

AUTORIDAD METROPOLITANA DE AUTOBUSES
AVENIDA DE DIEGO NÚM. 37
URB. SAN FRANCISCO
SAN JUAN, PR 00927

SUBASTA INFORMAL NÚM. 45-2526-001
PROYECTO DE MEJORAS AL TERMINAL DE ITURREGUI

FECHA DE EMISIÓN:
24 DE JULIO DE 2025

FECHA DE REUNIÓN PRESUBASTA:
5 DE AGOSTO DE 2025; 9:00 AM

FECHA DE INSPECCIÓN DEL PROYECTO:
6 DE AGOSTO DE 2025; 9:00 AM

FECHA DE ENTREGA DE OFERTA:
13 DE AGOSTO DE 2025; 10:00 AM

FECHA DE ACTO DE APERTURA:
13 DE AGOSTO DE 2025; 10:30 AM

Las instrucciones de esta Subasta Informal, incluyendo sus anejos, estarán disponibles en:

www.dtop.pr.gov/ama

También estarán disponibles en la sede de la Autoridad Metropolitana de Autobuses, en la dirección que aparece en el encabezado, durante el horario regular.

Año Fiscal 2025-2026

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Iniciales del Proponente: _____

I. INSTRUCCIONES



Iniciales del Proponente: _____

PREÁMBULO

A. LA AUTORIDAD METROPOLITANA DE AUTOBUSES

La Autoridad Metropolitana de Autobuses (AMA) fue creada al amparo de la Ley Núm. 5 de 11 de mayo de 1959, según enmendada. Entre sus principales funciones está el desarrollar, mejorar, poseer, funcionar, y administrar facilidades de transporte terrestre de pasajeros en el área metropolitana. La AMA está autorizada a adquirir aquellos bienes, servicios, u obras, necesarios para la operación de la entidad. Según el Artículo 4 de la Ley Núm. 73-2019, según enmendada, la AMA está exenta de realizar sus compras a través de la Administración de Servicios Generales (ASG).

B. BASE LEGAL

Esta Subasta Informal se realiza a tenor con las disposiciones del Reglamento I-23-01 (9415), conocido como Reglamento de Adquisiciones de Bienes, Obras de Construcción, y Servicios no Profesionales de la AMA.

C. NECESIDAD Y ENTREGABLES

La AMA requiere optimizar las facilidades estructurales del terminal de Iturregui para mejorar la funcionalidad de los espacios de trabajo, aumentar la comodidad y accesibilidad para los usuarios y optimizar los flujos de circulación dentro del terminal.

INSTRUCCIONES

A. FORMULARIO

Todos los licitadores presentarán su oferta en el formulario provisto para ello, titulado "Hoja de Ofertas". Si fuera necesario, se podrán añadir hojas para aclarar o describir más detalladamente su oferta, pero en este caso tendrán que hacerlo en procesador de palabras y en papel timbrado del licitador. La invitación, instrucciones y formularios relacionados a esta Subasta Informal se encuentran en www.dtop.pr.gov/ama. También podrá adquirir copia física en:

AUTORIDAD METROPOLITANA DE AUTOBUSES
Avenida de Diego Núm. 37

Iniciales del Proponente: _____

Urb. San Francisco
San Juan, Puerto Rico 00927

B. DEFINICIONES

Días - significará días según el calendario.

C. ITINERARIO

En la Tabla 1 se presenta un resumen de las principales actividades relacionadas con esta Subasta Informal. Las fechas, horarios y actividades están sujetos a cambios y pueden ser revisados a través de la emisión de enmiendas presentadas por parte de la AMA.

