



Solicitation Solicitation Amendment

1. Amendment Number A02 to Solicitation Number 162640-07-A-0147		Date 08/09/2007		
2a. Facility CHICAGO, IL - O'HARE AIRPORT MAIL CENTER		2b. Project J97461 Roof Replacement		
3a. Offeror Name and Address		3b. Issued By GREAT LAKES FSO 62 STRATFORD DR		
		3c. Contact EDWIN BRODERICK 630-295-6249		
4. The above numbered solicitation is amended as set forth in Block 5. Note: Offerors must acknowledge receipt of this amendment prior to the date and time specified in the solicitation by one of the following methods: a. By signing and returning one copy of the amendment; b. By acknowledging receipt of this amendment on each copy of the offer submitted; or c. By submitting a separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE SPECIFIED IN THE SOLICITATION PRIOR TO THE DATE AND TIME SPECIFIED FOR RECEIPT OF OFFERS MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment, you desire to change an offer already submitted, such change may be made by telegram or letter provided such telegram or letter makes reference to the solicitation and amendment numbers, and is received prior to the date and time specified. The date and time specified for receipt of offers is:				
5. Description of Amendment: Attached: Summary of Revisions (2 pages) Section 07540 - Thermoplastic Membrane (8 pages) Drawings SKA.1, SKA1.2, SKA1.3, SKA1.4, SKA1.5, SKA1.6, and SKA1.7 (7 pages) Total Pages Including Amendment Page (18 pages)				
6. Contractor Signature		Date Signed	U. S. Postal Service Signature	Date Signed
Name of person authorized to sign		Contracting Officer JOHN A VLCEK		9/17/07

United States Postal Service
O'Hare Air Mail Facility
Roof Replacement
USPS Solicitation No. 162640-07-A-0147
USPS File No. J97461
Teng Project No. 20001.001

Amendment No. A0

Date: August 17th, 2007

A. DRAWINGS

1. Drawing A0.00: Add drawing "5.03 – Roof Details" to the drawing sheet list.
2. Drawing A1.01: Keynote 1 – Revised to state, "RELOCATE EXIST DISH ANTENNA MOUNTED ON CMU-WEIGHTED STEEL FRAME ON ROOF SURFACE. RELOCATE DISH ANTENNA TO NEW STEEL MAST ASSEMBLY. SEE DETAILS ON A5.03. REMOVE CMU WEIGHTED STEEL PLATE AND CONCRETE BLOCKS FROM ROOF AND STORE IN STAGING AREA FOR USPS."
3. Drawing A1.01: Add General Note 12 as follows, "12. DEMOLISH ALL (4) EXIST ROOFTOP CONDENSING UNITS AS FOLLOWS: EVACUATE REFRIGERANT AND DEMOLISH CONDENSING UNITS AND CURBS. REMOVE POWER BACK TO PANEL. CUT REGRIGERANT LINES FLUSH WITH MTL DECK."
4. Drawing A1.01: Add General Note 2 as follows, "2. PROVIDE RIGID INSULATION, 1/2" COVER BOARD, AND TPO ROOFING AT LOCATION OF REMOVED ROOFTOP CONDENSING UNITS AND ASSOCIATED CURBS. THICKNESS AND HEIGHTS TO MATCH ADJACENT. (APPROX. 50 SQ. FT. @ 4 LOCATIONS)"
5. Drawing A2.01: Keynote 1 – Revised to state, "MOUNT EXIST DISH ANTENNA TO GALVANIZED STEEL ASSEMBLY. SEE DETAILS ON A5.03."
6. Drawing A2.01: Enlarged plan modified to show relocation of existing satellite dish to new steel mast assembly. See attached sketch SKA1.5.
7. Drawing A5.01: Detail 1 – Delete and insert revised detail per attached sketch SKA1.1. Detail issued in sketch in "Not To Scale" for formatting purposes.
8. Drawing A5.01: Detail 2 – Deleted
9. Drawing A5.01: Detail 4 – Delete and insert revised detail per attached sketch SKA1.2. Detail issued in sketch in "Not To Scale" for formatting purposes.
10. Drawing A5.01: Detail 5 – Delete and insert revised detail per attached sketch SKA1.3

