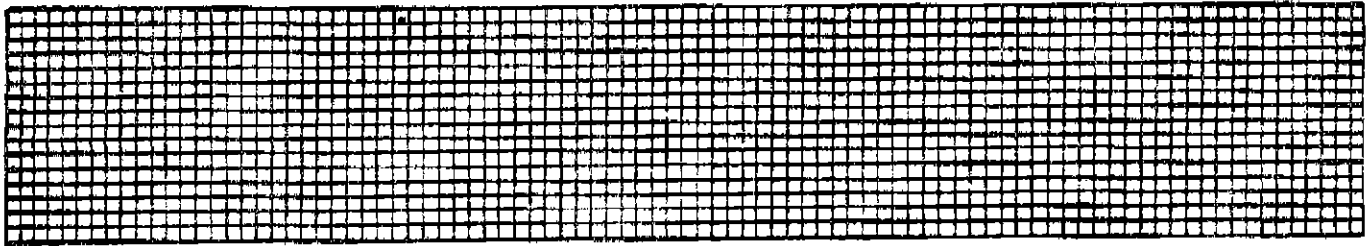


Miracle  
"Tornado Slide"  
Kiddie

# Product Specifications



PRODUCT:  
**TORNADO SLIDES**

MODEL NO.

16' --- 108

14' --- 108-39



**MIRACLE**  
RECREATION EQUIPMENT CO.

- GENERAL PLAYGROUND EQUIPMENT
- PARK SERVICE EQUIPMENT
- SPECTATOR SEATING
- ATHLETIC EQUIPMENT
- EXERCISE EQUIPMENT
- WATER SLIDES

**Working Hard For Recreation**

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SPECIFICATIONS

TORNADO SLIDE  
 MODELS 108 & 108-39  
 MAY 1983 EDITION

PART I - GENERAL

## A. DESCRIPTION:

MODEL 108

1. THE MODEL 108 TORNADO SLIDE PROVIDES THE USER WITH ONE AND ONE-HALF TURNS OF SLIDING FUN. THE PLATFORM DECK HEIGHT IS 12'-6" WITH THE PLATFORM ENCLOSURE EXTENDING TO AN OVERALL HEIGHT OF 16' ABOVE GROUND LEVEL.

THE STAIR ASSEMBLY FEATURES ENCLOSED STEPS AND SIDE HANDRAILS DESIGNED FOR EXTRA SAFE ACCESS TO THE DECK PLATFORM. THE SLIDE HAS A "FOR SURE" SIT AND SLIDE TUNNEL WITH PROVEN SAFETY PERFORMANCE ON A DEEPLY RECESSED SPIRAL BEDWAY. DIAGONAL BRACES PROVIDE ADDITIONAL SUPPORT.

MODEL 108-39

2. THE MODEL 108-39 TORNADO SLIDE IS A SMALLER VERSION OF THE MODEL 108 WITH THE SAME DESIGN AND SAFETY FEATURES AS OUTLINE ABOVE. THE PLATFORM DECK HEIGHT IS 10'-8" ABOVE GROUND LEVEL AND THE ENCLOSURE EXTENDS TO A TOTAL HEIGHT OF 14'-2".

## B. SHIPPING WEIGHT:

1. MODEL 108:	1,200 POUNDS	-	544.3 KILOS
2. MODEL 108-39:	1,025 POUNDS	-	464.9 KILOS

## C. GROUND SPACE REQUIRED:

1. MODEL 108:	15' X 19'	-	4.5 X 5.8 METERS
2. MODEL 108-39:	17' X 24'	-	5.2 X 7.3 METERS

NOTE: (A) PROTECTIVE SURFACE AREA REQUIRED SIX FEET IN ALL DIRECTIONS FROM THE UNIT; SEVEN FEET FROM THE END OF THE SLIDE.

(B) A NO ENCROACHMENT ZONE IS REQUIRED SIX FEET IN ALL DIRECTIONS FROM THE PROTECTIVE SURFACING AREA.

## D. MATERIALS NECESSARY FOR INSTALLATION, BUT FURNISHED BY OTHERS:

1. CONCRETE - 0.73 CUBIC YARDS REQUIRED.
2. OTHER ITEMS USEFUL IN ASSEMBLING THIS SLIDE ARE:

TWO 3' HIGH SAW HORSES, SEVERAL VISE 10' CLAMPS,  
 AN ELECTRIC 1/2" DRILL AND ASSORTED DRILL BITS.

