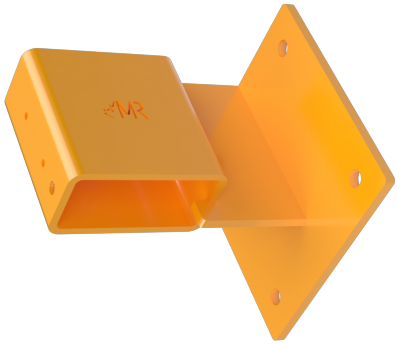
spec sheet overview

MIGHTYRAIL



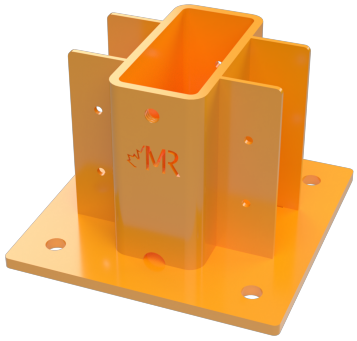
MIGHTYRAIL FACE MOUNT spec overview

6”x 6”x 1/4” base plate

2 3/4”offset from installation surface to 2x4 upright

7/16 bolt holes

Recommended max spacing of brackets - 6ft o/c
Recommended minimum fasteners
-concrete - 3/8 x 3” SST Titan anchor bolt or equivalent
-wood - 3/8 x 3.5 “lag screw with solid wood backing
- as per INTERTEK S3718.01-119-19 RO

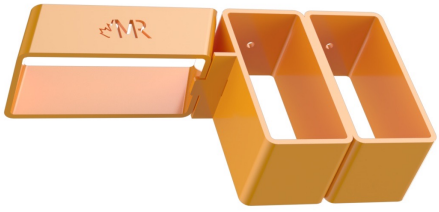


MIGHTYRAIL FLOOR MOUNT spec overview

6”x 6”x 1/4” base plate

7/16 bolt holes

Recommended Max spacing on brackets - 6ft o/c
Recommended minimum fasteners -
-concrete - 3/8 x 2 1/4” SST Titan anchor bolt or equivalent
-wood - 3/8 x 3.5 “lag screw with solid wood backing
- as per INTERTEK S3718.01-119-19 RO



MIGHTYRAIL LOOP RAIL spec overview

No fasteners required for compliance
Friction fit horizontal rail connector
Recommended use two per post
Receives standard 2x4 dimensional lumber SPF-2
- Installation Heights -