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Amendment No. A01

Date: August 17th, 2007

11. Drawing A5.01: Detail 9 - Delete and insert revised detail per attached sketch SKA1.4
12. Drawing A5.03: New drawing with the following details:
 1. Detail 1: Per attached sketch SKA1.6
 2. Detail 2: Per attached sketch SKA1.7

B. SPECIFICATIONS

1. Section 07540 – In paragraph 3.3 ROOFING MEMBRANE APPLICATION, item D is to be added as follows:

D. Special Solvent Based Adhesive Requirements:

1. *When using solvent based adhesive within 20 ft. of air intake equipment or louver, shut down equipment prior to installation of roofing.*
 2. *Intake equipment may be shut down for a maximum of two hours.*
 3. *Coordinate times and equipment to be shut down with USPS prior to work.*
2. Section 07540 – In paragraph 2.4 AUXILARY MATERIALS, item C is to read as follows: “Bonding Adhesive: Manufacturer’s standard *solvent based* bonding adhesive for membrane, and solvent based adhesive for base flashings.”
 3. Section 07540 – In paragraph 2.4 ROOF INSULATION, item D is to read as follows: “Cover Board: Glass Mat Gypsum Roof Board, ASTM C-1177. Zero fame spread and zero smoke developed per ASTM E84. Minimum 500 pounds per square *inch* compressive strength.”

Attachments: Sketches: SKA1.1, SKA1.2, SKA1.3, SKA1.4, SKA1.5, SKA1.6, SKA1.7
Specifications: Section 07540

SECTION 07540

THERMOPLASTIC MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of roof deck to receive roofing membrane.
2. Adhered thermoplastic membrane roofing system.
3. Flashing membrane.
4. Expansion Joints.
5. Accessories.

B. Related Documents:

1. The Contract Documents, as defined in Section 01110 - Summary of Work, apply to the Work of this Section.
2. Memorandum of Understanding (MOU) between the United States Environmental Protection Agency's ENERGY STAR® Roof Products Program and Roofing Material Manufacturers.
3. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:

1. Section 06100 - Rough Carpentry: Wood blocking, curbs, and nailers.
2. Section 07620 - Sheet Metal Flashing and Trim: Counter flashings, edge metal and other sheet metal.
3. Section 07720 - Roof Accessories.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C208 - Specification for Cellulosic Fiber Insulating Board.
2. ASTM C1177 - Standard Specification for Glass Mat Gypsum Roof Board.
3. ASTM C1289 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
4. ASTM D570 - Test Method for Water Absorption of Plastics.
5. ASTM D638 - Test Method for Tensile Properties of Plastics.
6. ASTM D751 - Test Method for Coated Fabrics.
7. ASTM D1004 - Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
8. ASTM D1079 - Terminology Relating to Roofing and Waterproofing.
9. ASTM D1204 - Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
10. ASTM D2136 - Test Method for Coated Fabrics – Low Temperature Bend Test.
11. ASTM D3045 - Practice for Heat Aging of Plastics Without Load.
12. ASTM D4434 - Specification for Poly(Vinyl Chloride) Sheet Roofing. (Most Recent Edition)
ASTM D5602 - Test Method for Static Puncture Resistance of Roofing Membrane Samples.
13. ASTM D5635 - Test Method for Dynamic Puncture Resistance of Roofing Membrane Samples.
14. ASTM D 6878 - Standard Specification for Thermoplastic Polyolefin based Sheet Roofing.
15. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
16. ASTM E96 - Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
18. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of

Materials Using Integrating Spheres.

19. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres.
20. ASTM G21 - Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
21. ASTM G26 - Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
22. ASTM G53 - Practice for Operating Light - and Water - Exposure Apparatus (Fluorescent UV/Condensation Type) for Exposure of Nonmetallic Materials.

B. Factory Mutual Global (FMG):

1. FMG - Approval Guide, Building Materials.
2. FMG - Loss Prevention Data 1-28, Wind Loads to Roof Systems and Roof Deck Securement.
3. FMG - Loss Prevention Data 1-29, Above Deck Roof Components (June 1996).
4. FMG - Standard 4450, Class 1 Insulated Steel Deck Roofs.
5. FMG - Standard 4470, Class 1 Roof Covers.

