



**MALTA DYNAMICS**  
FALL PROTECTION & SAFETY

**X** **SERIES**  
MOBILE FALL PROTECTION  
BY MALTA DYNAMICS

**X525**

**TECHNICAL  
INFORMATION**

**DESIGN CRITERIA:**

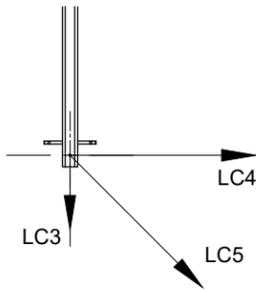
ANSI/ASSE Z359.6-2016 4.6.10.2.1:  
A SAFETY FACTOR OF NOT LESS THAN 2 AGAINST STATIC OVERTURNING, WHEN THE DESIGN PREVENTS CHANGE OF THE COUNTERBALANCE WEIGHT OR MOVEMENT OF THE FULCRUM POINT.

2019 IBC:  
A SAFETY FACTOR OF AT LEAST 1.5 AGAINST DYNAMIC OVERTURNING WHEN DESIGN PREVENTS MOVEMENT.

**MUST MEET ANSI SPECIFICATIONS AT MINIMUM**

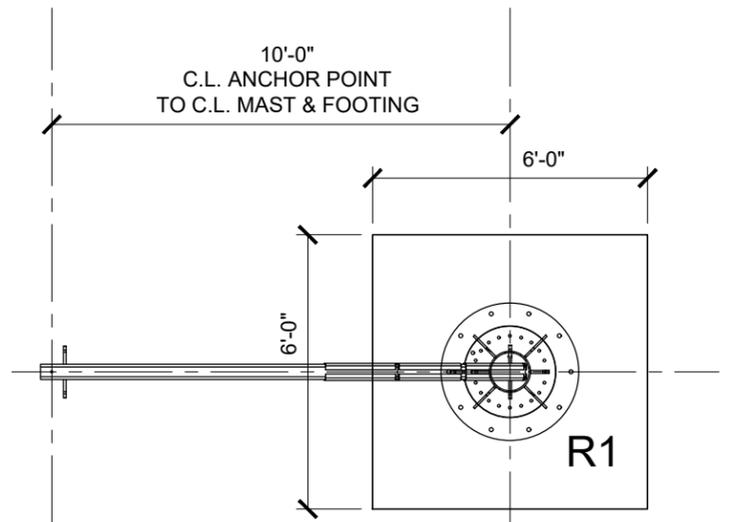
**POTENTIAL FALL ARREST LOADING:**

- (1) USERS, NON SIMULTANEOUS LOADING
- USER 1: 900 LB MAXIMUM ARRESTED FORCE
- STATIC LOAD = 310 LB ARREST USER WEIGHT
- DYNAMIC LOAD = 590 LB (OVER 400 MILLISECONDS)
- LC1: FALLS DOWN
- LC2: FALLS TOWARD UNIT 30 DEGREES (SIDE ELEVATION VIEW)
- LC3: FALLS AWAY FROM UNIT 30 DEGREES (SIDE ELEVATION VIEW)
- LC4: FALLS TO SIDE 30 DEGREES (FRONT ELEVATION VIEW)
- LC5: FALLS AWAY FROM UNIT 30 DEGREES AT 45 DEGREES (PLAN VIEW)



**PLAN VIEW**

SCALE: 1/4" = 1'-0"



**PLAN VIEW**

SCALE: 1/4" = 1'-0"

