

**SECTION 05 50 00
MISCMETALS**

SECTION 05 50 00

1.01 REFERENCE STANDARDS

- A. ASME B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series); 2012 (Reaffirmed 2021).
- B. ASME B18.2.2 - Nuts for General Applications: Machine Screw Nuts; and Hex, Square, Hex Flange, and Coupling Nuts (Inch Series); 2022.
- C. ASME B18.21.1 - Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series); 2009 (Reaffirmed 2016).
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- E. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.
- F. SSPC-PA 1 - Shop, Field, and Maintenance Coating of Metals; 2024, with Errata (2025).
- G. SSPC-SP 3 - Power Tool Cleaning; 2024.

MISCELLANEOUS METALS

PART 1 - GENERAL

3.01 GENERAL REQUIREMENTS

3.02 THE CONTRACTOR IS REFERRED TO THE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS, NYCHA CONTRACTS; THE SPECIAL NOTICE TO CONTRACTORS; THE FORM OF PROPOSAL; THE FORM OF BID BOND; DIVISION 01 - GENERAL REQUIREMENTS OF THE CONTRACT SPECIFICATIONS; THE CONTRACT DRAWINGS AND ALL AMENDMENTS AND ADDENDA THERETO; ALL OF WHICH GOVERN THE WORK OF THIS SECTION.

3.03 WORK INCLUDED

3.04 WORK OF THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY TO COMPLETE THE MISCELLANEOUS METAL WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

3.05 METAL RAILINGS AND GATES.

3.06 STEEL STAIRS REPLACEMENT.

3.07 STEEL PLATE COVERS AND FRAMES.

3.08 MASONRY SUPPORT STEEL.

3.09 LIGHT STEEL FRAMING, BRACING, SUPPORTS, ANCHORS, BOLTS, SHIMS, FASTENINGS, AND ALL OTHER SUPPLEMENTARY PARTS INDICATED ON DRAWINGS OR AS REQUIRED TO COMPLETE EACH ITEM OF WORK OF THIS SECTION, NOT INCLUDED AS PART OF WORK OF OTHER TRADES.

3.10 PRIME PAINTING, TOUCH-UP PAINTING, GALVANIZING AND SEPARATION OF DISSIMILAR METALS FOR WORK OF THIS SECTION.

3.11 CUTTING, FITTING, DRILLING AND TAPPING TO ACCOMMODATE WORK OF OTHER SECTIONS AND OF CONCRETE, MASONRY OR OTHER MATERIALS AS REQUIRED FOR ATTACHING AND INSTALLING WORK OF THIS SECTION.

3.12 RELATED WORK

3.13 STRUCTURAL STEEL RESTORATION - SECTION 05 12 00.

3.14 EXTERIOR PAINTING - SECTION 09 91 13.

3.15 QUALITY ASSURANCE

3.16 FIELD MEASUREMENTS: TAKE FIELD MEASUREMENTS PRIOR TO PREPARATION OF SHOP DRAWINGS AND FABRICATION, WHERE POSSIBLE. DO NOT DELAY JOB PROGRESS; ALLOW FOR TRIMMING AND FITTING WHERE TAKING FIELD MEASUREMENTS BEFORE FABRICATION MIGHT DELAY WORK.

3.17 SHOP ASSEMBLY: PRE-ASSEMBLE ITEMS IN SHOP TO GREATEST EXTENT POSSIBLE TO MINIMIZE FIELD SPLICING AND ASSEMBLY. DISASSEMBLE UNITS ONLY AS NECESSARY FOR SHIPPING AND HANDLING LIMITATIONS. CLEARLY MARK UNITS FOR RE-ASSEMBLY AND COORDINATED INSTALLATION.

3.18 REFERENCE STANDARDS: THE WORK IS SUBJECT TO REQUIREMENTS OF THE FOLLOWING STANDARDS:

3.19 "MANUAL OF STEEL CONSTRUCTION", AMERICAN INSTITUTE OF STEEL CONSTRUCTION.