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**TORNADO SLIDE  
MODELS 108 & 108-39**

**PART I - GENERAL (CONT.)**

**MATERIALS NECESSARY (CONT.):**

3. A SMALL CRANE OR FORK TRUCK WITH A HIGH LIFT TO SET THE SLIDE ASSEMBLY IN ITS FOOTINGS.

**PART II - MATERIALS, PRODUCTS**

**A. PLATFORM:**

1. THE PLATFORM IS FABRICATED OF 14 GAUGE GALVANIZED, DIE-FORMED FLOORPLATE. THE SIDE WALLS ARE 14 GAUGE PLATE.
2. THE MOUNTING SLEEVE SHALL BE 5" O.D. X 3/16" WALL TUBING WITH A RETAINING CAP WELDED ON ONE END.
3. PLATFORM HANDRAILS ARE FABRICATED OF 1-1/2" GALVANIZED TUBE.
4. THE SUPPORTING GUSSETS ARE 10 GAUGE.
5. THE PLATFORM IS SOLID WELDED CONSTRUCTION.

**B. STEP ASSEMBLY:**

1. THE SIDE CHANNELS ARE 14 GAUGE GALVANIZED, DIE-FORMED, 5" WIDE BY 1" DEEP.
2. EACH STEP SHALL BE DIE-FORMED OF 16 GAUGE STEEL. THE TREAD, RISER AND SIDES ARE ALL ONE-PIECE WITH A NONSKID, DIMPLED TREAD SURFACE.

**C. CENTER POLE:**

1. THE CENTER POLE IS 4" (4-1/2" O.D.) GALVANIZED STEEL PIPE.

**D. HANDRAILS:**

1. THE HANDRAILS SHALL BE FABRICATED OF DIE-FORMED 1-1/2" O.D. GALVANIZED STEEL TUBING WITH SOLID WELDED CONSTRUCTION.

**E. BEDWAYS:**

1. THE BEDWAY SECTIONS ARE 1/4" TO 5/16" THICK REINFORCED FIBERGLASS WITH THE COLOR MOLDED IN.
2. THE SLIDING SURFACES ARE 20 GAUGE POLISHED STAINLESS STEEL, DIE-FORMED AND MECHANICALLY ATTACHED UNDERNEATH WITHOUT EXPOSED THREADS.

**F. LEGS & BRACES:**

1. THE LEGS AND BRACES ARE FABRICATED OF 2" (2-3/8" O.D.) GALVANIZED STEEL PIPE.

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TORNADO SLIDE  
MODELS 108 & 108-39

PART II - MATERIALS, PRODUCTS (CONT.)

G. BOLTING FIN:

1. THE FIN AND SLEEVE ASSEMBLY IS FABRICATED OF 5" O.D. TUBE WITH SOLID WELDED 3/16" PLATE FIN.

H. CANOPY:

1. THE CANOPY IS 3/16" TO 1/4" THICK FIBERGLASS WITH THE COLOR MOLDED IN.

I. FOOTING SLEEVE:

1. THE FOOTING SLEEVE IS FABRICATED OF 5" O.D. X 3/16" WALL TUBING WITH A CAP AND LOCATING PIN WELDED ON.

J. FINISH:

1. THE STANDARD COLOR OF THE SLIDE IS A COMBINATION SKY BLUE AND GOLD. SOLID COLORS OF BLUE, GOLD AND BROWN ARE ALSO AVAILABLE.
2. THE FIBERGLASS BEDWAYS AND CANOPY HAVE THE COLOR MOLDED IN.
3. THE ENCLOSED STEPS, CENTER POLE, HANDRAILS, FRONT LEGS, GROUND SLEEVE AND BRACES ARE GALVANIZED. WHERE WELDS ARE NECESSARY, A COAT OF ALUMINUM ENAMEL PAINT SHALL BE APPLIED.
4. THE PLATFORM, STEP CHANNELS AND BOLTING FIN ARE FINISHED IN MIRACLE'S \* PERMAGUARD.

\* PERMAGUARD IS THE PROCESS OF BAKING ENAMEL ON METAL.

5. ALL FASTENERS ARE CADMIUM PLATED.

K. GUARANTEE (EXCLUDES CONCRETE):

1. MIRACLE GUARANTEES ALL MATERIALS AND WORKMANSHIP FOR ONE (1) YEAR, BUT WILL NOT ACCEPT ANY RESPONSIBILITY FOR VANDALISM. ANY CLAIM FILED MUST BE DONE SO WITHIN ONE YEAR OF THE INVOICE DATE AND MUST INCLUDE A COPY OF THE INVOICE, ACKNOWLEDGEMENT OR ORDER NUMBER.

PART III - FOOTING & INSTALLATION INSTRUCTIONS

IMPORTANT NOTES:

1. BEFORE INSTALLING OR ERECTING THIS EQUIPMENT, PLEASE READ AND COMPLY WITH ALL APPLICABLE RECOMMENDATIONS IN BROCHURE 100 ENCLOSED. IF FOR SOME REASON THIS BROCHURE IS MISSING, CONTACT YOUR LOCAL MIRACLE SALES REPRESENTATIVE FOR A COPY.
2. BEFORE ANY CONSTRUCTION IS BEGUN, CHECK WITH ALL UTILITY COMPANIES FOR EXACT LOCATIONS OF UNDERGROUND UTILITIES.