**TOTAL UNIT WEIGHT = 1784 lb**

**FOUNDATION**

1. FOOTINGS ARE DESIGNED BASED ON THE FOLLOWING INFORMATION: ALLOWABLE BEARING = 1500 PSF. FOOTINGS SHALL BEAR ON COMPACTED FILL OR NATIVE SOILS TESTED.
2. CONTRACTOR TO PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER, OR SEEPAGE, IF REQUIRED.
3. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEATHING, AND SHORING REQUIRED AND SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH ALL NATIONAL, STATE, AND LOCAL SAFETY ORDINANCES. EXCAVATION FOR FOOTINGS SHALL BE APPROVED BY THE INSPECTOR OR SOILS ENGINEER PRIOR TO PLACING THE CONCRETE AND REINFORCING. CONTRACTOR TO NOTIFY THE INSPECTOR WHEN INSPECTION OF EXCAVATION IS READY. INSPECTOR TO SUBMIT A LETTER OF COMPLIANCE.
4. ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED.
5. ALL ABANDONED FOOTINGS, UTILITIES, ETC. WHICH INTERFERE WITH NEW CONSTRUCTION SHALL BE REMOVED. NEW FOOTINGS SHALL EXTEND INTO UNDISTURBED SOILS.
7. PLACE FILLS TO BE COMPACTED IN MAX 8" LOOSE LIFTS. COMPACT TO MINIMUM 98% OF MAXIMUM DENSITY AT +/-2% OPTIMUM MOISTURE WHEN TESTED IN ACCORDANCE WITH ASTM D-698.

**CONCRETE**

1. ALL CONCRETE CONSTRUCTION SHALL CONFORM WITH CHAPTER 19 OF THE CODE AND WITH THE PROVISIONS OF ACI 318, LATEST EDITION.
2. REINFORCED CONCRETE IS DESIGNED BY THE "ULTIMATE STRENGTH DESIGN METHOD".
3. CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND APPROVED BY THE STRUCTURAL ENGINEER. MIX DESIGN METHODS (TEST HISTORY OR TRIAL BATCH METHOD) PER ACI SECTION 5.3 SHALL BE USED TO PROPORTION CONCRETE. SUBMIT MIX DESIGN METHOD DATA. IF 3-POINT CURVES ARE USED, GC TO CLEARLY IDENTIFY WHICH POINT ON CURVE IS USED AND MIX DESIGN ON 3-POINT CURVE.
4. SCHEDULE OF STRUCTURAL CONCRETE 28-DAY STRENGTH AND TYPES (SLUMP LISTED IS MAX):

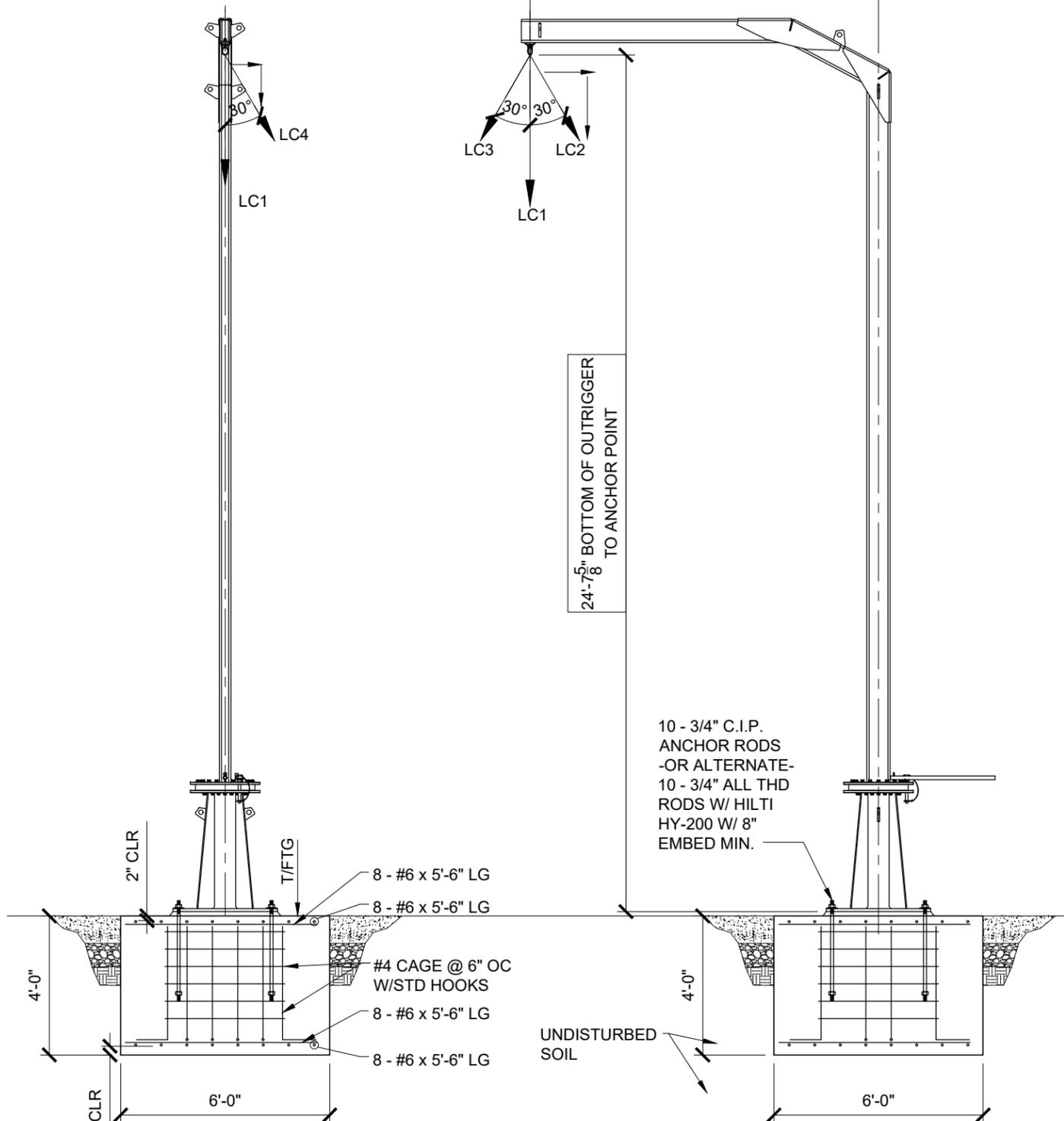
LOCATION IN STRUCTURE	STRENGTH	W/C RATIO	SLUMP	DENSITY
FOUNDATIONS	3000 PSI	0.55	4"	145 PCF