top rail - 42” off walking surface

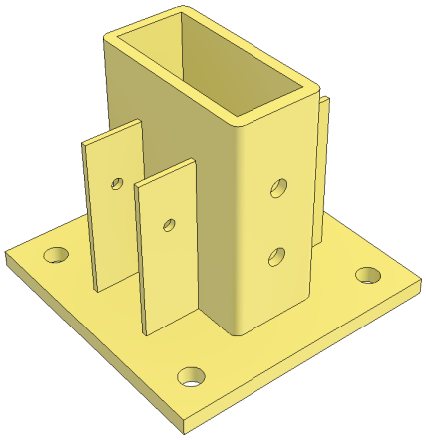
mid rail - 21 “ off walking surface

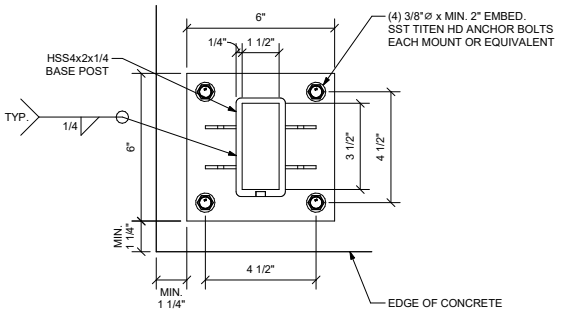
- as per INTERTEK S3718.01-119-19 RO

MIGHTYRAIL.com

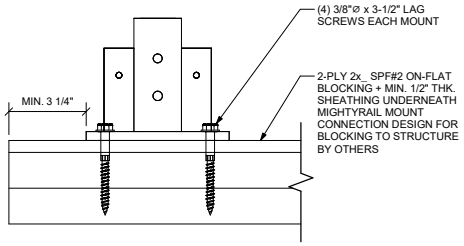
Floor Mount Spec sheet

NOTE:
ALL MIGHTYRAIL COMPONENTS TO
BE GRADE W300 OR W350 STEEL
OR GRADE 6061-T6 ALUMINUM

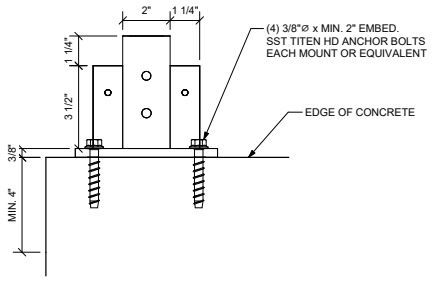




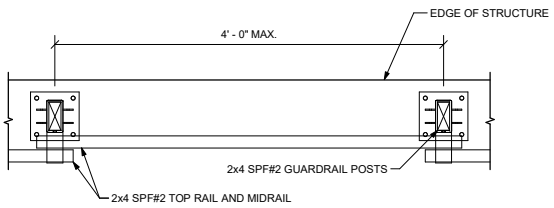
6 S100.1 MIGHTYRAIL FLOOR MOUNT TOP SECTION
CONCRETE ANCHOR OPTION
SCALE: 3" = 1'-0"



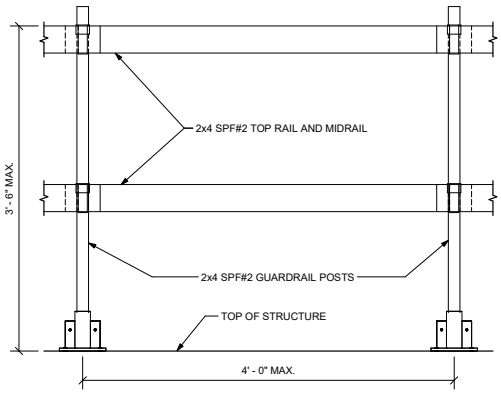
1 S100.2 MIGHTYRAIL FLOOR MOUNT FRONT SECTION
LAG SCREW OPTION
SCALE: 3" = 1'-0"



4 S100.1 MIGHTYRAIL FLOOR MOUNT FRONT SECTION
CONCRETE ANCHOR OPTION
SCALE: 3" = 1'-0"



9 S100.2 MIGHTYRAIL FLOOR MOUNT
EXAMPLE PLAN VIEW
SCALE: 1" = 1'-0"



8 S100.2 MIGHTYRAIL FLOOR MOUNT
EXAMPLE ELEVATION VIEW
SCALE: 1" = 1'-0"

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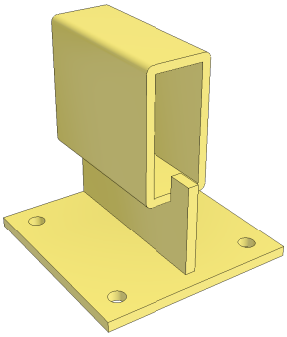
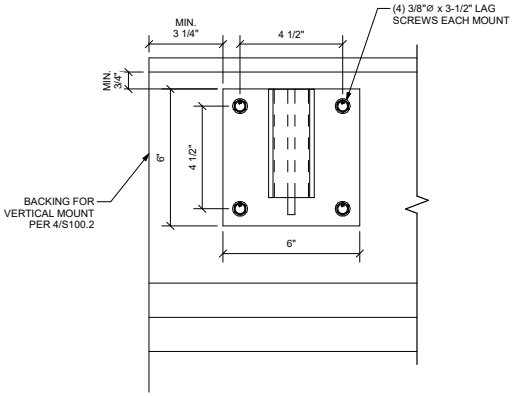
Face Mount spec sheet

NOTE:
ALL MIGHTYRAIL COMPONENTS TO
BE GRADE W300 OR W350 STEEL
OR GRADE 6061-T6 ALUMINUM



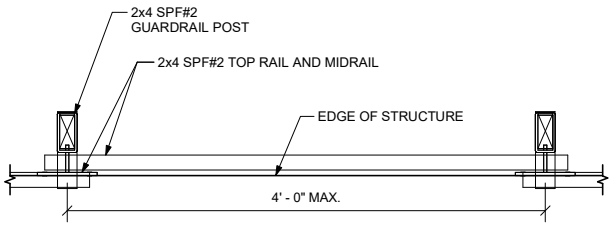
2 / S100.1 MIGHTYRAIL VERTICAL MOUNT 3D VIEW

SCALE: N.T.S.



