 6595                        |
| 19'-0"         | 19'-0"      | 20'-6" | 19'-0"         | 18'-0"         | 19'-0"          |               | 4.17                           | 459                     | 6925                        |
| 20'-0"         | 20'-0"      | 21'-6" | 20'-0"         | 19'-0"         | 20'-0"          |               | 4.35                           | 479                     | 7255                        |
| 21'-0"         | 21'-0"      | 22'-6" | 21'-0"         | 20'-0"         | 21'-0"          |               | 4.53                           | 499                     | 7585                        |
| 22'-0"         | 22'-0"      | 23'-6" | 22'-0"         | 21'-0"         | 22'-0"          |               | 4.71                           | 519                     | 7915                        |
| 23'-0"         | 23'-0"      | 24'-6" | 23'-0"         | 22'-0"         | 23'-0"          |               | 4.89                           | 539                     | 8245                        |
| 24'-0"         | 24'-0"      | 25'-6" | 24'-0"         | 23'-0"         | 24'-0"          |               | 5.07                           | 559                     | 8575                        |
| 25'-0"         | 25'-0"      | 26'-6" | 25'-0"         | 24'-0"         | 25'-0"          |               | 5.25                           | 579                     | 8905                        |

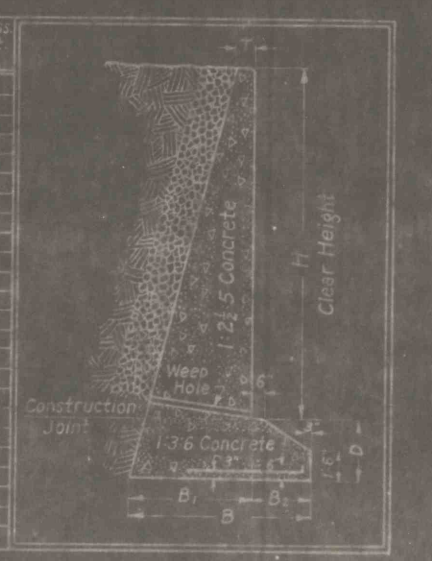


TYPE 2 RETAINING WALL WALLS SUSTAINING SLOPING BANKS OF EARTH OF INDEFINITE HEIGHT

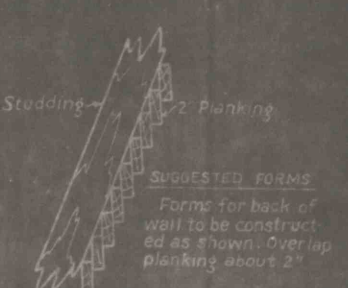


CURTAIN WALL

| Clear Height H | Top Width T | Base B | B <sub>1</sub> | B <sub>2</sub> | Footing Depth D | Reinforcement | Concrete per lin. ft. Cu. Yds. | Steel per lin. ft. Lbs. | Toe Press. per sq. ft. Lbs. |
|----------------|-------------|--------|----------------|----------------|-----------------|---------------|--------------------------------|-------------------------|-----------------------------|
| 2'-0"          | 2'-0"       | 3'-6"  | 2'-0"          | 1'-6"          | 2'-0"           |               | 0.79                           | 132                     | 610                         |
| 3'-0"          | 3'-0"       | 4'-6"  | 3'-0"          | 2'-0"          | 3'-0"           |               | 1.08                           | 159                     | 1020                        |
| 4'-0"          | 4'-0"       | 5'-6"  | 4'-0"          | 3'-0"          | 4'-0"           |               | 1.37                           | 186                     | 1430                        |
| 5'-0"          | 5'-0"       | 6'-6"  | 5'-0"          | 4'-0"          | 5'-0"           |               | 1.66                           | 213                     | 1840                        |
| 6'-0"          | 6'-0"       | 7'-6"  | 6'-0"          | 5'-0"          | 6'-0"           |               | 1.95                           | 240                     | 2250                        |
| 7'-0"          | 7'-0"       | 8'-6"  | 7'-0"          | 6'-0"          | 7'-0"           |               | 2.24                           | 267                     | 2660                        |
| 8'-0"          | 8'-0"       | 9'-6"  | 8'-0"          | 7'-0"          | 8'-0"           |               | 2.53                           | 294                     | 3070                        |
| 9'-0"          | 9'-0"       | 10'-6" | 9'-0"          | 8'-0"          | 9'-0"           |               | 2.82                           | 321                     | 3480                        |
| 10'-0"         | 10'-0"      | 11'-6" | 10'-0"         | 9'-0"          | 10'-0"          |               | 3.11                           | 348                     | 3890                        |
| 11'-0"         | 11'-0"      | 12'-6" | 11'-0"         | 10'-0"         | 11'-0"          |               | 3.40                           | 375                     | 4300                        |
| 12'-0"         | 12'-0"      | 13'-6" | 12'-0"         | 11'-0"         | 12'-0"          |               | 3.69                           | 402                     | 4710                        |
| 13'-0"         | 13'-0"      | 14'-6" | 13'-0"         | 12'-0"         | 13'-0"          |               | 3.98                           | 429                     | 5120                        |
| 14'-0"         | 14'-0"      | 15'-6" | 14'-0"         | 13'-0"         | 14'-0"          |               | 4.27                           | 456                     | 5530                        |
| 15'-0"         | 15'-0"      | 16'-6" | 15'-0"         | 14'-0"         | 15'-0"          |               | 4.56                           | 483                     | 5940                        |
| 16'-0"         | 16'-0"      | 17'-6" | 16'-0"         | 15'-0"         | 16'-0"          |               | 4.85                           | 510                     | 6350                        |
| 17'-0"         | 17'-0"      | 18'-6" | 17'-0"         | 16'-0"         | 17'-0"          |               | 5.14                           | 537                     | 6760                        |
| 18'-0"         | 18'-0"      | 19'-6" | 18'-0"         | 17'-0"         | 18'-0"          |               | 5.43                           | 564                     | 7170                        |
| 19'-0"         | 19'-0"      | 20'-6" | 19'-0"         | 18'-0"         | 19'-0"          |               | 5.72                           | 591                     | 7580                        |
| 20'-0"         | 20'-0"      | 21'-6" | 20'-0"         | 19'-0"         | 20'-0"          |               | 6.01                           | 618                     | 7990                        |
| 21'-0"         | 21'-0"      | 22'-6" | 21'-0"         | 20'-0"         | 21'-0"          |               | 6.30                           | 645                     | 8400                        |
| 22'-0"         | 22'-0"      | 23'-6" | 22'-0"         | 21'-0"         | 22'-0"          |               | 6.59                           | 672                     | 8810                        |
| 23'-0"         | 23'-0"      | 24'-6" | 23'-0"         | 22'-0"         | 23'-0"          |               | 6.88                           | 699                     | 9220                        |
| 24'-0"         | 24'-0"      | 25'-6" | 24'-0"         | 23'-0"         | 24'-0"          |               | 7.17                           | 726                     | 9630                        |
| 25'-0"         | 25'-0"      | 26'-6" | 25'-0"         | 24'-0"         | 25'-0"          |               | 7.46                           | 753                     | 10040                       |



TYPE 3 RETAINING WALL WALLS SUSTAINING LEVEL BANKS OF EARTH



COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF HIGHWAYS STANDARD ENDWALLS AND RETAINING WALLS

APPROVED *[Signature]* DEPUTY SECRETARY OF HIGHWAYS & ENGINEERING EXECUTIVE