June 30, 2014

TO: PROSPECTIVE OFFERORS

The US Embassy in Quito requires a fixed-price agreement for the building and installation of a handrail for compound buildings.

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes specifications for the following options:

1. Option 1: Structural and formed aluminum panel guardrail system attached to existing concrete parapet wall using existing fall restraint anchor bolts.

2. Option 2: Structural and formed steel panel guardrail system attached to existing parapet wall using existing fall restraint anchor bolts.

3. Option 3: Standard aluminum pipe rails with aluminum components attached to existing concrete parapet wall using existing fall restraint anchor bolts.

4. Option 4: Standard steel pipe rails with steel components attached to existing concrete parapet wall using existing fall restraint anchor bolts.

1.2 PERFORMANCE REQUIREMENTS

A. General: In engineering guardrail system to withstand structural loads indicated, determine allowable design working stresses of materials based on the following:

B. Structural Performance of Guardrail System: Provide guardrail system capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors, and connections:
   1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:
      a. Concentrated load of 890 N applied at any point and in any direction.
      b. Uniform load of 730 N/m applied horizontally and concurrently with uniform load of 1460 N/m applied vertically downward.
      c. Concentrated and uniform loads above need not be assumed to act concurrently.

C. Thermal Movements: Provide Guardrail System that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 67 deg C, ambient; 100 deg C, material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.3 SUBMITTALS

A. Shop Drawings: Show fabrication and installation of guardrail system. Include plans, elevations, sections, details, and attachments to other Work.

B. Samples for Initial Selection: Short sections of railing or flat sheet metal Samples showing available mechanical finishes; brackets; provide two of each component.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 COORDINATION

A. Coordinate installation of anchorages for railings with existing conditions. Furnish Setting Drawings, templates, and directions for installing anchorages.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Plate and Sheet: ASTM B 209M, Alloy 6063-T5

B. Aluminum Extrusions: ASTM B 211M, Alloy 6063-T5.

C. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

D. Steel Section: ASTM A36/A36M.

E. Steel Tubing: 32 mm NPS ASTM A53, Grade B, Schedule 40, or as required for design loading.

2.2 FASTENERS

A. Fasteners: Fasteners shall be aluminum or stainless steel for connections to aluminum or stainless steel. Fasteners shall be only stainless steel where attached to materials other than aluminum or stainless steel. Provide types, gauges and lengths to suit unit installation conditions.

2.3 FABRICATION

A. General: Cut, fit, weld, fill, smooth and grind all exposed metal surfaces to provide a smooth surface ready to receive factory finish. All welding to be finished to blend with surrounding surfaces, free of voids. All cuts smoothed to true line and edge. Ease all exposed edges to uniform radius. Completed frame to be true to lines and planes, free of warp.
   1. Configurations and profiles: As indicated on the Drawings.

2.4 FACTORY FINISH FOR ALUMINUM OPTIONS

A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. Apply finishes in factory after products assembly. Protect finishes on exposed surfaces prior to shipment. Remove scratches and blemishes from exposed surfaces which will be visible after completing finishing process.
   1. Provide custom color for all exposed components to match existing Exterior Sunscreen.

B. Aluminum: Alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

C. Exposed Finishes: Apply the following coating, as specified or indicated on Drawings.

   1. Surface: Smooth, flat finish.

   2. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      a. Fluoropolymer Three-Coat System: Manufacturer's standard three-coat, thermocured system consisting of specially formulated inhibitive primer,fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight, with a minimum total dry film thickness of 1.5 mil(0.038 mm); complying with AAMA 2605.
      b. Color and finish: Provide to match PPG “Duranar XL” 3-Coat System finish, color “Medium Gray to match existing exterior sunscreen.

2.5 FIELD AND FACTORY FINISH FOR STEEL OPTIONS

A. Galvanized, for field painting to match existing exterior sunscreen color.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing Guardrail system. Set system accurately in location, alignment, and elevation, measured from established lines and levels and free from rack.
   1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
   2. Set posts plumb within a tolerance of 2 mm in 1 m.