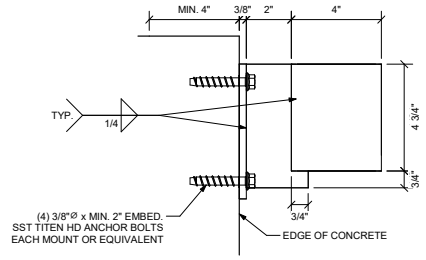
3 / S100.2 MIGHTYRAIL VERTICAL MOUNT FRONT SECTION LAG SCREW OPTION

SCALE: 3" = 1'-0"



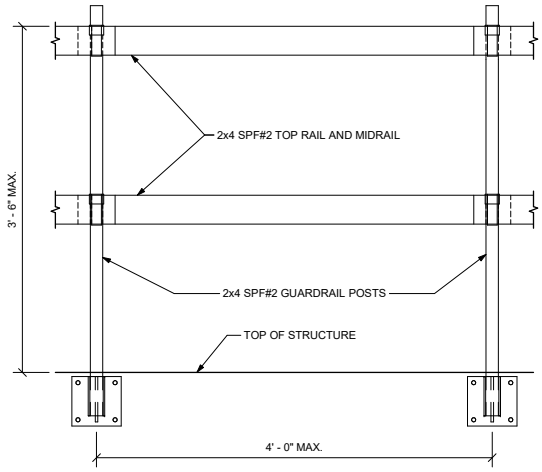
11 / S100.2 MIGHTYRAIL VERTICAL MOUNT EXAMPLE PLAN VIEW

SCALE: 1" = 1'-0"



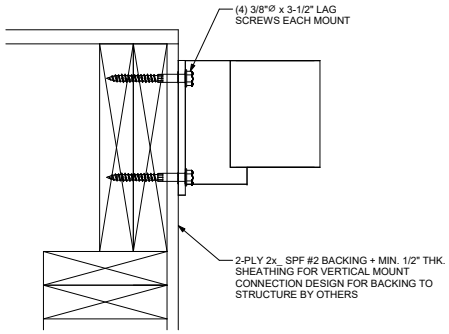
8 / S100.1 MIGHTYRAIL VERTICAL MOUNT SIDE SECTION CONCRETE ANCHOR OPTION

SCALE: 3" = 1'-0"



10 / S100.2 MIGHTYRAIL VERTICAL MOUNT EXAMPLE ELEVATION VIEW

SCALE: 1" = 1'-0"



4 / S100.2 MIGHTYRAIL VERTICAL MOUNT SIDE SECTION LAG SCREW OPTION

SCALE: 3" = 1'-0"

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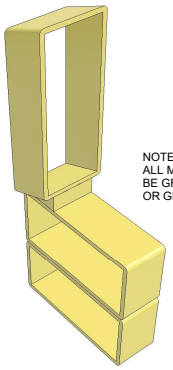
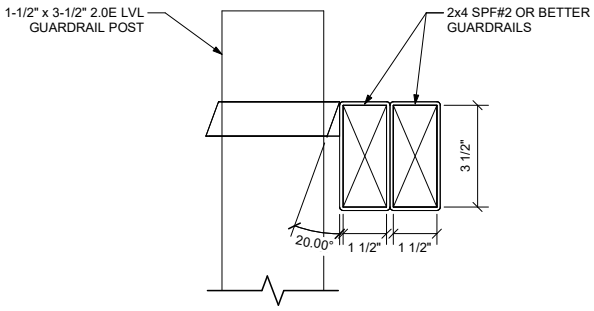
Loop Rail spec sheet



NOTE:
ALL MIGHTYRAIL COMPONENTS TO BE GRADE W300 OR W350 STEEL OR GRADE 6061-T6 ALUMINUM

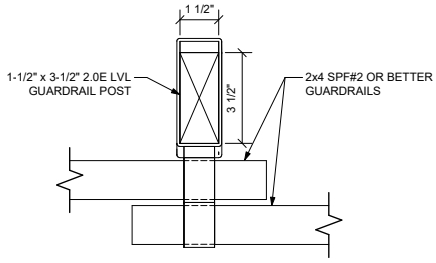
3 / S101.1 MIGHTYRAIL RAILING PIECE 3D VIEW

SCALE: N.T.S.