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TORNADO SLIDE  
MODELS 108 & 108-39

PART III - FOOTING & INSTALLATION INSTRUCTIONS (CONT.)

NOTES (CONT.):

3. WHEN DESIGNING AREAS FOR FOOTINGS AND THE AREA UNDER AND ADJACENT TO ALL EQUIPMENT, CONSIDERATION SHOULD BE GIVEN TO SOIL TYPES AND SUBGRADE CHARACTERISTICS. THE PURCHASER AND/OR INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND INSURING THAT ABNORMAL AND UNSAFE COMPACTION DOES NOT OCCUR IN THESE AREAS, WHICH ARE GENERALLY RECOMMENDED TO BE UNDER AND A MINIMUM OF 7' OUT FROM THE EDGES OF ALL PLAY STRUCTURES.

IT IS THE PURCHASER'S RESPONSIBILITY TO MAINTAIN THESE AREAS PROPERLY AFTER INSTALLATION. IT IS ALSO RECOMMENDED THAT COMPACTION TESTS BE MADE SEVERAL TIMES PER YEAR. WHEN COMPACTION OCCURS, IT IS SUGGESTED THAT THE AREA AFFECTED BE SCAFFIED OR ADDITIONAL PEA GRAVEL, SAND, REDWOOD BARK OR COARSE WOOD SHAVINGS BE ADDED UNTIL THE AREA IS SOFT AND RESILIENT.

A. FOOTING INSTRUCTIONS:

1. REQUIRED FOOTING DIMENSIONS:

- a. CENTER POST: 24" IN DIAMETER BY 42" DEEP.  
b. STEP CHANNELS: 18" WIDE X 24" LONG X 16" DEEP.  
c. FRONT LEGS & BRACES: 12" IN DIAMETER BY 16" DEEP.

2. SELECT THE SITE FOR SLIDE INSTALLATION; DETERMINE THE CENTER POLE LOCATION AND DIG THE FOOTING 24" IN DIAMETER BY 42" DEEP. DRIVE THE GROUND SLEEVE INTO THE CENTER OF THE FOOTING, PROTECTING THE SLEEVE WITH A BOARD AS YOU DRIVE. PLUMB, LEVEL AND BRACE THE SLEEVE. POUR CONCRETE; 0.40 CUBIC YARDS IS REQUIRED. ALLOW THE CONCRETE TO CURE FOR 72 HOURS.

3. AGAIN, BE SURE THE SLEEVE IS PLUMB AND LEVEL. BUILD A SLIGHT COLLAR AROUND THE SLEEVE SO WATER WILL NOT DRAIN INTO IT. AS THE CONCRETE CURES, ASSEMBLY CAN CONTINUE. THE REMAINING FOOTINGS WILL BE DONE AS ASSEMBLY PROGRESSES.

B. ASSEMBLY INSTRUCTIONS FOR MODEL 108:

1. NECESSARY ITEMS TO HELP WITH ASSEMBLY ARE: TWO 4'-6" HIGH SAW HORSES, SEVERAL VISE 'C' CLAMPS, DRIFT PINS, 1/2" DRILL AND BITS, WRENCHES, A BOOM TRUCK OR FORK TRUCK WITH A HIGH LIFT TO SET THE ASSEMBLY INTO THE GROUND SLEEVE.
2. SET THE CENTER POLE ON THE SAW HORSES AND SLIP THE PLATFORM ASSEMBLY ON ONE END. SECURE THE PLATFORM ON THE CENTER POLE BY TIGHTENING THE 5/8" X 3/4" SET SCREW AS TIGHT AS POSSIBLE BY HAND AND APPROXIMATELY ONE MORE TURN, USING A HAMMER OR LEVERAGE.
3. SLIDE THE THREE BOLTING FINNS ON THE POLE, BEING CAREFUL THAT THE BEVEL CUT END OF THE FINNS ARE ALL POINTING DOWN. USING THE VISE 'C' CLAMPS AND THE TOP FIN, CLAMP A HALF TURN SPIRAL SECTION TO THE PLATFORM AND FIN. MAKE SURE ALL HOLES IN THE HALF SECTION LINE UP WITH THE HOLES IN THE PLATFORM AND FIN. ALL FINNS GO BEHIND FIBERGLASS JOINTS.

TORNADO SLIDE  
MODELS 108 & 108-39

PART III - FOOTING & INSTALLATION INSTRUCTIONS (CONT.)

