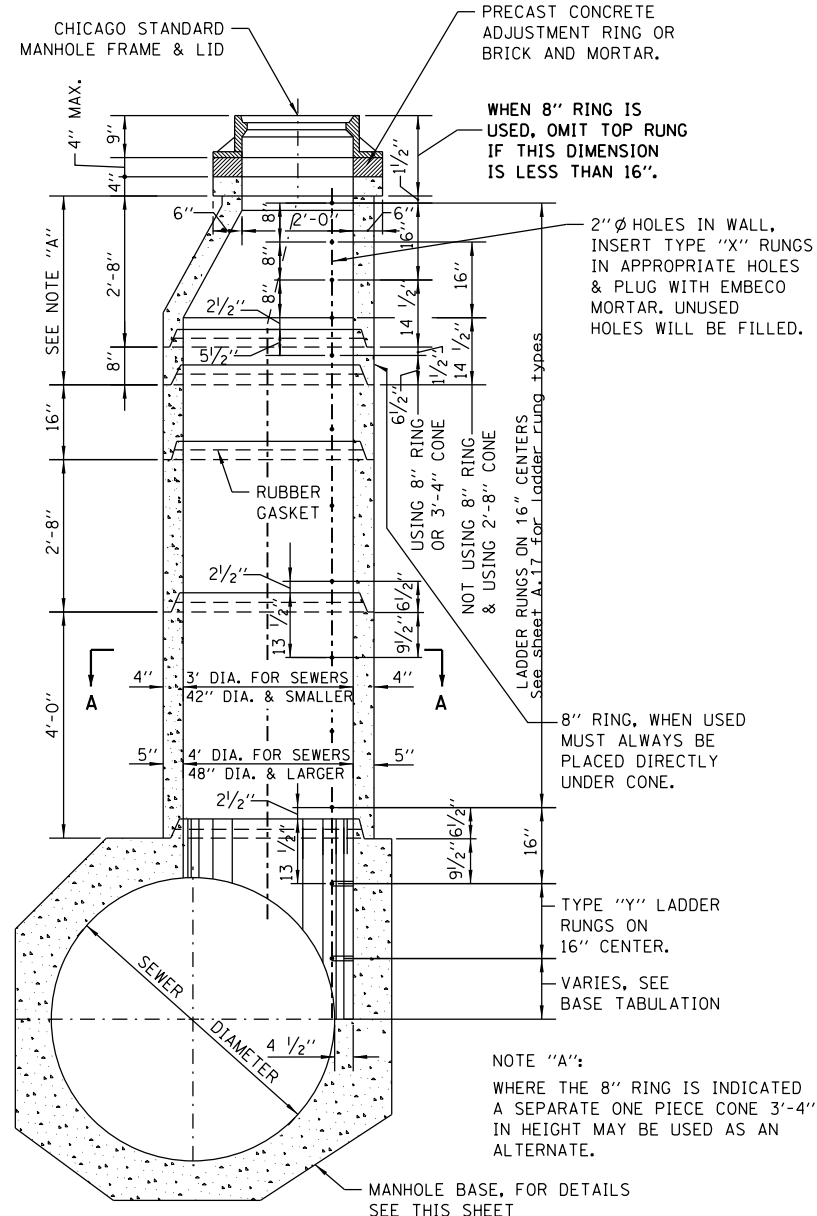


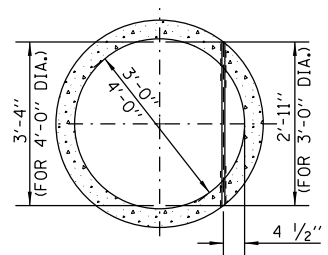
NUMBER OF PRECAST RINGS REQUIRED FOR MANHOLES OF VARIOUS HEIGHTS

| TOTAL HEIGHT "H" | 9" FRAME ±2'-8" CORBEL ±3'-5" | PRECAST RINGS | | | | BRICK AND/OR MORTAR | TOTAL HEIGHT "H" | 9" FRAME ±2'-8" CORBEL ±3'-5" | PRECAST RINGS | | | | BRICK AND/OR MORTAR |
|------------------|-------------------------------|---------------|-------|-------|----|---------------------|------------------|-------------------------------|---------------|-------|-------|----|---------------------|
| | | 4'-0" | 2'-8" | 1'-4" | 8" | | | | 4'-0" | 2'-8" | 1'-4" | 8" | |
| 5'-0" | 3'-5" | 1 | | | | 3" | 12'-0" | 3'-5" | 2 | | | | 3" |
| 1" | | 1 | | | | 4" | 1" | | 2 | | | | 4" |
| 2" | | 1 | | | | 1" | 2" | | 2 | | | | 1" |
| 3" | | 1 | | | | 2" | 3" | | 2 | | | | 2" |
| 4" | | 1 | | | | 3" | 4" | | 2 | | | | 3" |
| 5" | | 1 | | | | 4" | 5" | | 2 | | | | 4" |
| 6" | | 1 | | | | 5" | 6" | | 2 | | | | 5" |
| 7" | | 1 | | | | 6" | 7" | | 2 | | | | 6" |
| 8" | | 1 | | | | 7" | 8" | | 2 | | | | 7" |
| 9" | | 1 | | | | 8" | 9" | | 2 | | | | 8" |
| 10" | | 1 | | | | 9" | 10" | | 2 | | | | 9" |
| 11" | | 1 | | | | 10" | 11" | | 2 | | | | 10" |
| 12" | | 1 | | | | 11" | 12" | | 2 | | | | 11" |
| 13" | | 1 | | | | 12" | 13" | | 2 | | | | 12" |
| 14" | | 1 | | | | 13" | 14" | | 2 | | | | 13" |
| 15" | | 1 | | | | 14" | 15" | | 2 | | | | 14" |
| 16" | | 1 | | | | 15" | 16" | | 2 | | | | 15" |
| 17" | | 1 | | | | 16" | 17" | | 2 | | | | 16" |
| 18" | | 1 | | | | 17" | 18" | | 2 | | | | 17" |
| 19" | | 1 | | | | 18" | 19" | | 2 | | | | 18" |
| 20" | | 1 | | | | 19" | 20" | | 2 | | | | 19" |
| 21" | | 1 | | | | 20" | 21" | | 2 | | | | 20" |
| 22" | | 1 | | | | 21" | 22" | | 2 | | | | 21" |
| 23" | | 1 | | | | 22" | 23" | | 2 | | | | 22" |
| 24" | | 1 | | | | 23" | 24" | | 2 | | | | 23" |
| 25" | | 1 | | | | 24" | 25" | | 2 | | | | 24" |