CONTRACTOR AT HIS OPTION MAY INCREASE SLUMP WITH USE OF HRWR ADMIXTURE. LIMIT SLUMP INCREASE TO 2" GREATER THAN THAT ALLOWED WITHOUT HRWR.

5. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE I OR II.
6. AGGREGATE FOR CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C-33 AND PROJECT SPECIFICATIONS.
7. CONCRETE MIXING OPERATION, ETC. SHALL CONFORM TO ASTM C-94.
8. PLACEMENT OF CONCRETE SHALL CONFORM TO ACI CODE, CHAPTER 5 AND PROJECT SPECIFICATIONS.
9. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL CONCRETE SURFACES AGAINST WHICH NEW CONCRETE IS TO BE PLACED.
10. ALL REINFORCING BARS, ANCHOR BOLTS, AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
11. CONCRETE EXPOSED TO THE WEATHER, FREEZE-THAW, DEICING CHEMICALS, AND OR PARKED VEHICLES SHALL CONTAIN 6% (+/-1%) ENTRAINED AIR EITHER BY USING TYPE "A" PORTLAND CEMENTS OR ADMIXTURES CONFORMING TO ASTM C-260.
12. CURE CONCRETE BY WET CURING OR LIQUID SPRAY CONFORMING TO ASTM C-309. CONTRACTOR TO VERIFY CURING AGENT IS COMPATIBLE WITH ANY FLOOR ADHESIVES SPECIFIED WITHIN THE CONTRACT DOCUMENTS.
13. ALL ADMIXTURES SHALL BE COMPATIBLE WITH ONE ANOTHER. PREFERABLY ONE MANUFACTURER SHALL BE USED FOR ALL ADMIXTURES.
14. CALCIUM CHLORIDE OR CHLORIDE CONTAINING ADMIXTURES **WILL NOT** BE PERMITTED UNDER ANY CIRCUMSTANCES.
15. FLYASH CONTENT, IF APPROVED IN ADVANCE BY ENGINEER, SHALL BE LIMITED TO 20% OF TOTAL CEMENTITIOUS MATERIAL OR 25% OF PORTLAND CEMENT CONTENT. IF FLYASH IS USED, CONTRACTOR SHALL TAKE ADDITIONAL CONCRETE TEST CYLINDERS FOR 56 DAY BREAKS.
16. DURING HOT WEATHER PLACE CONCRETE IN ACCORDANCE WITH ACI 305. DURING COLD WEATHER PLACE CONCRETE IN ACCORDANCE WITH ACI 306.
17. FOR CONCRETE PUMP MIX DESIGNS, USED AT THE ELECTION OF THE CONTRACTOR:
  - a. SUBMIT MIX DESIGN FOR PUMPABLE CONCRETE AS OUTLINED IN THE "CONCRETE" NOTES WITH HISTORIC TEST DATA INCLUDING BREAKS.
  - b. MAXIMUM WATER CEMENT RATIO TO BE 0.45
  - c. SLUMP TESTS SHALL BE TAKEN BY THE TESTING LAB AT BOTH TRUCK DISCHARGE AND POINT OF PLACEMENT
  - d. ALL MIX DESIGNS AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION OF ACI 304.2R - PLACING CONCRETE BY PUMPING METHODS.
  - e. MAXIMUM ALLOWED SLUMP AT TRUCK DISCHARGE: 8"
  - f. SLUMP AT POINT OF FINAL PLACEMENT: 6"
  - g. ALL CONCRETE TEST CYLINDERS SHALL BE TAKEN AT POINT OF FINAL PLACEMENT. FOLLOW "FIELD CONTROL" PROCEDURES IN ACI 304.2R, LATEST ADDITION.
  - h. ONE ADDITIONAL TEST CYLINDER SHALL BE TAKEN FOR 56 DAY BREAKS.