MODEL 108 ASSEMBLY INSTRUCTIONS (CONT.):

4. FASTEN THE SUPPORT PLATE AND GUSSET WITH SEVEN 7/16" X 2" HEX HEAD BOLTS, WASHERS AND NUTS. THREE BOLTS GO THROUGH THE FIBERGLASS AND THROUGH THE PLATE, FOUR BOLTS GO FROM INSIDE THE PLATFORM THROUGH THE GUSSET AND THROUGH THE FIBERGLASS.
5. PLACE THE SECOND HALF SECTION AGAINST THE FIRST. ALIGN THE SECOND HALF SECTION AS STATED IN STEP 3, BEING SURE THE SECTION IS SNUG AGAINST THE CENTER POLE. CLAMP THE JOINT SECTIONS TO THE FIN. BOLT AT THE FIN, USING 7/16" X 2" HEX HEAD BOLTS, WASHERS BOTH SIDES AND NUTS.
6. WHERE FIBERGLASS MEETS FIBERGLASS (UP THE SIDES AND UNDER THE LIP), BOLT, USING 7/16" X 1-1/2" HEX HEAD BOLTS, WASHERS BOTH SIDES AND NUTS. LEAVE THE 'C' CLAMPS IN PLACE AT THE FIN WHERE THE THIRD SECTION IS TO BE INSTALLED.
7. BOLT THE CANOPY TO THE PLATFORM STRAP ON THE SLEEVE. BOLT FROM INSIDE THE CANOPY TO THE OUTSIDE, USING 5/16" X 1-1/2" O.H.D. BOLTS. THE BOLTS WILL GO FROM THE INSIDE, THROUGH THE STRAP, THROUGH THE CANOPY AND ARE SECURED WITH A WASHER AND NUT.
8. THE CANOPY THEN BOLTS TO THE OUTSIDE OF THE SPIRAL SECTION, USING 5/16" X 1-1/2" O.H.D. BOLTS WITH WASHERS AND NUTS UNDERNEATH. THE HOLES FOR THE OUTSIDE MUST BE FIELD DRILLED USING A 3/8" BIT AT FOUR LOCATIONS.  

NOTE: ANY BOLTS OR THREADS PROTRUDING BEYOND THE NUTS SHOULD BE CUT AND PEENED. THIS PRECAUTION WILL PREVENT ACCIDENTAL INJURY OCCURRING LATER.
9. SET THE SEMICOMPLETED UNIT IN THE GROUND SLEEVE USING THE CRANE OR FORK TRUCK. BE SURE ALL THREE FINS ARE ON THE POLE.
10. FOLLOW THE INSTRUCTIONS IN STEPS 5 AND 6 FOR INSTALLATION OF THE THIRD HALF SECTION.
11. FASTEN THE FRONT LEGS TO THE BOTTOM BEDWAY SECTION, USING 3/8" X 3" CARRIAGE BOLTS, WASHERS AND NUTS. SET THE SECTION IN POSITION AND MARK FOR THE FOOTINGS. DIG THE FOOTINGS 12" IN DIAMETER BY 16" DEEP. FOLLOW THE PREVIOUS INSTRUCTIONS FOR FASTENING THE BOTTOM BEDWAY TO THE HALF TURN SECTION.
12. PLACE THE BEDWAY SUPPORT BRACE TO THE SLIDE AND MARK FOR A FOOTING 12" IN DIAMETER BY 16" DEEP. BOLT THE BRACE IN PLACE, USING 3/8" X 3" CARRIAGE BOLTS, WASHERS AND NUTS.
13. POSITION AND LOCATE FOOTINGS FOR THE DIAGONAL BRACES, 12" IN DIAMETER BY 16" DEEP. BOLT TO THE PLATFORM, USING 7/16" X 1-1/2" HEX HEAD BOLTS, WASHERS BOTH SIDES AND NUTS.