3.20 AWS D1-1 "STRUCTURAL WELDING CODE", AMERICAN WELDING SOCIETY.

3.21 SSPC-SP 3 "SURFACE PREPARATION SPECIFICATION NO. 3, POWER TOOL CLEANING", STEEL STRUCTURES PAINTING COUNCIL.

3.22 SSPC-PA 1 "PAINTING APPLICATION SPECIFICATION", STEEL STRUCTURES PAINTING COUNCIL.

- 3.23 "HANDBOOK ON BOLT, NUT AND RIVET STANDARDS", INDUSTRIAL FASTENERS INSTITUTE.
- 3.24 SUBMITTALS
- 3.25 MANUFACTURER'S LITERATURE: SUBMIT MANUFACTURER'S SPECIFICATIONS, LOAD TABLES, DIMENSION DIAGRAMS, ANCHOR DETAILS AND INSTALLATION INSTRUCTIONS FOR PRODUCTS TO BE USED IN THE FABRICATION OF MISCELLANEOUS METAL WORK, INCLUDING PAINT PRODUCTS.
- 3.26 B. SHOP DRAWINGS: FOR THE FABRICATION AND ERECTION OF ALL ASSEMBLIES OF MISCELLANEOUS METALWORK. INCLUDE PLANS AND ELEVATIONS AT NOT LESS THAN 1" TO 1'-0" SCALE, AND DETAILS OF SECTIONS AND CONNECTIONS AT NOT LESS THAN 3" TO 1'-0" SCALE. SHOW ANCHORAGE AND ACCESSORY ITEMS. SHOP DRAWINGS MUST BE APPROVED BY NYCHA PRIOR TO ANY FABRICATION OR INSTALLATION. WELDING SHALL BE INDICATED ON SHOP DRAWINGS USING AWS SYMBOLS AND SHOWING LENGTH, SIZE AND SPACING. AUXILIARY VIEWS SHALL BE SHOWN TO CLARIFY ALL WELDING. NOTES SUCH AS '1/4" WELD', 'WELD' AND 'TACK WELD' ARE NOT ACCEPTABLE.

PART 2 - PRODUCTS

4.01 MATERIALS

4.02 METALS

- 4.03 METAL SURFACES, GENERAL: FOR FABRICATION OF MISCELLANEOUS METAL WORK WHICH WILL BE EXPOSED TO VIEW, USE ONLY MATERIALS WHICH ARE SMOOTH AND FREE OF SURFACE BLEMISHES INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, ROLLED TRADE NAMES AND ROUGHNESS.
- 4.04 STAINLESS STEEL SHEET: ASTM 666
- 4.05 STEEL PLATES, SHAPES AND BARS: ASTM A36.
- 4.06 STEEL BAR GRATING: ASTM A569 OR ASTM A36.
- 4.07 STEEL TUBING: COLD FORMED, ASTM A500; OR HOT ROLLED, ASTM A501.
- 4.08 STRUCTURAL STEEL SHEET: HOT ROLLED, ASTM A570; OR COLD ROLLED, ASTM A611, CLASS 1; OF GRADE REQUIRED FOR DESIGN LOADING.
- 4.09 GALVANIZED STRUCTURAL STEEL SHEET: ASTM A446, OF GRADE REQUIRED FOR DESIGN LOADING. COATING DESIGNATION AS INDICATED, OR IF NOT INDICATED, G90.
- 4.10 STEEL PIPE: ASTM A53, TYPE AND GRADE SELECTED BY FABRICATOR AND REQUIRED FOR DESIGN LOADING, BLACK FINISH UNLESS GALVANIZED. STANDARD WEIGHT, SCHEDULE 40, UNLESS INDICATED. ALL STEEL PIPE TO BE PRIMED AND PAINTED, AS PER SECTION 09 91 00 PAINTING AND FINISHING, UNLESS OTHERWISE NOTED.
- 4.11 GRAY IRON CASTINGS: ASTM A48, CLASS 30, UNLESS ANOTHER CLASS IS INDICATED OR REQUIRED BY STRUCTURAL LOADS.
- 4.12 MALLEABLE IRON CASTINGS: ASTM A47, GRADE AS SELECTED BY FABRICATOR.
- 4.13 BRACKETS, FLANGES AND ANCHORS: CAST OR FORMED METAL OF THE SAME TYPE OF MATERIAL AND FINISH AS SUPPORTED RAILS, UNLESS OTHERWISE INDICATED.
- 4.14 CONCRETE INSERTS: THREADED OR WEDGE TYPE; GALVANIZED FERROUS CASTINGS, EITHER MALLEABLE IRON, ASTM A47, OR CAST STEEL, ASTM A27. PROVIDE BOLTS, WASHERS AND SHIMS AS REQUIRED, HOT DIP GALVANIZED, ASTM A153.
- 4.15 PERFORATED METAL PANELS:
- A. Aluminum mesh for rooftop HVAC screens: plain weave 2" opening, 250-gauge wire cloth.
 - B. Stainless Steel for Entry lobby stair handrail panels: 316 alloy, flat top weave, 1" opening, .120/11 gauge.
 - C. Fence panel at outdoor sitting area: steel 1" opening, 135/10-gauge, plain weave.