| 26" | | 1 | | | | 25" | 26" | | 2 | | | | 25" |
| 27" | | 1 | | | | 26" | 27" | | 2 | | | | 26" |
| 28" | | 1 | | | | 27" | 28" | | 2 | | | | 27" |
| 29" | | 1 | | | | 28" | 29" | | 2 | | | | 28" |
| 30" | | 1 | | | | 29" | 30" | | 2 | | | | 29" |
| 31" | | 1 | | | | 30" | 31" | | 2 | | | | 30" |
| 32" | | 1 | | | | 31" | 32" | | 2 | | | | 31" |
| 33" | | 1 | | | | 32" | 33" | | 2 | | | | 32" |
| 34" | | 1 | | | | 33" | 34" | | 2 | | | | 33" |
| 35" | | 1 | | | | 34" | 35" | | 2 | | | | 34" |
| 36" | | 1 | | | | 35" | 36" | | 2 | | | | 35" |
| 37" | | 1 | | | | 36" | 37" | | 2 | | | | 36" |
| 38" | | 1 | | | | 37" | 38" | | 2 | | | | 37" |
| 39" | | 1 | | | | 38" | 39" | | 2 | | | | 38" |
| 40" | | 1 | | | | 39" | 40" | | 2 | | | | 39" |
| 41" | | 1 | | | | 40" | 41" | | 2 | | | | 40" |
| 42" | | 1 | | | | 41" | 42" | | 2 | | | | 41" |
| 43" | | 1 | | | | 42" | 43" | | 2 | | | | 42" |
| 44" | | 1 | | | | 43" | 44" | | 2 | | | | 43" |
| 45" | | 1 | | | | 44" | 45" | | 2 | | | | 44" |
| 46" | | 1 | | | | 45" | 46" | | 2 | | | | 45" |
| 47" | | 1 | | | | 46" | 47" | | 2 | | | | 46" |
| 48" | | 1 | | | | 47" | 48" | | 2 | | | | 47" |
| 49" | | 1 | | | | 48" | 49" | | 2 | | | | 48" |
| 50" | | 1 | | | | 49" | 50" | | 2 | | | | 49" |
| 51" | | 1 | | | | 50" | 51" | | 2 | | | | 50" |
| 52" | | 1 | | | | 51" | 52" | | 2 | | | | 51" |
| 53" | | 1 | | | | 52" | 53" | | 2 | | | | 52" |
| 54" | | 1 | | | | 53" | 54" | | 2 | | | | 53" |
| 55" | | 1 | | | | 54" | 55" | | 2 | | | | 54" |
| 56" | | 1 | | | | 55" | 56" | | 2 | | | | 55" |
| 57" | | 1 | | | | 56" | 57" | | 2 | | | | 56" |
| 58" | | 1 | | | | 57" | 58" | | 2 | | | | 57" |
| 59" | | 1 | | | | 58" | 59" | | 2 | | | | 58" |
| 60" | | 1 | | | | 59" | 60" | | 2 | | | | 59" |
| 61" | | 1 | | | | 60" | 61" | | 2 | | | | 60" |
| 62" | | 1 | | | | 61" | 62" | | 2 | | | | 61" |