**TORNADO SLIDE  
MODELS 108 & 108-39**

**PART III - FOOTING & INSTALLATION INSTRUCTIONS (CONT.)**

**MODEL 108 ASSEMBLY INSTRUCTIONS (CONT.):**

14. LAY OUT THE LEFT AND RIGHT STEP CHANNELS. STARTING AT THE BOTTOM AND USING 1/4" X 3/4" CARRIAGE BOLTS, BOLT THE STEP PANS TO THE CHANNELS; THE BOTTOM LIP OF EACH PAN WILL OVERLAP THE ONE BELOW. DO NOT APPLY BOLTS IN THE TOP HOLES OF THE TOP STEP PAN AT THIS TIME. BOLT A CONNECTOR PLATE ON EACH STEP CHANNEL, USING 1/2" X 1" HEX HEAD BOLTS AND NUTS.
15. MARK AND DIG THE STEP ASSEMBLY FOOTING 18" WIDE X 24" LONG X 16" DEEP. (SEE DIAGRAM FOR CORRECT LOCATION). PLACE THE STEP ASSEMBLY IN ITS CORRECT POSITION AGAINST THE PLATFORM AND BLOCK THE STEP CHANNELS. MAKE ANY ADJUSTMENT IN THE FOOTINGS AS REQUIRED AND THEN BOLT THE SIDE STEP CONNECTING PLATES TO THE PLATFORM. SECURE WITH 1/2" X 1" HEX HEAD BOLTS AND NUTS. BOLT FROM OUTSIDE THE PLATE TO THE INSIDE.
16. PLACE THE 17-3/4" PINCH PLATE ON THE STEP ASSEMBLY AT THE STEP PAN AND FASTEN, USING 1/4" X 3/4" CARRIAGE BOLTS, WASHERS AND NUTS. THE PINCH PLATE COVERS THE JOINT WHERE THE STEPS MEET THE PLATFORM DECK. (SEE DRAWING DETAIL).
17. SLIP THE TWO HANDRAILS OVER THE PLATFORM STUBS AND BOLT TO THE SIDE STEP CHANNELS. BOLT FROM THE HANDRAIL THROUGH THE CHANNEL WITH 3/8" X 2-1/4" CARRIAGE BOLTS, WASHERS AND NUTS; FOUR BOLTS PER SIDE.
18. MAKE ALL NECESSARY ADJUSTMENTS FOR PROPER ALIGNMENT AND FIT. PLUMB AND LEVEL THE ENTIRE UNIT AND TIGHTEN ALL BOLTS AND SET SCREWS. THE UNIT SHOULD MEASURE 12'-6" FROM GROUND LEVEL TO THE PLATFORM DECK AND THE BEDWAY SHOULD BE APPROXIMATELY 9" ABOVE GRADE.
19. POUR THE CONCRETE AND ALLOW TO CURE FOR 72 HOURS BEFORE USING THE UNIT.
20. AGAIN, ANY BOLT THREAD PROTRUDING BEYOND THE NUT SHOULD BE CUT AND PEENED TO PREVENT ACCIDENTAL INJURY.

**C. ASSEMBLY INSTRUCTIONS FOR MODEL 108-39:**

1. FOLLOW THE SAME FOOTING INSTRUCTIONS GIVEN IN SECTION 'A'- FOOTINGS FOR THE CENTER POLE SLEEVE.
2. FOLLOW THE SAME PROCEDURE AS OUTLINED FOR MODEL 108 FOR ASSEMBLING THE MODEL 108-39. THE FOLLOWING VARIANCES IN COMPONENTS AND DIMENSIONS SHOULD BE NOTED:
  - a. THE DECK PLATFORM IS APPROXIMATELY 10'-8" HIGH AND THE OVERALL HEIGHT IS 14'-2". OTHER COMPONENTS WILL BE PROPORTIONATELY SMALLER, BUT REQUIRE THE SAME ASSEMBLY PROCEDURE.

TORNADO SLIDE  
MODELS 108 & 108-39

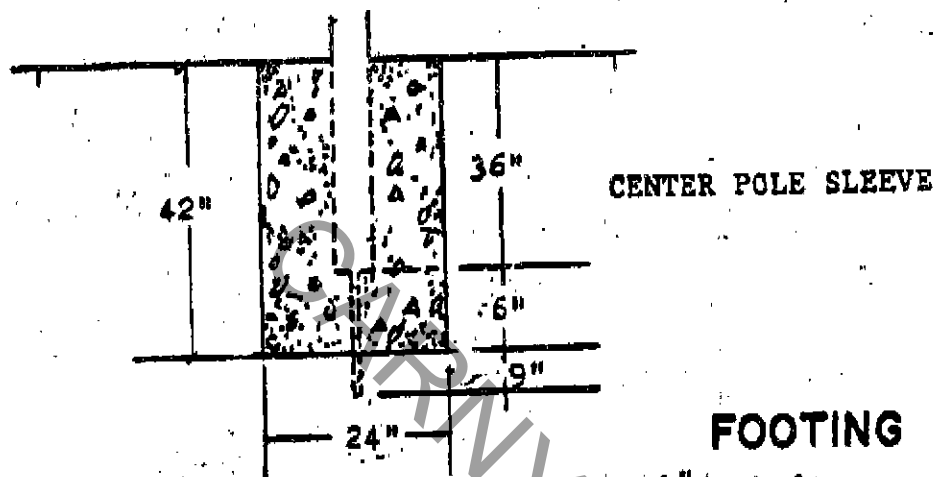
PART III - FOOTING & INSTALLATION INSTRUCTIONS (CONT.)