C. Adjust railings before anchoring to ensure alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.

D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railing system and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. .

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in shop or in field.

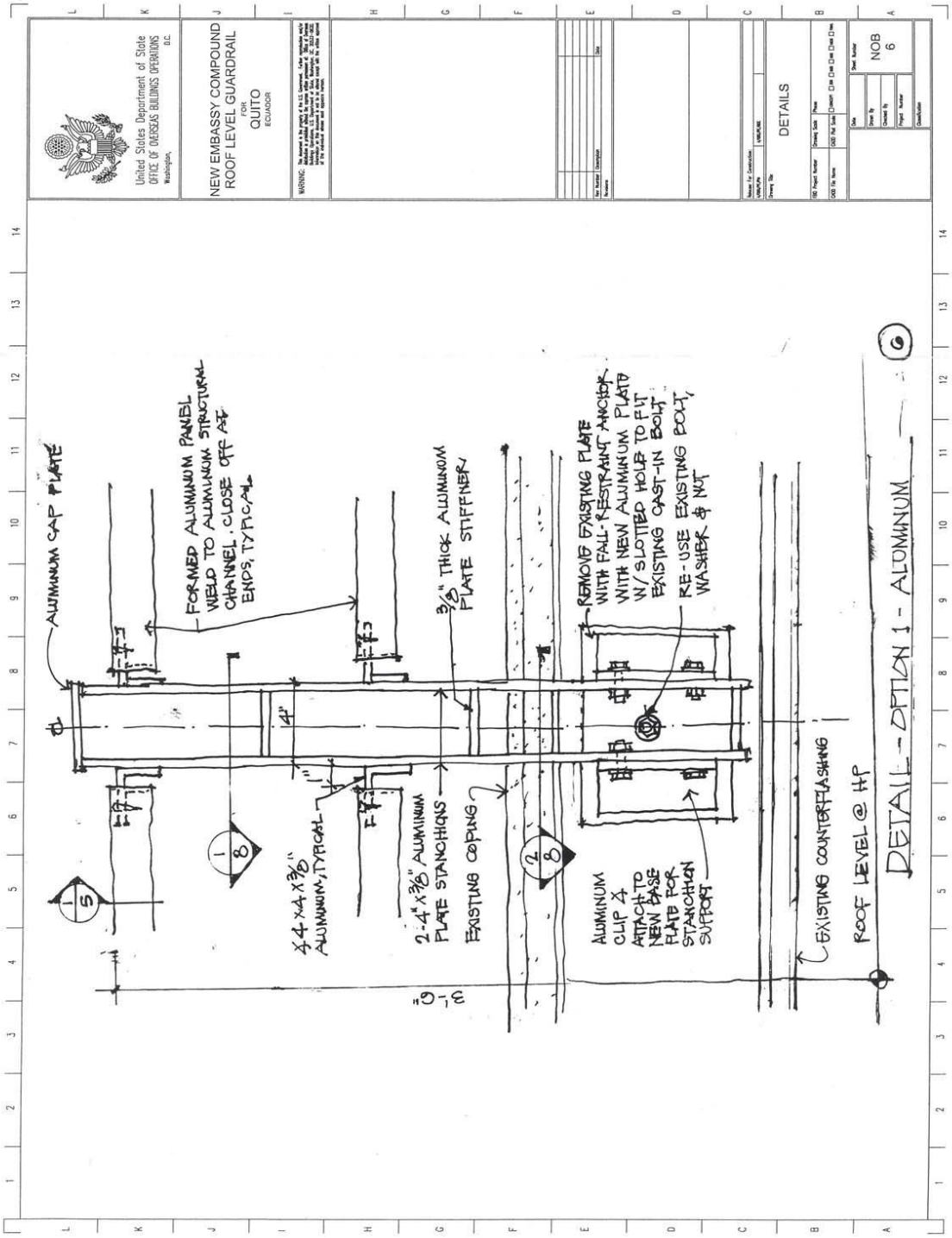
3.3 CLEANING

A. Clean aluminum and stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.

3.4 PROTECTION

A. Protect finishes of guardrail system from damage during construction.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.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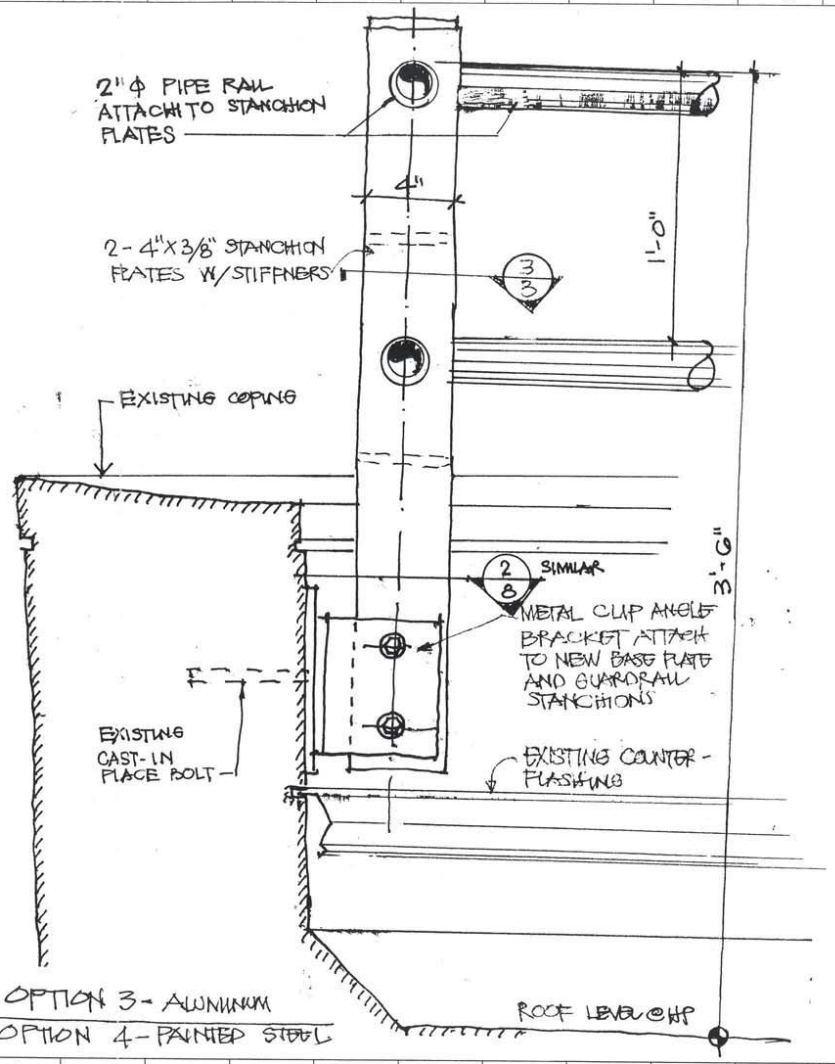
6
ALUMINUM CAP PLATE
FORMED ALUMINUM PANEL WELD TO ALUMINUM STRUCTURAL CHANNEL. CLOSE OFF AT ENDS, TYPICAL
3/8" THICK ALUMINUM PLATE STIFFNER
REMOVE EXISTING PLATE WITH FALL-RESTRAINT ANCHOR WITH NEW ALUMINUM PLATE W/ SLOTTED HOLE TO FIT EXISTING CAST-IN BOLT
RE-USE EXISTING BOLT, WASHER & NUT
14"
4-4"x4"x3/8" ALUMINUM, TYPICAL
2-4"x3/8" ALUMINUM PLATE STANCHIONS
EXISTING COPING
ALUMINUM CLIP & ATTACH TO NEW BASE PLATE FOR STANCHION SUPPORT
EXISTING COUNTERFLASHING
ROOF LEVEL @ HP
DETAIL - OPTION 1 - ALUMINUM