| 63" | | 1 | | | | 62" | 63" | | 2 | | | | 62" |
| 64" | | 1 | | | | 63" | 64" | | 2 | | | | 63" |
| 65" | | 1 | | | | 64" | 65" | | 2 | | | | 64" |
| 66" | | 1 | | | | 65" | 66" | | 2 | | | | 65" |
| 67" | | 1 | | | | 66" | 67" | | 2 | | | | 66" |
| 68" | | 1 | | | | 67" | 68" | | 2 | | | | 67" |
| 69" | | 1 | | | | 68" | 69" | | 2 | | | | 68" |
| 70" | | 1 | | | | 69" | 70" | | 2 | | | | 69" |
| 71" | | 1 | | | | 70" | 71" | | 2 | | | | 70" |
| 72" | | 1 | | | | 71" | 72" | | 2 | | | | 71" |
| 73" | | 1 | | | | 72" | 73" | | 2 | | | | 72" |
| 74" | | 1 | | | | 73" | 74" | | 2 | | | | 73" |
| 75" | | 1 | | | | 74" | 75" | | 2 | | | | 74" |
| 76" | | 1 | | | | 75" | 76" | | 2 | | | | 75" |
| 77" | | 1 | | | | 76" | 77" | | 2 | | | | 76" |
| 78" | | 1 | | | | 77" | 78" | | 2 | | | | 77" |
| 79" | | 1 | | | | 78" | 79" | | 2 | | | | 78" |
| 80" | | 1 | | | | 79" | 80" | | 2 | | | | 79" |
| 81" | | 1 | | | | 80" | 81" | | 2 | | | | 80" |
| 82" | | 1 | | | | 81" | 82" | | 2 | | | | 81" |
| 83" | | 1 | | | | 82" | 83" | | 2 | | | | 82" |
| 84" | | 1 | | | | 83" | 84" | | 2 | | | | 83" |
| 85" | | 1 | | | | 84" | 85" | | 2 | | | | 84" |
| 86" | | 1 | | | | 85" | 86" | | 2 | | | | 85" |
| 87" | | 1 | | | | 86" | 87" | | 2 | | | | 86" |
| 88" | | 1 | | | | 87" | 88" | | 2 | | | | 87" |
| 89" | | 1 | | | | 88" | 89" | | 2 | | | | 88" |
| 90" | | 1 | | | | 89" | 90" | | 2 | | | | 89" |
| 91" | | 1 | | | | 90" | 91" | | 2 | | | | 90" |
| 92" | | 1 | | | | 91" | 92" | | 2 | | | | 91" |
| 93" | | 1 | | | | 92" | 93" | | 2 | | | | 92" |
| 94" | | 1 | | | | 93" | 94" | | 2 | | | | 93" |
| 95" | | 1 | | | | 94" | 95" | | 2 | | | | 94" |
| 96" | | 1 | | | | 95" | 96" | | 2 | | | | 95" |
| 97" | | 1 | | | | 96" | 97" | | 2 | | | | 96" |
| 98" | | 1 | | | | 97" | 98" | | 2 | | | | 97" |
| 99" | | 1 | | | | 98" | 99" | | 2 | | | | 98" |
| 100" | | 1 | | | | 99" | 100" | | 2 | | | | 99" |