- 4.16 GROUT: NON-SHRINK, NON-METALLIC GROUT CONFORMING TO SECTION 03 30 00.
- 4.17 FASTENERS
- 4.18 GENERAL: PROVIDE ZINC-COATED FASTENERS FOR EXTERIOR USE OR WHERE BUILT INTO EXTERIOR WALLS. SELECT FASTENERS FOR THE TYPE, GRADE AND CLASS REQUIRED.
- 4.19 BOLTS AND NUTS: REGULAR HEXAGON HEAD TYPE, ASTM A307, GRADE A.
- 4.20 ANCHOR BOLTS: ASTM F1554, GRADE 36.
- 4.21 LAG BOLTS: SQUARE HEAD TYPE, ASME B18.2.1.
- 4.22 MACHINE SCREWS: CADMIUM PLATED STEEL, ASME B18.6.3.
- 4.23 PLAIN WASHERS: ROUND, CARBON STEEL, ASME B18.2.2.1.
- 4.24 MASONRY ANCHORAGE DEVICES: EXPANSION SHIELDS, FS FF-S-325.
- 4.25 TOGGLE BOLTS: TUMBLE-WING TYPE, FS FF-B-588, TYPE, CLASS AND STYLE AS REQUIRED.
- 4.26 LOCK WASHERS: HELICAL SPRING TYPE CARBON STEEL, ASME B18.21.1.
- 4.27 BITUMINOUS PAINT: COLD APPLIED ASPHALT EMULSION COMPLYING WITH ASTM D1187.
- 4.28 GALVANIZE REPAIR COATING: FOR TOUCHING UP GALVANIZED SURFACES, PROVIDE Z.R.C. COLD GALVANIZING COMPOUND BY Z.R.C. CHEMICAL PRODUCTS CO. OR EQUAL.
- 4.29 PRIME PAINTING
- 4.30 SCOPE: ALL FERROUS METAL SHALL BE CLEANED, AND SHOP PAINTED WITH ONE COAT OF SPECIFIED FERROUS METAL PRIMER USING SERIES 88 AZERON PRIMER MADE BY TNEMEC OR EQUAL. NO SHOP PRIME PAINT REQUIRED ON GALVANIZED STEEL, STAINLESS STEEL, OR ALUMINUM WORK.
- 4.31 CLEANING: CONFORM TO STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATION SP 3 (LATEST EDITION) "POWER TOOL CLEANING: FOR CLEANING OF FERROUS METALS WHICH ARE TO RECEIVE SHOP PRIME COAT.
- 4.32 APPLICATION
- 4.33 APPLY SHOP PRIME COAT IMMEDIATELY AFTER CLEANING METAL. APPLY PAINT IN DRY WEATHER OR UNDER COVER. METAL SURFACES SHALL BE FREE FROM FROST OR MOISTURE WHEN PAINTED. PAINT ALL METAL SURFACES INCLUDING EDGES, JOINTS, HOLES, CORNERS, ETC.
- 4.34 PAINT SURFACES WHICH WILL BE CONCEALED AFTER SHOP ASSEMBLY SHALL BE PAINTED PRIOR TO SUCH ASSEMBLY. APPLY PAINT IN ACCORDANCE WITH APPROVED PAINT MANUFACTURER'S PRINTED INSTRUCTIONS, AND THE USE OF ANY THINNERS, ADULTERANTS OR ADMIXTURES SHALL BE ONLY AS STATED IN SAID INSTRUCTIONS.
- 4.35 PAINT SHALL UNIFORMLY AND COMPLETELY COVER METAL SURFACES, 2.0 MILS MINIMUM DRY FILM THICKNESS. NO WORK SHALL BE SHIPPED UNTIL THE SHOP PRIME COAT HAS DRIED.
- 4.36 TOUCH-UP: IN THE SHOP, AFTER ASSEMBLY AND IN THE FIELD, AFTER INSTALLATION OF WORK OF THIS SECTION, TOUCH-UP DAMAGED OR ABRADED PORTIONS OF SHOP PRIME PAINT WITH SPECIFIED FERROUS METAL PRIMER.
- 4.37 APPLY ONE SHOP COAT TO FABRICATED METAL ITEMS, EXCEPT APPLY TWO (2) COATS OF PAINT TO SURFACES INACCESSIBLE AFTER ASSEMBLY OR ERECTION. CHANGE COLOR OF SECOND COAT TO DISTINGUISH IT FROM THE FIRST.
- 4.38 GALVANIZING