3.5



1 DETAIL - OPTION 3 - ALUMINUM
3"=1'-0" OPTION 4 - PAINTED STEEL

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Rev. Number	Description	Date
Revisions		

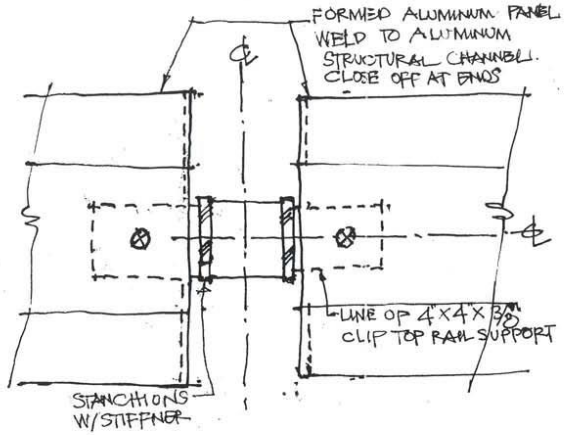
Release For Construction:

Drawing Title: DETAILS

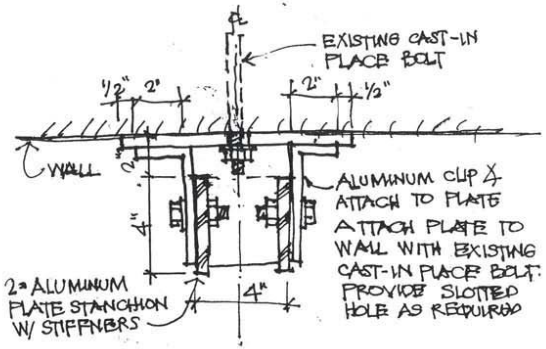
FBO Project Number	Drawing Scale	Phase
CADD File Name	CADD Plot Scale	