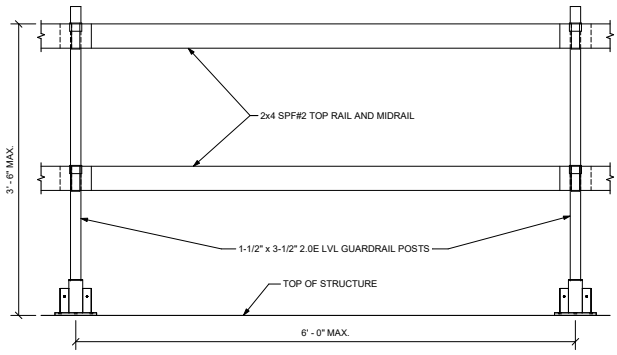
6 / S101.2 MIGHTYRAIL RAILING PIECE SIDE SECTION

SCALE: 3" = 1'-0"



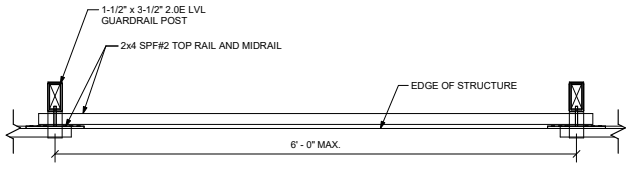
7 / S101.2 MIGHTYRAIL RAILING PIECE TOP SECTION

SCALE: 3" = 1'-0"



8 / S101.2 MIGHTYRAIL FLOOR MOUNT EXAMPLE ELEVATION VIEW

SCALE: 1" = 1'-0"



11 / S101.2 MIGHTYRAIL VERTICAL MOUNT EXAMPLE PLAN VIEW

SCALE: 1" = 1'-0"

STRUCTURAL NOTES

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WOOD FRAMING

1. ALL DIMENSIONAL LUMBER TO BE #2 SPF OR BETTER. WALL STUDS MUST BE #2 SPF OR BETTER AND SHALL CONFORM TO CAN/CSA-0141
2. ALL TIMBER WORK SHALL CONFORM TO THE REQUIREMENTS OF CAN/CSA-086
3. ALL FRAMING, BRIDGING, BLOCKING, NAILING, ETC. SHALL CONFORM TO THE BUILDING CODE, SECTION 9.23
4. ALL BEAM SPLICES ARE TO OCCUR AT SUPPORTS, UNLESS NOTED OTHERWISE

WOOD CONNECTIONS

1. ALL BOLTS AND ANCHOR BOLTS SHALL CONFORM TO ASTM A307
2. ALL BOLTS AND NUTS MUST BE FITTED WITH CUT STEEL WASHERS
3. ALL STEEL PLATE USED IN CONNECTION DETAILS SHALL BE GRADE 300W
4. ALL NAILING SHALL BE WITH COMMON WIRE NAILS TO CSA B111. IF PNEUMATIC NAILS ARE INTENDED AS SUBSTITUTION, SUBMIT INFORMATION TO ROV CONSULTING FOR REVIEW AND APPROVAL PRIOR TO USE
5. BOLT HOLES SHALL NOT BE MORE THAN $\frac{1}{16}$" LARGER THAN THE BOLT DIAMETER
6. BOLTS IN WOOD SHALL NOT BE LESS THAN 7 DIAMETERS FROM THE END AND 4 DIAMETERS FROM THE EDGE
7. LAG SCREWS SHALL BE PRE-DRILLED WITH A BIT SIZE OF 65% OF THE SHANK DIAMETER FOR THE THREADED PORTION. LEAD HOLES SHALL BE THE SAME LENGTH AS THE UNTHREADED PORTION AND THE SAME DIAMETER AS THE SHANK. SCREW ALL LAGS INTO PLACE. CUT WASHERS SHALL BE PROVIDED UNDER HEADS WHICH BEAR ON WOOD
8. NO CHECKS OR SPLITS ALLOWED AT AREAS TO BE BOLTED OR LAGGED
9. ALL EXPOSED BOLTS AND WASHERS SHALL BE GALVANIZED, OR PER THE ARCHITECT
10. ALL FRAMING CONNECTION HARDWARE INCLUDING HOLD-DOWN CONNECTORS, JOIST / BEAM HANGERS, STRAPS, ANGLES, ETC. SHALL BE "SIMPSON STRONG TIE" OR APPROVED EQUAL
11. NAILS SHALL BE PLACED NOT LESS THAN $\frac{3}{8}$" FROM THE PANEL EDGE AND SHALL NOT BE OVER-DRIVEN MORE THAN 15% OF THE PANEL THICKNESS