- 4.39 SCOPE: ALL FERROUS METAL EXPOSED TO THE WEATHER, OR INDICATED ON DRAWINGS OR SPECIFIED TO BE GALVANIZED, SHALL BE CLEANED AND THEN HOT-DIPPED GALVANIZED AFTER FABRICATION.
- 4.40 CLEANING: THOROUGHLY CLEAN METAL SURFACES OF ALL MILL SCALE, RUST, DIRT, GREASE, OIL, MOISTURE AND OTHER CONTAMINANTS PRIOR TO GALVANIZING.
- 4.41 APPLICATION: HOT-DIP GALVANIZING SHALL BE APPLIED IN ACCORDANCE WITH:
- 4.42 ASTM A123: STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS.
- 4.43 ASTM A153: GALVANIZED COATING ON IRON AND STEEL HARDWARE - TABLE 1.
- 4.44 ASTM A446: GALVANIZED COATING ON STEEL SHEETS.
- 4.45 MINIMUM WEIGHT OF GALVANIZED COATING SHALL BE TWO (2) OZ. PER SQ. FT. OF SURFACE.
- 4.46 FABRICATE JOINTS WHICH WILL BE EXPOSED TO WEATHER IN A MANNER TO EXCLUDE WATER OR PROVIDE WEEP HOLES WHERE WATER MAY ACCUMULATE.
- 4.47 ALL GALVANIZED MATERIALS MUST BE INSPECTED FOR COMPLIANCE WITH THESE SPECIFICATIONS AND MARKED WITH A STAMP INDICATING THE NAME OF THE GALVANIZER, THE WEIGHT OF THE COATING, AND THE APPROPRIATE ASTM NUMBER.
- 4.48 TO MINIMIZE SURFACE IMPERFECTIONS, MATERIAL TO BE GALVANIZED SHALL BE DIPPED IN A SOLUTION OF ZINC AMMONIUM CHLORIDE (PRE-FLUX) IMMEDIATELY PRIOR TO GALVANIZING. THE TYPE OF GALVANIZING PROCESS UTILIZING A FLUX BLANKET OVERLAYING THE MOLTEN ZINC WILL NOT BE PERMITTED.
- 4.49 AFTER GALVANIZING ALL MATERIALS NOT EXPOSED TO VIEW MUST BE CHROMATED BY DIPPING MATERIAL IN A 0.2% CHROMIC ACID SOLUTION.
- 4.50 GALVANIZED SURFACES, WHERE EXPOSED TO VIEW, MUST HAVE A SMOOTH, LEVEL SURFACE FINISH. IF NOT, THE PIECE SHALL BE REJECTED AND REPLACED TO THE ACCEPTANCE OF THE ARCHITECT.
- 4.51 PROTECTIVE COATINGS
- 4.52 WHENEVER DISSIMILAR METALS WILL BE IN CONTACT, SEPARATE CONTACT SURFACES BY COATING EACH CONTACT SURFACE PRIOR TO ASSEMBLY OR INSTALLATION WITH ONE COAT OF SPECIFIED BITUMINOUS PAINT, WHICH SHALL BE IN ADDITION TO THE SPECIFIED SHOP PRIME PAINT. MASK OFF THOSE SURFACES NOT REQUIRED TO RECEIVE PROTECTIVE COATING.
- 4.53 PROVIDE ADDITIONAL SEPARATION BETWEEN DISSIMILAR METALS AS NOTED ON THE DRAWINGS OR AS REQUIRED BY NYCHA.
- 4.54 WORK QUALITY
- 4.55 GENERAL
- 4.56 MISCELLANEOUS METAL WORK SHALL BE FABRICATED BY AN EXPERIENCED FABRICATOR OR MANUFACTURER AND INSTALLED BY EXPERIENCED WORKERS
- 4.57 MATERIALS, METHODS OF FABRICATION, FITTING, ASSEMBLY, BRACING, SUPPORTING, FASTENING, OPERATING DEVICES, AND ERECTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS, APPROVED SHOP DRAWINGS, AND BEST PRACTICES OF THE INDUSTRY, USING NEW AND CLEAN MATERIALS AS SPECIFIED, HAVING STRUCTURAL PROPERTIES SUFFICIENT TO SAFELY SUSTAIN OR WITHSTAND STRESSES AND STRAINS TO WHICH MATERIALS AND ASSEMBLED WORK WILL BE SUBJECTED.
- 4.58 ALL WORK SHALL BE ACCURATELY AND NEATLY FABRICATED, ASSEMBLED AND ERECTED.