NOTES:
 PRECAST CONCRETE RINGS MUST CONFORM TO A.S.T.M. DESIGNATION C76 FOR "REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE", CLASS II, WALL B.
 STANDARD LENGTHS OF RINGS ARE: 4'-0", 2'-8", 1'-4", 0'-8" AND 0'-4" COLLAR.
 ALL REINFORCEMENT STEEL REQUIRED FOR PRECAST RINGS MUST BE INCLUDED IN THE PRICE BID FOR ALL MANHOLE ITEMS.

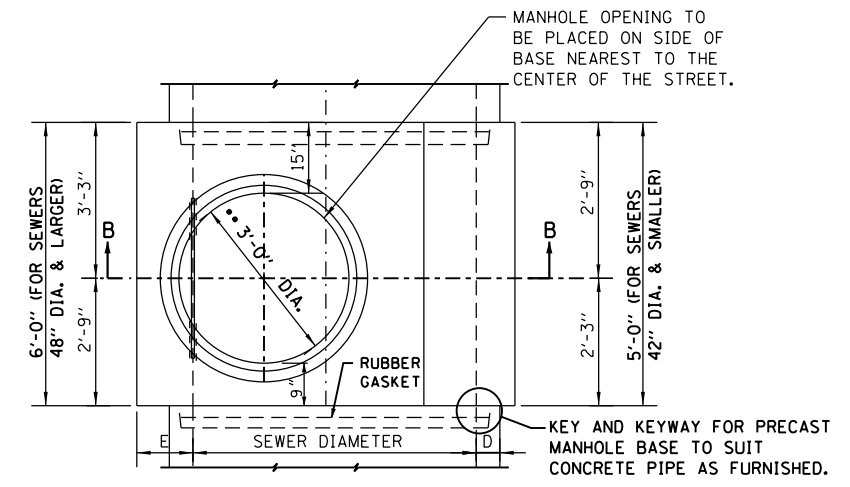


DETAIL OF PRECAST RINGS

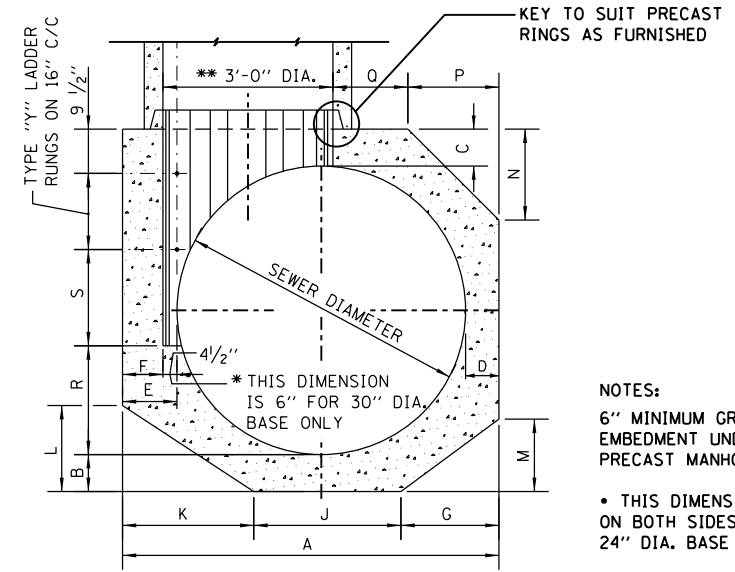


1"Ø LADDER RUNG, TYPE "X", LENGTH 2'-11" OR 3'-4" INSERTED INTO 2"Ø HOLE IN WALL & PLUGGED BY MFR. WITH EMBECO MORTAR.

SECTION A-A



PLAN



SECTION B-B

DETAIL OF PRECAST BASE

NOTES:
 6" MINIMUM GRANULAR EMBEDMENT UNDER ALL PRECAST MANHOLE BASES
 • THIS DIMENSION IS 6" ON BOTH SIDES FOR A 24" DIA. BASE