ENGINEERED WOOD MEMBERS

1. GLUE LAMINATED MEMBERS SHALL BE FABRICATED BY A PLANT CONFORMING TO CSA 0177-M89 (R2003) "QUALIFICATION CODE FOR MANUFACTURERS OF GLUE LAMINATED TIMBER"
2. SCL (STRUCTURAL COMPOSITE LUMBER) - STRESS GRADES:

	E (psi)	f_b(psi)	f_v(psi)	f_{cp}(psi)
PARALLEL STRAND LUMBER (PSL) - BEAMS	$2.2x10^6$	5360	540	1365
PARALLEL STRAND LUMBER (PSL) - COLUMNS	$1.8x10^6$	4435	355	775
LAMINATED VENEER LUMBER (LVL) - BEAMS	$2.0x10^6$	4805	530	1365

GLULAM BEAM STRESS GRADES:

SIMPLE SPAN - 24f-E

CONTINUOUS SPAN OR CANTILEVER - 24f-EX

FINISH AS PER ARCHITECTURAL REQUIREMENTS & EXTERIOR SERVICE CONDITIONS

COLUMN GRADES

ALL - 16c-E

FINISH AS PER ARCHITECTURAL REQUIREMENTS & EXTERIOR SERVICE CONDITIONS

3. GENERAL CONTRACTOR TO SUBMIT ALL PERTINENT DRAWINGS AND DESIGN INFORMATION TO MANUFACTURER, INCLUDING ANY PERTINENT MECHANICAL AND ELECTRICAL EQUIPMENT THAT WOULD AFFECT BEAM DESIGN
4. MANUFACTURER / CONTRACTOR TO SUBMIT SHOP DRAWINGS TO DESIGN AUTHORITY, STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO MANUFACTURER
5. WEATHER PROTECTION REQUIRED FOR ALL MEMBERS DURING CONSTRUCTION AND SCL MATERIALS REQUIRE WEATHER PROTECTION FOR THE SERVICE LIFE OF THE BUILDING, AS PER THE ARCHITECTURAL PLANS

STRUCTURAL NOTES

MIGHTYRAIL.com

DRILL-IN (POST-INSTALLED) ANCHORS

1. UNLESS AN APPROVED ALTERNATE IS PERMITTED BY ROV CONSULTING, USE "HILTI" PRODUCTS. ONLY USE EPOXY BRAND NAME AND SERIES SPECIFIED ON DRAWINGS. THE SPECIFIED PRODUCTS ARE SPECIFICALLY REQUIRED TO MEET THE STRUCTURAL CALCULATIONS OF THE PLAN. BEFORE SUBSTITUTING ANOTHER BRAND, CONFIRM LOAD CAPACITY BASED ON RELIABLE PUBLISHED TESTING DATA OR CALCULATIONS. ROV CONSULTING INC. MUST EVALUATE AND GIVE WRITTEN APPROVAL FOR SUBSTITUTION PRIOR TO INSTALLATION

2. INJECTION OF ADHESIVE SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS ACCOMPANYING PRODUCT TO PRODUCE AN AIR-VOID FREE INJECTION CLEAR OF DIRT AND DEBRIS. USE HILTI PROFI KIT FOR PROPER HOLE PREPARATION

3. DRILLING SHALL BE PERFORMED FOLLOWING SAFE-SET PROCEDURES OR WITH A ROTARY HAMMER DRILL AND CARBIDE TIPPED DRILL BIT IN ACCORDANCE WITH INSTRUCTIONS ACCOMPANYING ADHESIVE CARTRIDGES. ALTERNATE DRILLING METHODS, SUCH AS DIAMOND CORING, MUST BE APPROVED BY ROV CONSULTING INC. WHEN HOLES ARE DRILLED INTO ARCHAIC OR HOLLOW BASE MATERIALS, THE DRILL SHOULD BE SET TO "ROTATION-ONLY" MODE

4. NO REBAR IS ALLOWED TO BE CUT DURING THE INSTALLATION OF ANCHORS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE REBAR IS LOCATED TO AVOID ANCHORS THAT HAVE LIMITED FLEXIBILITY IN BEING REPOSITIONED