MODEL 108-39 ASSEMBLY INSTRUCTIONS (CONT.):

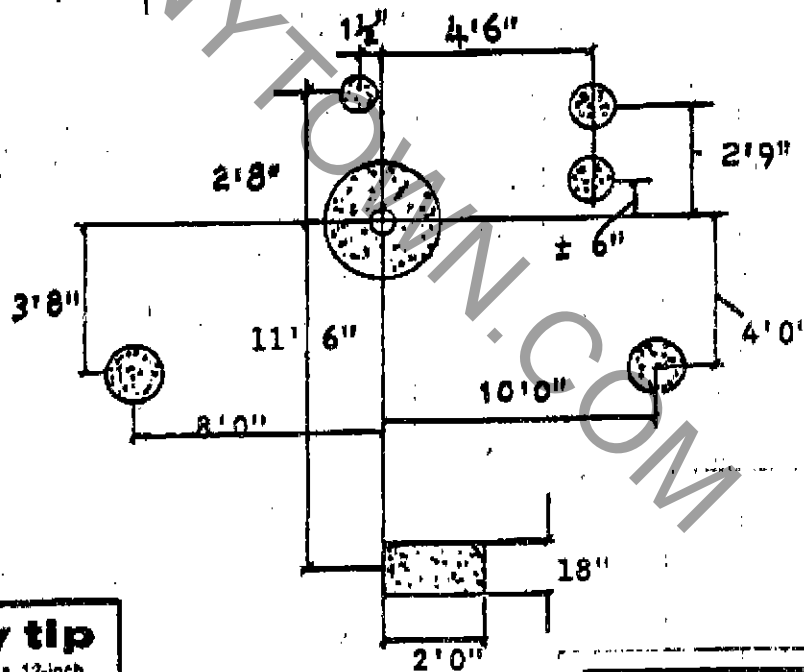
- b. IMPORTANT - THERE WILL BE THREE SPIRAL SECTIONS; TWO HALF SPIRALS AND ONE QUARTER SPIRAL. THE QUARTER SECTION WILL BE THE FIRST TO ATTACH TO THE PLATFORM WITH THE HALF SECTIONS FOLLOWING.
- c. THE BOTTOM BEDWAY EXIT ANGLE WILL BE DIFFERENT THAN THE MODEL 108.
- d. FOOTING LOCATIONS FOR STEPS, BRACES AND LEGS WILL VARY ACCORDINGLY. (SEE FOOTING DIAGRAM).
- e. ANY BOLT THREAD PROTRUDING BEYOND THE NUT MUST BE CUT AND PEENED TO PREVENT ACCIDENTAL INJURY.

# MODEL NO. - 108

## FOOTING DETAIL



## FOOTING LAYOUT

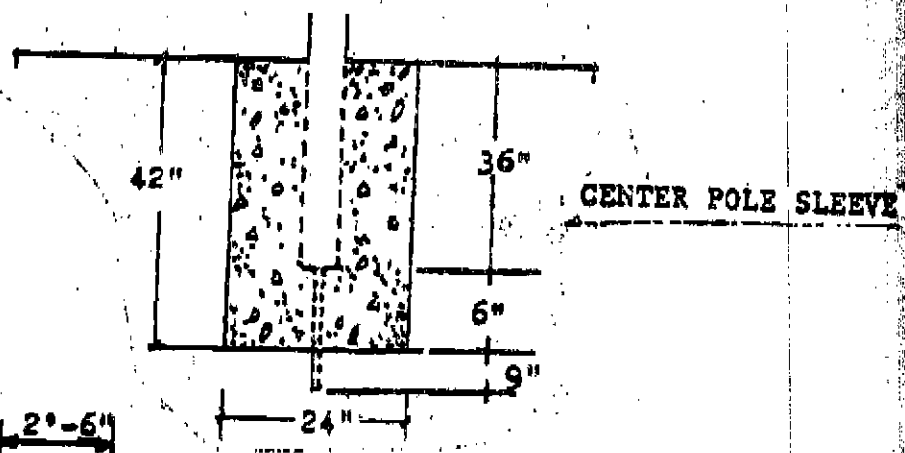


**safety tip**  
 We recommend a 12-inch deep base of pea gravel, sand, redwood bark or coarse wood shavings be maintained around all outdoor playground equipment extending at least seven feet beyond the outer limits of each item.