| SEWER DIA. | PART OF ITEM | DIMENSIONS OF PRECAST MANHOLE BASE | | | | | | | | | | | | | | | | NO. "Y" RUNGS |
|------------|--------------|------------------------------------|-----|-----|-----|---------|-----|-----------|-----------|------------|-----------|---------|------------|------------|------------|-------|---------|---------------|
| | | A | B | C | D | E | F | G | J | K | L | M | N | P | O | R | S | |
| 120" | - | 12'-4 1/2" | 12" | 12" | 12" | 16 1/2" | 12" | 4'-0" | 4'-0" | 4'-4 1/2" | 2'-7 1/2" | 2'-5" | 3'-6" | 3'-6" | 3'-10 1/2" | 2'-0" | 18 1/2" | 6 |
| 108" | - | 11'-4 1/2" | 12" | 12" | 12" | 16 1/2" | 12" | 3'-8" | 4'-0 1/2" | 3'-8" | 4'-0 1/2" | 2'-5" | 3'-2 1/2" | 3'-2 1/2" | 3'-2" | 2'-0" | 6 1/2" | 6 |
| 102" | - | 10'-10 1/2" | 12" | 12" | 12" | 16 1/2" | 12" | 3'-6" | 3'-6" | 3'-10 1/2" | 2'-4" | 2'-1" | 3'-0" | 3'-0" | 2'-10 1/2" | 2'-0" | 16 1/2" | 5 |
| 96" | - | 10'-2 1/2" | 11" | 11" | 11" | 15 1/2" | 11" | 3'-3" | 3'-3" | 3'-8 1/2" | 2'-3" | 2'-3" | 2'-10 1/2" | 2'-10 1/2" | 2'-5" | 2'-0" | 9 1/2" | 5 |
| 90" | - | 9'-8 1/2" | 11" | 11" | 11" | 15 1/2" | 11" | 3'-1" | 3'-1" | 3'-6 1/2" | 2'-1 1/2" | 2'-2" | 2'-9" | 2'-9" | 2'-0 1/2" | 2'-0" | 19 1/2" | 4 |
| 84" | - | 9'-0 1/2" | 10" | 10" | 10" | 14 1/2" | 10" | 2'-11" | 2'-11" | 3'-2 1/2" | 2'-3" | 2'-1" | 2'-5 1/2" | 2'-5 1/2" | 1'-9" | 2'-0" | 12 1/2" | 4 |
| 78" | - | 8'-6 1/2" | 10" | 10" | 10" | 14 1/2" | 10" | 2'-9" | 2'-9" | 3'-0 1/2" | 2'-2" | 2'-2" | 2'-4 1/2" | 2'-4 1/2" | 1'-4" | 2'-0" | 6 1/2" | 4 |
| 72" | 3A | 7'-10 1/2" | 9" | 9" | 9" | 13 1/2" | 9" | 2'-6" | 2'-6" | 2'-10 1/2" | 2'-1" | 2'-1" | 2'-2 1/4" | 2'-2 1/4" | 11 1/4" | 2'-0" | 15 1/2" | 3 |
| 66" | - | 7'-4 1/2" | 9" | 9" | 9" | 13 1/2" | 9" | 2'-4" | 2'-4" | 2'-8 1/2" | 19 1/2" | 17" | 2'-0 1/2" | 2'-0 1/2" | 7" | 2'-0" | 9 1/2" | 3 |
| 60" | 3B | 6'-8 1/2" | 8" | 8" | 8" | 12 1/2" | 8" | 2'-1 1/2" | 2'-1 1/2" | 2'-6" | 18" | 15" | 1'-5 1/2" | 1'-5 1/2" | 7" | 2'-0" | 18 1/2" | 2 |
| 54" | 3C | 6'-2 1/2" | 8" | 8" | 8" | 12 1/2" | 8" | 2-3/4" | 2-3/4" | 2'-4" | 17" | 14" | 11 1/2" | 11 1/2" | 7" | 2'-0" | 12 1/2" | 2 |
| 48" | 3D | 5'-6 1/2" | 7" | 7" | 7" | 11 1/2" | 7" | 2-1/2" | 2-1/2" | 2-1" | 15" | 12 1/2" | 4 1/2" | 4 1/2" | 7" | 2'-0" | 21 1/2" | 1 |
| 42" | - | 5'-0 1/2" | 7" | 7" | 7" | 11 1/2" | 7" | 18 1/2" | 19" | 23" | 14" | 11" | --- | --- | 17 1/2" | 21" | 18 1/2" | 1 |
| 36" | - | 4'-4 1/2" | 6" | 6" | 6" | 10 1/2" | 6" | 16" | 16" | 20 1/2" | 12 1/2" | 9 1/2" | --- | --- | 10 1/2" | 18" | 14 1/2" | 1 |
| 30" | 3E | 4'-0" | 6" | 6" | 6" | 12" | 6" | 14" | 14" | 20" | 12" | 8 1/2" | --- | --- | 6" | 15" | 11 1/2" | 1 |
| 24" | - | 4'-0" | 6" | 6" | 6" | 12" | 6" | 16" | 16" | 16" | 9 1/2" | 9 1/2" | --- | --- | 6" | 12" | 8 1/2" | 1 |

| STANDARD REVISIONS | |
|--------------------|---------------|
| DATE | DESCRIPTION |
| 12/07/09 | APPROVED PLAN |
| | |
| | |
| | |

| PERCENT COMPLETE | DATE |
|------------------|------|
| 30 | |
| 60 | |
| 75 | |
| 90 | |
| 100 | |
| BULLETIN | |

| CITY OF CHICAGO | | | | DRAWN: SDB | CHECKED: SDB | DESIGNED: SDB |
|--|--|--|--|---------------|--------------|---------------|
| DEPARTMENT OF WATER MANAGEMENT | | | | | | |
| BUREAU OF ENGINEERING SERVICES | | | | REVIEWED: SDB | | |
| TYPE "A" MANHOLE PRECAST BASES AND RINGS | | | | OF | | |