- 4.59 SHOP ASSEMBLY: INsofar AS PRACTICABLE, FITTING AND ASSEMBLY OF WORK SHALL BE DONE IN SHOP, IN LARGEST PRACTICAL SIZES TO MINIMIZE FIELDWORK. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE HIM/HERSELF THAT THE SHOP-FABRICATED MISCELLANEOUS METAL ITEMS WILL PROPERLY FIT THE FIELD CONDITION. IN THE EVENT THAT SHOP-FABRICATED MISCELLANEOUS METAL ITEMS DO NOT FIT THE FIELD CONDITION, THE ITEM SHALL BE RETURNED TO THE SHOP FOR CORRECTION.**
- 4.60 CUTTING: CUT METAL BY SAWING, SHEARING, OR BLANKING. FLAME CUTTING WILL BE PERMITTED ONLY IF CUT EDGES ARE GROUND BACK TO CLEAN, SMOOTH EDGES. MAKE CUTS ACCURATE, CLEAN, SHARP AND FREE OF BURRS, WITHOUT DEFORMING ADJACENT SURFACES OR METALS.**
- 4.61 HOLES: DRILL OR CLEANLY PUNCH HOLES; DO NOT BURN.**
- 4.62 CONNECTIONS: MAKE CONNECTIONS WITH TIGHT JOINTS, CAPABLE OF DEVELOPING FULL STRENGTH OF MEMBER, FLUSH UNLESS INDICATED OTHERWISE, FORMED TO EXCLUDE WATER WHERE EXPOSED TO WEATHER. LOCATE JOINTS WHERE LEAST CONSPICUOUS. UNLESS INDICATED OTHERWISE, WELD OR BOLT SHOP CONNECTIONS, BOLT OR SCREW FIELD CONNECTIONS. PROVIDE EXPANSION AND CONTRACTION JOINTS TO ALLOW FOR THERMAL MOVEMENT OF METAL AT LOCATIONS AND BY METHODS APPROVED BY ARCHITECT.**
- 4.63 WELDING**
- A. In accordance with "Standard Code for Welding in Building Construction" of the American Welding Society and shall be done with electrodes and/or methods recommended by the manufacturer of the metals being welded.
 - B. Welds shall be continuous, except where spot welding is specifically permitted. Welds exposed to view shall be ground flush and dressed smooth with and to match finish of adjoining surfaces; undercut metal edges where welds are required to be flush.
 - C. All welds on or behind surfaces which will be exposed to view shall be done to prevent distortion of finished surface. Remove weld spatter and welding oxides from all welded surfaces.