C. Underwriters Laboratory (UL):

1. Class A rated roofing system

1.3 SYSTEM DESCRIPTION

A. Fully Adhered TPO Membrane Roofing System.

- B. Manufacturer of roofing membrane must be a Partner in the EPA ENERGY STAR® Roof Products Program for energy efficiency and membrane supplied for Work must meet the applicable Program specification.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals

1. Product Data:
 - a. Membrane materials, base flashing, materials, and insulation.
 - b. Insulation fastener layouts complying with FMG Loss Prevention Data Sheet 1-29 patterns for specified wind uplift resistance. Indicate number of insulation fasteners required and spacing of fasteners for field, perimeter, and corners for each pattern.
2. Shop Drawings: Indicate setting plan for insulation including fastener pattern, layout of roofing seams, direction of laps and base flashing details.
3. Assurance/Control Submittals:
 - a. Certificates: Manufacturer is to certify that components and products meet or exceed specified standards and complies with referenced standards.
 - b. Qualification Documentation: Manufacturer certification indicating roofing applicator qualifications complying with requirements specified in Paragraph entitled "Applicator Qualifications" of this Section.
 - c. Manufacturer's certification letter acknowledging receipt of specifications, intent to issue warranty, and intent to perform field audits as outlined in 1.4.3.d.
 - d. Manufacturer's Field Reports: Submit the following reports directly to Contracting Officer from Manufacturer's Roofing Quality Control Inspector, with copy to Contractor. Prepare reports in conformance with Section 01450 - Quality Control:
 - 1) Preparatory inspection.
 - 2) Initial inspection.
 - 3) Follow-up inspections.
 - 4) Final inspection.

- e. Written certification that proposed roofing membrane meets the EPA ENERGY STAR® Roof Products Program specification for energy efficiency and that the manufacturer is listed as a Partner.
- 4. Maintenance Instruction: Document training by furnishing a sign-in sheet with a description of the training provided, instructors name and organization and those who received training. Refer to 01780 1.3, 1.4, and 1.5 for more specific training requirements.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in TPO membrane roof application with minimum of 5 years documented experience and that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product, and that is eligible to receive a manufacturer's warranty.
- B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by membrane manufacturer for specified roofing system and shall be in compliance with all applicable regulatory requirements.
- C. FMG Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
 - 1. Fire/Windstorm Classification: Class 1A- 90.
 - 2. Hail Resistance: MH
- D. Pre-installation Meeting:
 - 1. Convene a Pre-installation Meeting at Project Site one week prior to commencing work of this Section.
 - 2. Require attendance of parties directly affecting work of this Section.
 - 3. Review preparation and installation procedures and coordinating and scheduling required with related work.
 - a. Require Manufacturer's Roofing Quality Control Inspector to conduct Pre-installation Meeting along with Contractor Quality Control Representative and Contracting Officer.
 - 4. Agenda:
 - a. Tour, inspect and discuss condition of substrate, roof drains, roof drain final locations, curbs, penetrations and other preparatory work performed by other trades.
 - b. Review structural loading limitations of deck and inspect deck for loss of flatness and for required mechanical fastening.
 - c. Review roofing system requirements (Drawings, Specifications and other Contract Documents).
 - d. Review required submittals, both completed and yet to be completed.
 - e. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - f. Review requirements for inspections, testing, certifying, and material usage accounting procedures.
 - g. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
 - h. Review safety precautions relating to roofing installation.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect products.

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- B. Deliver materials in manufacturer's original unopened containers or wrappings, dry, undamaged, seals and labels intact.
- C. Store materials in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure.
- D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.7 PROJECT CONDITIONS OR SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not apply roofing membrane during inclement weather. When air temperature is expected to fall below 40 degrees F, follow specified Cold Weather Application Procedures.
 - 2. Do not apply roofing membrane to wet, damp or frozen deck surface or when precipitation is occurring.
 - 3. Do not expose materials vulnerable to water or the sun in quantities greater than can be weatherproofed during same day.

PART 2 - PRODUCTS

2.1 ROOFING SYSTEMS

- A. Roofing systems shall be manufacturer's standard fully adhered system compliant with the .