Date
Drawn By
Checked By
Project Number
Classification

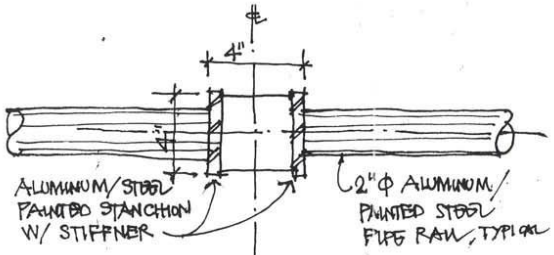
Sheet Number NOB 7



1 PLAN DETAIL
3"=1'-0"



2 DETAIL AT WALL CONNECTION
3"=1'-0"



3 PLAN DETAIL
3"=1'-0"

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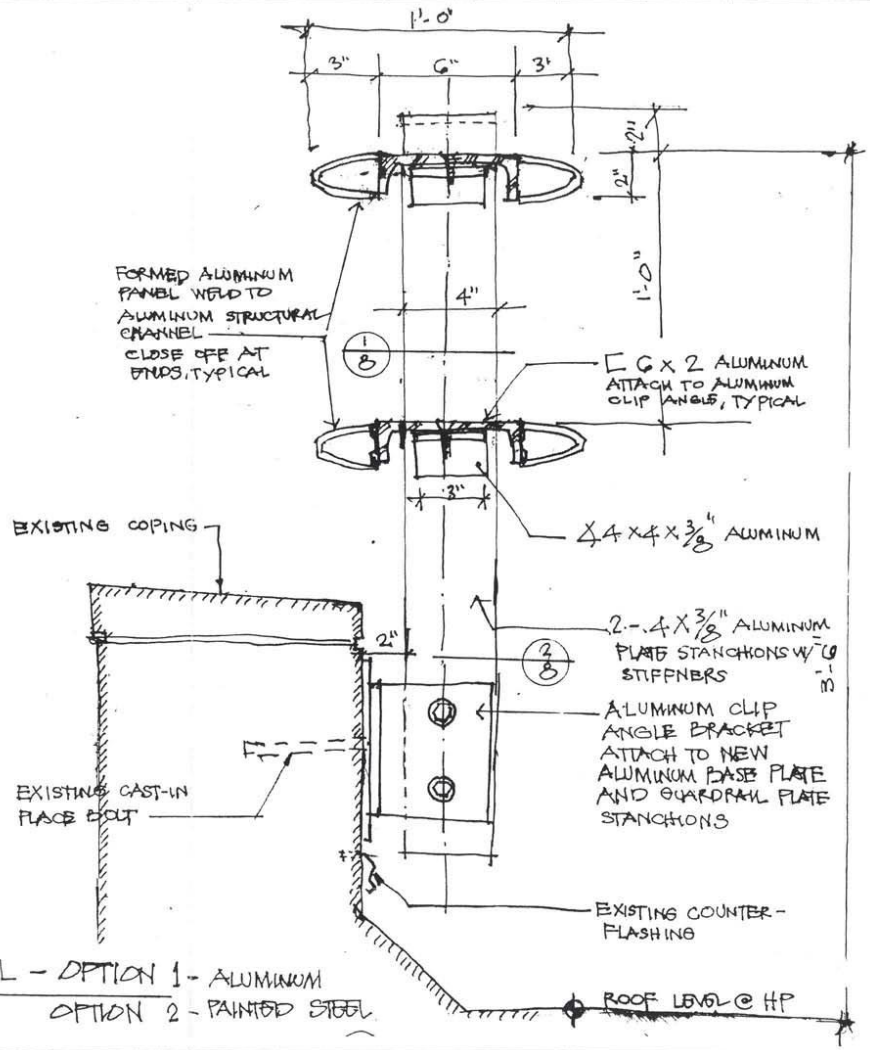
Item Number	Description	Date
Revisions		

Release For Construction
MM/DD/YR MM/DD/YEAR

Drawing Title
DETAILS

OBO Project Number | Drawing Scale | Phase
CADD File Name | CADD Plot Scale | ☐ CONCEPT ☐ 30 ☐ 60 ☐ 90 ☐ 100 ☐ Final

Date
Drawn By
Checked By
Project Number
Classification
Sheet Number
NOB
8



1 DETAIL - OPTION 1 - ALUMINUM
3/4"=1'-0" OPTION 2 - PAINTED STEEL

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Rev Number	Description	Date
Revisions		

Release For Construction
MM/DD/YY MM/DD/YEAR

Drawing Title
DETAILS

FBO Project Number | Drawing Scale | Phase
CADD File Name | CADD Plot Scale | ☐NMSM ☐NM ☐NW ☐NNW ☐NNE

Date
Drawn By
Checked By
Project Number
Classification

Sheet Number
NOB
5

Timeframe for the Execution:

The timeframe for the completion and delivery of the project is 14 weeks that will start when a complete notice to proceed is submitted to the contractor.

Point of Contact:

Any technical inquiry regarding this project shall be sent to Omar Perraso, Mechanical Engineer

Telephone (593) 23985064
Mobile (593) 999811580
Email PerrasoO@state.gov

If you are interested in this project please contact Karin Zambrano, Procurement Agent, at e-mail zambranokm@state.gov and/or Omar Perraso, Mechanical Engineer, at PerrasoO@state.gov.

The Embassy will evaluate offers based on the best value to the US Government.

If you would like to be considered for this project please submit your quote in a sealed envelope with the following reference: "Roof handrail for compound buildings", by 4:00 p.m., on July 18, 2014 at the address set forth below.

Embajada de los Estados Unidos
Ave. Guayacanes N52-205 y Ave. Avigiras
Att: Ronald Hernandez, Facilities Manager
C/O Karin de Zambrano, Procurement Agent