- 4.64 **BOLTS AND SCREWS: MAKE THREADED CONNECTIONS TIGHT WITH THREADS ENTIRELY CONCEALED. USE LOCK NUTS. BOLTS AND SCREW HEADS EXPOSED TO VIEW SHALL BE FLAT AND COUNTERSUNK. CUT OFF PROJECTING ENDS OF EXPOSED BOLTS AND SCREWS FLUSH WITH NUTS OR ADJACENT METAL.**
- 4.65 **OPERATING MECHANISM: OPERATING DEVICES (I.E. PIVOTS, HINGES, ETC.) AND HARDWARE USED IN CONNECTION WITH THIS WORK SHALL BE FABRICATED, ASSEMBLED, INSTALLED, AND ADJUSTED AFTER INSTALLATION TO OPERATE SMOOTHLY, FREELY, NOISELESSLY AND WITHOUT EXCESSIVE FRICTION.**
- 4.66 **BUILT-IN WORK: FURNISH ANCHOR BOLTS, INSERTS, PLATES AND ANY OTHER ANCHORAGE DEVICES, AND ALL OTHER ITEMS SPECIFIED UNDER THIS SECTION OF THE SPECIFICATIONS TO BE BUILT INTO CONCRETE, MASONRY, OR WORK OF OTHER TRADES, WITH NECESSARY TEMPLATES AND INSTRUCTIONS, AND IN AMPLE TIME TO FACILITATE PROPER PLACING AND INSTALLATION.**
- 4.67 **SUPPLEMENTARY PARTS: PROVIDE AS NECESSARY TO COMPLETE EACH ITEM OF WORK, EVEN THOUGH SUCH SUPPLEMENTARY PARTS ARE NOT SHOWN OR SPECIFIED.**
- 4.68 **COORDINATION: ACCURATELY CUT, FIT, DRILL AND TAP WORK OF THIS SECTION TO ACCOMMODATE AND FIT WORK OF OTHER TRADES. FURNISH OR OBTAIN, AS APPLICABLE, TEMPLATES AND DRAWINGS TO OR FROM APPLICABLE TRADES FOR PROPER COORDINATION OF THIS WORK.**
- 4.69 **EXPOSED WORK**
- 4.70 **IN ADDITION TO REQUIREMENTS SPECIFIED HEREIN AND SHOWN ON DRAWINGS, ALL SURFACES EXPOSED TO VIEW SHALL BE CLEAN AND FREE FROM DIRT, STAINS, GREASE, SCRATCHES, DISTORTIONS, WAVES, DENTS, BUCKLES, TOOL MARKS, BUTTS, AND OTHER DEFECTS WHICH MAR APPEARANCE OF FINISHED WORK.**
- 4.71 **METAL WORK EXPOSED TO VIEW SHALL BE STRAIGHT AND TRUE TO LINE OR CURVE, SMOOTH ARRISES AND ANGLES AS SHARP AS PRACTICABLE, MITERS FORMED IN TRUE ALIGNMENT, PROFILES ACCURATELY INTERSECTING, AND WITH JOINTS CAREFULLY MATCHED TO PRODUCE CONTINUITY OF LINE AND DESIGN.**
- 4.72 **EXPOSED FASTENINGS, WHERE PERMITTED, SHALL BE OF THE SAME MATERIAL, COLOR AND FINISH AS THE METAL TO WHICH APPLIED, UNLESS OTHERWISE INDICATED, AND SHALL BE OF THE SMALLEST PRACTICABLE SIZE.**
- 4.73 **MISCELLANEOUS METAL ITEMS**
- 4.74 **ROUGH HARDWARE**
- 4.75 **FURNISH BENT OR CUSTOM FABRICATED BOLTS, PLATES, ANCHORS, HANGERS, DOWELS, AND OTHER MISCELLANEOUS METAL SHAPES AS REQUIRED FOR FRAMING AND SUPPORTING WOODWORK, AND FOR ANCHORING OR SECURING WOODWORK TO CONCRETE OR OTHER STRUCTURES.**
- 4.76 **FABRICATE ITEMS TO SIZES, SHAPES AND DIMENSIONS REQUIRED. FURNISH MALLEABLE IRON WASHERS FOR HEADS AND NUTS WHICH BEAR ON WOOD CONNECTIONS; ELSEWHERE, FURNISH STEEL WASHERS.**
- 4.77 **LADDER**
- 4.78 **LADDER REPLACED COMPONENTS SHALL BE GALVANIZED, OR OTHERWISE ANTI-RUST COATED AND FABRICATED TO SUPPORT A LIVE LOAD OF ONE HUNDRED (100) LBS. PER SQUARE FOOT AND A CONCENTRATED LOAD OF THREE HUNDRED (300) LBS. PER RUNG; LOADS NOT TO ACT SIMULTANEOUSLY.**
- 4.79 **LOOSE STEEL LINTELS**