2.2 ROOFING MEMBRANE FLASHING MEMBRANE

- A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: Uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced, and as follows:
 - 1. Calisle Sure-Weld TPO membrane.
 - 2. Firestone Ultra-Ply TPO membrane.
 - 3. GAF Everguard TPO.
 - 4. GenFlex TPO membrane.
 - 5. Johns Manville Ultragard TPO membrane.
 - 6. Sarnafil TPO membrane.
 - 7. Thickness: 60 mils (1.5 mm), nominal.
 - 8. Exposed Face Color: White.
 - 9. Physical Properties:
 - a. Breaking Strength: 225 lbf (1kN); ASTM D 751, grab method.
 - b. Elongation at Break: 15 percent; ASTM D 751.
 - c. Tearing Strength: 55 lbf (245 N) minimum; ATSM D 751, Procedure B.
 - d. Brittleness Point: Minus 22 deg F (30 deg C).
 - e. Ozone Resistance: No cracks after sample, wrapped around a 3-inch- (75-mm-) diameter mandrel, is exposed for 166 hours to a temperature of 104 deg F (40 deg C) and an ozone level of 100 pphm (100 mPa); ASTM D 1149.
 - f. Resistance to Heat Aging: 90 percent minimum retention of breaking strength, elongation at break, and tearing strength after 166 hours at 240 deg F (116 deg C); ASTM D 5573.
 - g. Water Absorption: Less than 4 percent mass change after 166 hours' immersion at 158 deg F (70 deg C); ASTM D 471.
 - h. Linear Dimension Change: Plus or minus 2 percent; ASTM D 1204.

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2.3 ROOFING SYSTEM MANUFACTURERS

- A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated into the Work include the following:
1. Carlisle Syntec Inc., Carlisle, PA (800) 479-6832.
 2. GAF Materials Corp., Wayne, NJ (800) 766-3411.
 3. GenFlex Roofing Systems, Maumee, OH (800) 443-4272.
 4. Johns Manville Roofing Systems, Denver, CO (800) 592-6958.
 5. Sarnafil, Incorporated, Canton, MA (800) 451-2504.

2.4 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard sheet flashing of same thickness, and color as TPO sheet membrane.
- C. Bonding Adhesive: Manufacturer's standard solvent based bonding adhesive for membrane, and solvent-based bonding adhesive for base flashings.

2.5 ROOF INSULATION

- A. Polyisocyanurate Foam Insulation which meets or exceeds FS HH-I-1972/2, both faces covered with glass fiber felt; comply with FMG Standard 4450 Approval.
1. Overlayered insulation board applied as a second layer with joints offset from bottom layer.
- B. Roof Curb Insulation: Glass Fiber or Polyisocyanurate foam; thickness to match wood nailer.
- C. Tapered Insulation: Provide crickets, saddles, and tapered insulation of same material as second layer of insulation; taper to the following slopes:
1. Cricket and Saddles: 1/4 inch per foot or twice the slope of the roof, whichever is greater.
 2. Insulation Installed to Counterslope Roof Structure: 1/2 inch to the foot, or twice slope of roof, whichever is greater.
- D. Cover Board: Glass Mat Gypsum Roof Board, ASTM C-1177. Zero flame spread and zero smoke developed per ASTM E84. Minimum 500 pounds per square inch compressive strength.

2.6 ACCESSORIES

- A. Roofing Insulation Fasteners: Fasteners shall be as tested and approved by FMG as part of the roofing system.
1. Mechanical Fasteners: Coated fasteners with plates appropriate for purpose intended and approved by Factory Mutual and roofing membrane manufacturer. Thickness of substrates and roofing membrane manufacturer's deck penetration requirements shall determine the length of the fastener.
 2. Cant and Tapered Edge Strips: Not required.
 3. Walkway Pads: Walkway materials shall be provided by the roofing membrane manufacturer.
 4. Isolation Pads: Provide a piece of walkway pad as above.
 5. Termination: Use roofing membrane manufacturer's recommended termination details and associated products to comply with Warranty requirements.

6. Pipe Flashings: Prefabricated pipe flashings shall be supplied by the roofing membrane manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
 1. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains, valleys, and eaves. Verify flutes of steel deck are evenly spaced at intersections.
 2. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, and nailing strips, and reglets are in place. Verify deck is supported and tightly secured.
 3. Verify deck surfaces are dry and free of water, snow, and ice.
- C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 PREPARATION

- A. Provide covers and other means of protection as necessary to protect building surfaces against damage during roofing work.
- B. Where work shall continue over finished roof membrane, protect surfaces according to roofing membrane manufacturer's recommendations.