**REINFORCING STEEL**

1. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 12 OF THE ACI CODE. ASTM A615, GRADE 60 U.N.O. EPOXY COATED REINFORCING STEEL BARS SHALL CONFORM TO ASTM A775.
  2. BARS SHALL BE CLEAN OF RUST, GREASE, OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
  3. ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE.
  4. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE "A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.
  5. REBAR SPACINGS GIVEN ARE MAXIMUM ON CENTER WHETHER STATED AS "O.C." OR NOT. ALL REBAR IS CONTINUOUS WHETHER STATED AS "CONT." OR NOT. CONTINUOUS INSPECTION OF CONCRETE SHALL INCLUDE INSPECTION DURING INSTALLATION OF REINFORCING STEEL. INSPECTION SHALL BE SCHEDULED SO THAT PLACEMENT OF REINFORCING STEEL, CONDUIT, SLEEVES, AND EMBEDDED ITEMS MAY BE CORRECTED PRIOR TO PLACEMENT OF OVERLYING GRIDS OF REINFORCING STEEL.
  7. CONCRETE PROTECTION FOR REINFORCEMENT CAST-IN-PLACE CONCRETE (NON-PRESTRESSED) THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT UNLESS NOTED OTHERWISE:
- | COVER  |    |
|--|----|
| A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: | 3" |
| B. CONCRETE EXPOSED TO EARTH OR WEATHER:                   | 2" |
| NO. 6 THROUGH NO. 18 BAR 1 1/2"                            |    |
12. REPAIR ANY DAMAGED EPOXY COATINGS AS REQUIRED BY ACI AND ASTM REQUIREMENTS.
  13. MILL TEST REPORTS FOR GRADE 60 BARS SHALL BE SUBMITTED PRIOR TO PLACEMENT OF CONCRETE.

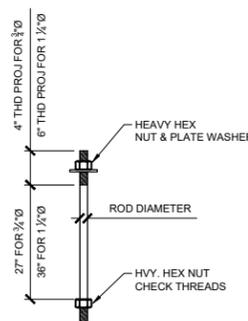


**FRONT ELEVATION**

SCALE: 1/4" = 1'-0"

**SIDE ELEVATION**

SCALE: 1/4" = 1'-0"



**ANCHOR ROD DETAIL**  
N.T.S.  
ASTM F1554 GRADE 105 STEEL

## **SUMMARY**

- 1. Unit checked for full height of mast**
- 2. One user checked**
- 3. A 6'-0"x6'-0"x4'-0" deep foundation with 10 – 3/4" cast in place anchors or alternatively 10 – 3/4" all thread rods with Hilti HY-200 (or equal) with 8" embedment minimum results in the X525 being OK for every load combination per ANSI Z359 and IBC. See the attached drawing for foundation reinforcing.**
- 4. The unit was checked for dynamic overturning at a factor of safety of 1.0 (no uplift occurring at boundary conditions). As the static loading conditions are half of the dynamic loading conditions, a dynamic overturning factor of safety of 1.0 is equivalent to a static overturning factor of safety of 2.0, and the modified unit satisfies ANSI specifications.**