4.80 PROVIDE LOOSE STRUCTURAL STEEL LINTELS FOR OPENINGS AND RECESSES IN MASONRY WALLS AND PARTITIONS AS SHOWN. WELD ADJOINING MEMBERS TOGETHER TO FORM A SINGLE UNIT WHERE INDICATED. PROVIDE NOT LESS THAN EIGHT (8) INCHES BEARING AT EACH SIDE OF OPENINGS, UNLESS OTHERWISE INDICATED.

4.81 LOOSE LINTELS SHALL CONFORM TO THE FOLLOWING SCHEDULE, UNLESS OTHERWISE INDICATED ON DRAWINGS OR IN WRITING BY AUTHORITY'S STRUCTURAL ENGINEER:

Opening Width (Maximum)	WALL THICKNESS		
	4 inches	6 inches	8 inches*
2'-0"	3-1/2" x 3-1/2" x 1/4"	6" x 4" x 5/16"	3-1/2" x 3-1/2" x 1/4"
3'-0"	3-1/2" x 3-1/2" x 5/16"	6" x 4" x 5/16"	3-1/2" x 3-1/2" x 5/16"
4'-0"	3-1/2" x 3-1/2" x 5/16"	6" x 4" x 5/16"	3-1/2" x 3-1/2" x 5/16"
5'-0"	4" x 3-1/2" x 3/8"	6" x 4" x 3/8"	4" x 3-1/2" x 5/16"
6'-0"	5" x 3-1/2" x 3/8"	6" x 4" x 3/8"	5" x 3-1/2" x 5/16"
7'-0"	5" x 3-1/2" x 3/8"	5" x 5" x 1/2"	5" x 3-1/2" x 3/8"
8'-0"	5" x 3-1/2" x 3/8"	5" x 5" x 5/8"	5" x 3-1/2" x 3/8"

4.82 * TWO ANGLES AT ALL OPENINGS IN EIGHT (8) INCH WALLS.