3.3 ROOFING MEMBRANE APPLICATION

- A. Apply roofing membrane in accordance with membrane manufacturer's published instructions for specified system.
- B. All quality control recommendations of the roofing system manufacturer shall be strictly followed.
- C. Cold Weather Application Procedures: When air temperature is expected to fall below 40 degrees F, follow Cold Weather Application Procedures as follows:
 1. Store flashing adhesive in heated storage units (minimum temperature 40 degrees F) prior to installation.
 2. Follow roofing membrane manufacturer's recommendation for cold weather application of adhered flashings.
- D. Special Solvent Based Adhesive Requirements:
 1. When using solvent based adhesive within 20 ft. of air intake equipment or louver, shut down equipment prior to installation of solvent based adhesive.
 2. Intake equipment may be shut down for a maximum of 2 hours.
 3. Coordinate times and equipment to be shut down with USPS prior to work.

3.4 WATER CUTOFFS AND WEATHER PROTECTION

- A. Install water cut-offs according to roofing membrane manufacturer's recommendations at end of day's operation to seal insulation and edge of roof membrane from moisture entry. If rain or foul weather appears imminent during roofing application, cease operations and protect deck, insulation, flashings, penetrations and membrane from moisture intrusion and damage with water cutoffs. Insulation and roofing materials not so protected before rain are considered damaged materials and will be rejected.
- B. Water cut-offs over steel deck must include steel deck flute plugs to prevent moisture from getting under insulation.
- C. Remove water cut-offs and other temporary weather protections prior to continuing roofing work. Remove materials that have been subject to moisture damage and return deck to clean, dry condition before proceeding with roofing operations. Remove damaged materials from job site.
- D. Water cut-offs and weather protection shall not be considered part of final roof system specified.

3.5 FLASHING MEMBRANE AND ACCESSORIES

- A. Field membrane shall be terminated with fasteners and plates. Flashing membrane, mechanically attached or adhered, shall be extended past the termination of the field membrane and hot air welded on the horizontal plane.
- B. Roof Penetrations:
 - 1. Prefabricated pipe flashings shall be installed where the configuration of penetration will permit, including but not limited to electrical conduit, and plumbing vents.
 - 2. Field fabrication of flashing shall be used where the configuration of the penetration prohibits the use of prefabricated flashing.
- C. Fasten membrane and flashing terminations per roofing membrane manufacturer's recommendations.
- D. Walkway Pads: Weld walkways to roofing membrane per manufacturer's recommendation.

3.6 ROOF SURFACING

- A. No field-applied surfacing shall be utilized with this roofing system.

3.7 CONSTRUCTION

- A. Interface with Other Work:
 - 1. Coordinate Work with installation of associated metal counterflashings specified under other Sections as Work of this Section proceeds.
 - 2. Complete installation of base flashing at roof curbs prior to setting roof top equipment.
 - 3. Coordinate Work with Plumbing for roof drain(s) installation.

3.8 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Manufacturer's Field Services: Manufacturer's Roofing Quality Control Inspector.
 - 1. Attend and conduct Pre-installation Meeting.

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2. Perform preparatory, initial, follow-up and final inspections for installation of roof insulation and roofing system.
3. Prepare and submit inspection reports for each inspection made.
4. Maintenance Instruction:
 - a. Provide on-site instruction to review the components of the system and detail any common troubleshooting or maintenance that is required to ensure normal performance of the roofing system.
 - b. Provide one complete set of installation details and component manuals that will remain at the installed location.

3.9 CLEANING

- A. Section 01700 - Execution Requirements: Requirements for cleaning.
- B. Remove dirt, debris, and markings from finished surfaces. In areas where finished surfaces are soiled, consult roofing membrane manufacturer for cleaning advice and comply with their instruction.
- C. Replace defaced or disfigured finishes caused by Work of this Section.

3.10 PROTECTION

- A. Where construction traffic must continue over finished roof installation, protect surfaces in manner recommended by roofing system manufacturer to protect Manufacturer's Warranty.

END OF SECTION

USPS MSBD Specifications issued: 1/17/2007
Last revised: 1/17/2007

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