5. USE HY-200 SYSTEM FOR FASTENING INTO CONCRETE. ALTHOUGH HAS RODS ARE STANDARD, TZ RODS ARE PREFERRED DUE TO THEIR EFFICIENT INSTALLATION WITH REDUCED DRILLING AND EASIER HOLE PREPARATION REQUIREMENTS

6. SPECIAL CONDITIONS SUCH AS WATER SATURATED CONCRETE, WATER-FILLED HOLES, UNDERWATER AND OVERHEAD INSTALLATIONS MUST BE APPROVED BY ROV CONSULTING INC.

7. ANCHORAGE TO CONCRETE

7.1. ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
HILTI HIT-HY 200 SAFE SET SYSTEM WITH THE HILTI HIT-Z ROD PER ICC ESR-3187

- HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM SYSTEM WITH HAS-E THREADED ROD PER ICC ESR-3187
- HILTI HIT-RE 500v3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM WITH HAS-E THREADED ROD PER ICC ESR-3814
- HILTI HIT-RE 500v3 SAFE SET SYSTEM WITH HILTI ROUGHENING TOOL (HIT RT) WITH HAS-E THREADED ROD PER ICC ESR-3814 FOR DIAMOND CORED HOLES

7.2. MEDIUM DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:

- HILTI KWIK HUS EZ AND KWIK HUS EZ-I SCREW ANCHORS SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND VACUUM SYSTEM PER ICC ESR-3027
- HILTI KWIK BOLT-TZ EXPANSION ANCHORS SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND VACUUM SYSTEM AND SI-AT-A22 WITH ADAPTIVE TORQUE PER ICC ESR-1917
- HILTI KWIK BOLT 3 EXPANSION ANCHOR SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND VACUUM SYSTEM AND SI-AT-A22 WITH ADAPTIVE TORQUE (UNCRACKED CONCRETE ONLY) PER ICC ESR-2302

7.3. HEAVY DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:

- HILTI HDA UNDERCUT ANCHORS PER ICC ESR 1546
- HILTI HSL-3 EXPANSION ANCHORS PER ICC ESR 1545

8. REBAR DOWELING INTO CONCRETE

8.1. ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:

- HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM SYSTEM WITH CONTINUOUSLY DEFORMED REBAR PER ICC ESR-3187
- HILTI HIT-HY 500v3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM SYSTEM WITH CONTINUOUSLY DEFORMED REBAR PER ICC ESR-3814
- HILTI HIT-RE 500v3 SAFE SET SYSTEM WITH HILTI ROUGHENING TOOL (HIT RT) WITH CONTINUOUSLY DEFORMED REBAR PER ICC ESR-3814 IN DIAMOND CORED HOLES

9. ANCHORAGE TO SOLID GROUTED MASONRY

9.1. ADHESIVE ANCHORS USE:

- HILTI HIT-HY 270 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM SYSTEM PER ICC ESR-4143
- STEEL ANCHOR ELEMENT SHALL BE HILTI HAS-E CONTINUOUSLY THREADED ROD OR CONTINUOUSLY DEFORMED STEEL REBAR

9.2. MECHANICAL ANCHORS USE:

- HILTI KWIK BOLT-3 EXPANSION ANCHORS WITH SI-AT-A22 WITH ADAPTIVE TORQUE PER ICC ESR 1385

10. ANCHORAGE TO HOLLOW / MULTI-WYTHE MASONRY

10.1. ADHESIVE ANCHORS USE:

10.1.1. HILTI HIT-HY 270 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM SYSTEM PER ICC ESR-4143.

10.1.2. STEEL ANCHOR ELEMENT SHALL BE HILTI HAS-E CONTINUOUSLY THREADED ROD OR CONTINUOUSLY DEFORMED STEEL REBAR

10.1.3. THE APPROPRIATE SIZE SCREEN TUBE SHALL BE USED PER ADHESIVE MANUFACTURER'S RECOMMENDATION

11. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE

12. INSTALL ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING

13. OVERHEAD ADHESIVE ANCHORS MUST BE INSTALLED USING THE HILTI PROFI SYSTEM

14. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.

15. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

16. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE TO LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY HILTI FERROSCAN, GPR, X-RAY, CHIPPING OR OTHER MEANS