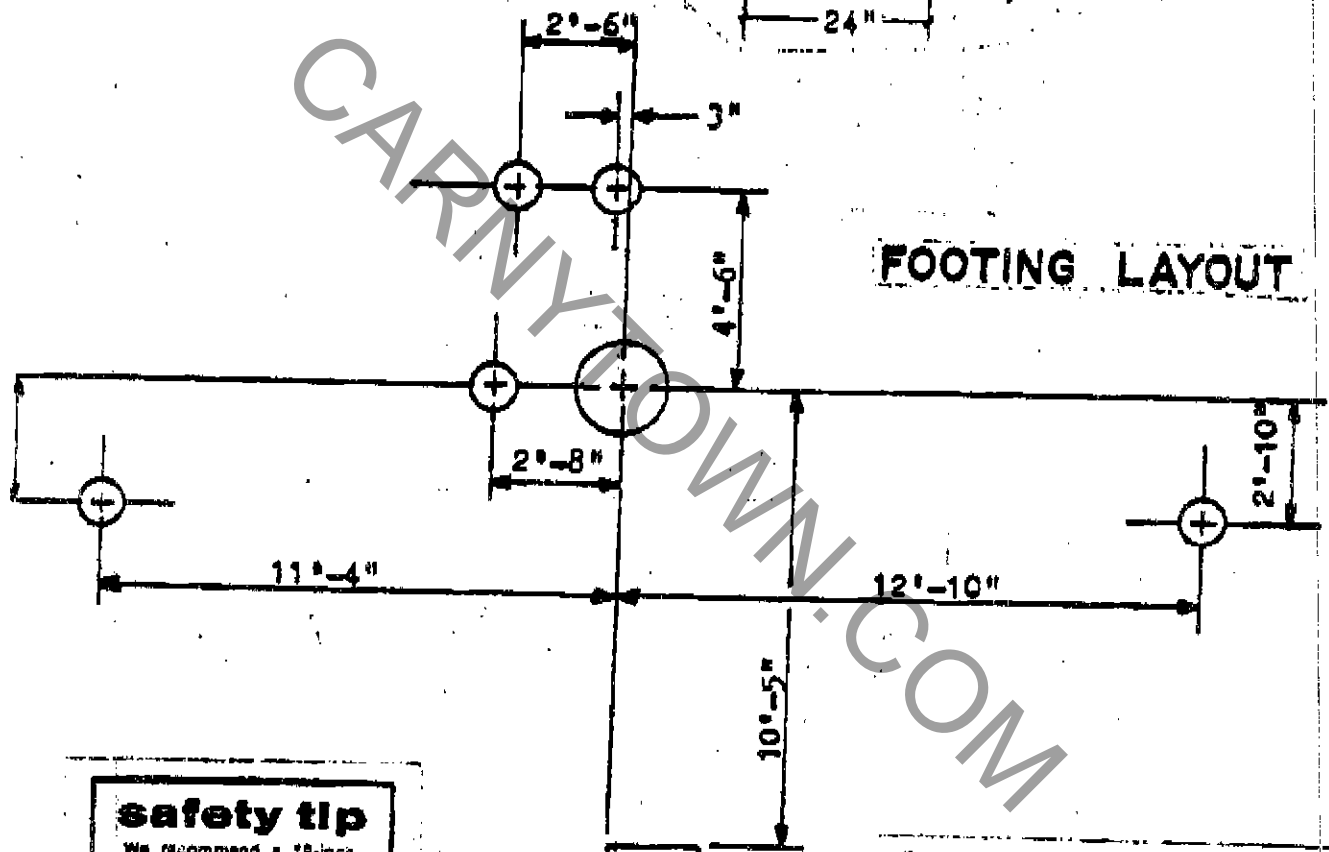
**RECOMMENDED FOOTING SUB-GRADE:  
 6-12" COMPACTED GRANULAR MATERIAL**

# FOOTING DETAIL

**MODEL NO.**  
**108-39**



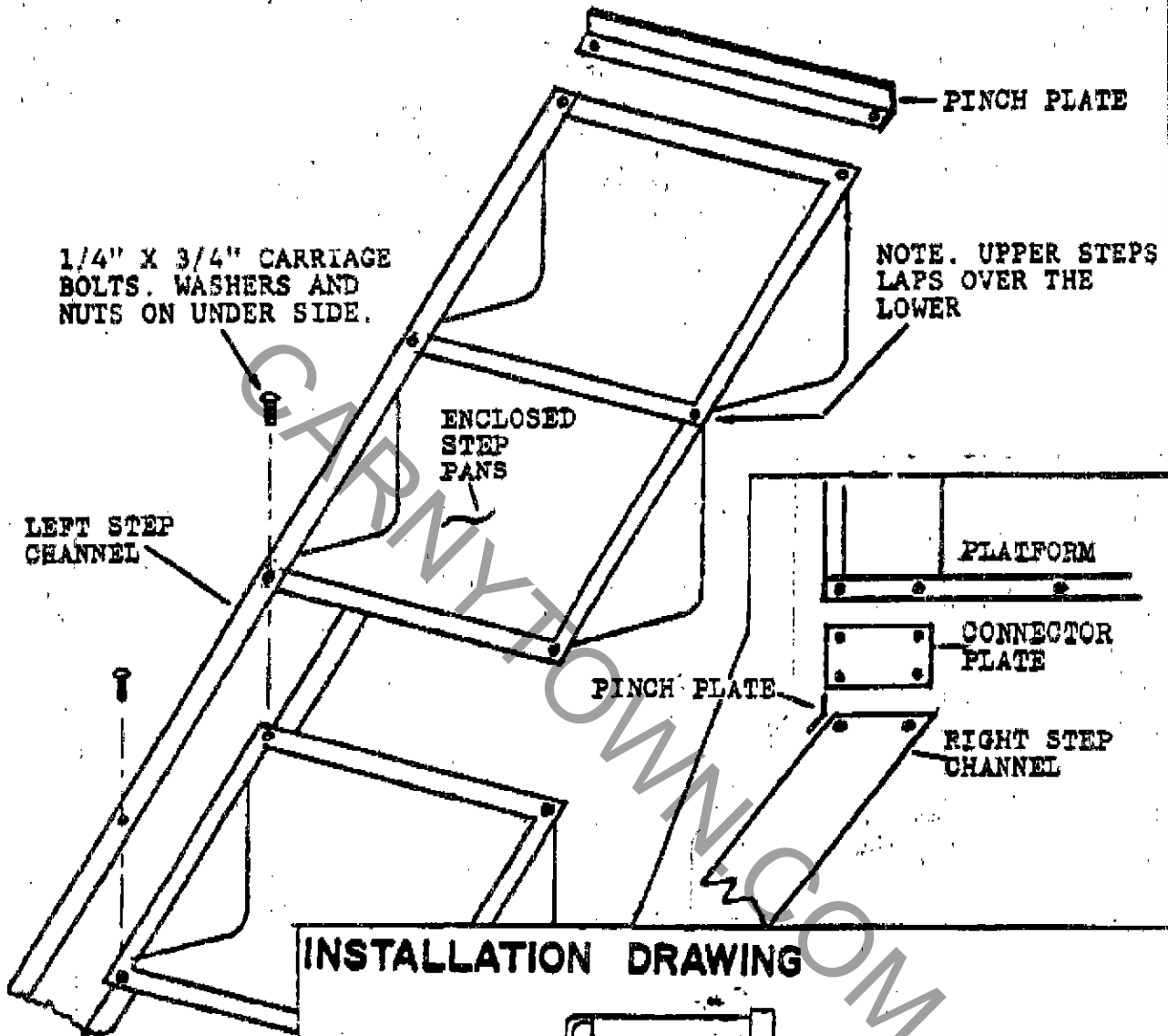
# FOOTING LAYOUT



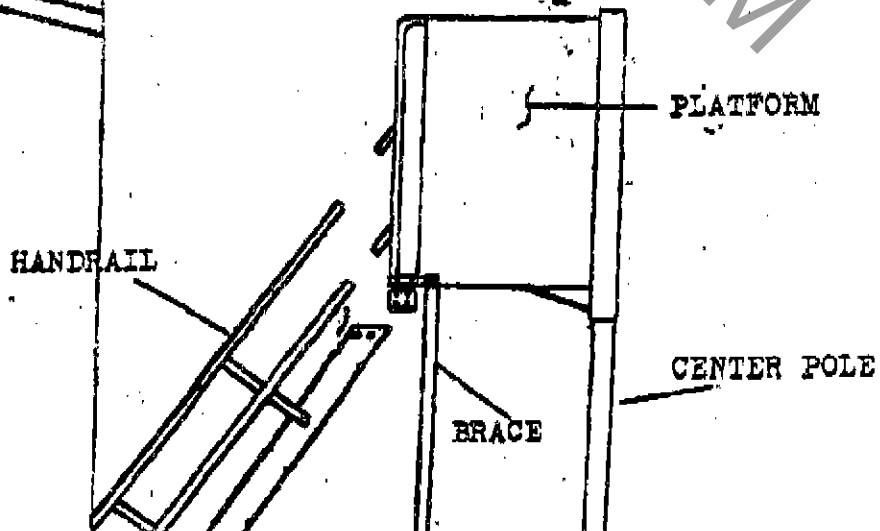
**safety tip**  
 We recommend a 18-inch deep base of pea gravel, sand, redwood bark or coarse wood shavings be maintained around all outdoor playground equipment extending at least seven feet beyond the outer limits of each item.

**RECOMMENDED FOOTING SUB-GRADE:  
 6-12" COMPACTED GRANULAR MATERIAL**

# STEP ASSEMBLY INSTALLATION DRAWING



## INSTALLATION DRAWING



# INSTALLATION DRAWING