4.83 AT COLUMNS OR VERTICAL SURFACES WHERE LINTELS CANNOT BEAR ON MASONRY, PROVIDE CLIP ANGLES SIZED FOR STRUCTURAL CAPACITY OF LINTEL.

PART 3 - EXECUTION

5.01 INSPECTION

5.02 EXAMINE THE AREAS AND CONDITIONS WHERE MISCELLANEOUS METAL IS TO BE INSTALLED AND NOTIFY THE ARCHITECT OF CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK. DO NOT PROCEED WITH THE WORK UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED TO PERMIT PROPER INSTALLATION OF THE WORK.

5.03 ERECTION

5.04 FASTENING TO IN-PLACE CONSTRUCTION: PROVIDE ANCHORAGE DEVICES AND FASTENERS WHERE NECESSARY FOR SECURING MISCELLANEOUS METAL FABRICATIONS TO IN-PLACE CONSTRUCTION; INCLUDING THREADED FASTENERS FOR CONCRETE AND MASONRY INSERTS, TOGGLE BOLTS, THROUGH-BOLTS, LAG BOLTS, WOOD SCREWS, AND OTHER CONNECTORS AS REQUIRED.

5.05 CUTTING, FITTING AND PLACEMENT: PERFORM CUTTING, DRILLING AND FITTING REQUIRED FOR INSTALLATION OF MISCELLANEOUS METAL FABRICATIONS. SET WORK ACCURATELY IN LOCATION, ALIGNMENT AND ELEVATION, PLUMB, LEVEL, TRUE AND FREE OF RACK, MEASURED FROM ESTABLISHED LINES AND LEVELS. PROVIDE TEMPORARY BRACING OR ANCHORS IN FORMWORK FOR ITEMS WHICH ARE TO BE BUILT INTO CONCRETE, MASONRY, OR SIMILAR CONSTRUCTION.

5.06 FITTING CONNECTIONS: FIT EXPOSED CONNECTIONS ACCURATELY TOGETHER TO FORM TIGHT HAIRLINE JOINTS. WELD CONNECTIONS WHICH ARE NOT TO BE LEFT AS EXPOSED JOINTS BUT CANNOT BE SHOP WELDED BECAUSE OF SHIPPING SIZE LIMITATIONS. GRIND EXPOSED JOINTS SMOOTH AND TOUCH UP SHOP PAINT COAT. DO NOT WELD, CUT OR ABRABE THE SURFACES OF EXTERIOR UNITS WHICH HAVE BEEN HOT DIP GALVANIZED AFTER FABRICATION, AND ARE INTENDED FOR BOLTED OR SCREWED FIELD CONNECTIONS.

5.07 FIELD WELDING: NO FIELD WELD ALLOWED IN NYCHA PROPERTY.

5.08 TOUCH-UP PAINTING: IMMEDIATELY AFTER ERECTION, CLEAN FIELD WELDS, BOLTED CONNECTIONS, AND ABRABED AREAS OF SHOP PAINT, AND PAINT EXPOSED AREAS WITH SAME MATERIAL AS USED FOR SHOP PAINTING. APPLY BY BRUSH OR SPRAY TO PROVIDE A MINIMUM DRY FILM THICKNESS OF 2.0 MILS.

5.09 FIELD TOUCH-UP OF GALVANIZED SURFACES: TOUCH-UP SHOP APPLIED GALVANIZED COATINGS DAMAGED DURING HANDLING AND INSTALLATION. USE GALVANIZING REPAIR COATING SPECIFIED HEREIN FOR GALVANIZED SURFACES.

END OF SECTION 05 50 00