Tabla 1: Itinerario de la Subasta Informal:

Evento		Fecha y Hora
Convocatoria (Invitación y publicación)		24 de julio de 2025
Disponibilidad de pliegos	Hasta:	12 de agosto de 2025, 10:00AM
Reunión presubasta		5 de agosto de 2025, 9:00AM
Inspección del proyecto		6 de agosto de 2025, 9:00AM
Fecha límite para enviar preguntas		7 de agosto de 2025, 2:00 PM
Fecha límite para enviar respuestas		8 de agosto de 2025, 3:00 PM
Fecha límite para entrega de ofertas	En o antes de:	13 de agosto de 2025, 10:00AM
Acto de Apertura		13 de agosto de 2025, 10:30AM
Período de evaluación de ofertas	Desde:	13 de agosto de 2025
	Hasta:	4 de septiembre de 2025
Aviso de adjudicación*	En o antes de:	5 de septiembre de 2025

FECHA, HORA DE REUNIÓN PRESUBASTA: La reunión presubasta se llevará a cabo el **5 de agosto de 2025 a las 9:00 am** presencialmente en las Oficinas Centrales de la AMA, en 37 Ave. De Diego, Urb. San Francisco, Río Piedras, San Juan, Puerto Rico 00927, y simultáneamente de manera virtual a través de **Microsoft Teams**, ID de la reunión: **236 377 988 688 3**

Código de Acceso: **De3bz7jp**. Puede acceder a:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZTYwZjE3NTktMzMzMzUwLTgyYjQ0NjhmZGQ4MmVmMDRj%40thread.v2/0?context=%7b%22tid%22%3a%225696b431-1a4a-4cb0-8385-b20255c0e614%22%2c%22oid%22%3a%225528ad25-57ca-4167-a574-20394d0ff930%22%7d

La participación a esta reunión no es compulsoria.

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- **FECHA, HORA DE INSPECCIÓN DEL PROYECTO:** La visita de inspección del proyecto se llevará a cabo **el miércoles, 6 de agosto de 2025, a las 9:00 am; presencialmente en el terminal de Iturregui, en Ave. Iturregui, Esquina Ave. El Comandante, Carolina PR 00982.** Debido a la complejidad del proyecto, se recomienda la comparecencia a esta inspección, ya que personal de la AMA estará disponible para contestar preguntas. Se solicita ser puntuales al horario del recorrido para que no pierda detalles de lo explicado.
- **FECHA, HORA Y MODO DE ENTREGAR LA OFERTA:** Las ofertas deberán ser presentadas en o antes de las **10:00AM del 13 de agosto de 2025;** en dos maneras, (1) presencialmente en la Oficina de Compras en las oficinas centrales de la AMA, en 37 Ave. De Diego, Urb. San Francisco, Río Piedras, San Juan, Puerto Rico 00927 (entregando original y dos copias en sobres sellados), y (2) electrónicamente a la siguiente dirección de correo electrónico: gcolon@ama.pr.gov y/o dmarti@ama.pr.gov Ambas formas. Todas las ofertas deben incluirse en el formulario AMA-01, titulado "Hoja de Ofertas".
- **FECHA Y HORA DEL ACTO DE APERTURA:** El Acto de Apertura se llevará a cabo el **13 de agosto de 2025, a las 10:30AM.** Toda persona interesada en comparecer al Acto de Apertura deberá presentarse en la Recepción en las Oficinas Centrales de la AMA, Ave. De Diego, Núm. 37, Urb. San Francisco, Río Piedras, San Juan, Puerto Rico 00927. También podrá asistir de manera virtual a través de **Microsoft Teams, ID de reunión: 256 038 871 473 7, Código de acceso PS7h5jA3. Puede acceder a:**
https://teams.microsoft.com/l/meetup-join/19%3ameeting_YjQzNjYzMGUtOTE1OS00NWYwLWI0ZDEtZWlyOGJhNzFIMmNh%40thread.v2/0?context=%7b%22Tid%22%3a%225696b431-1a4a-4cb0-8385-b20255c0e614%22%2c%22Oid%22%3a%225528ad25-57ca-4167-a574-20394d0ff930%22%7d
- La Apertura tiene como propósito el que las partes interesadas puedan comprobar las ofertas se recibieron, y si cumplieron con los requisitos, así como conocer la cuantía de cada oferta. Toda persona que asista tendrá que cumplir con las normas de conducta que establezca la Oficina de Compras, a tales efectos.

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D. ALCANCE DEL TRABAJO (SCOPE OF WORK)

	DESCRIPTION	QUANTITY
EXTERIOR WORK		
1.	Entrance sidewalk cleaning	1 Ls
2.	Sidewalk repair	310 sf
3.	Entrance Canopy	88 sf
4.	Exit canopies canvas Rep.	175 sf
5.	Bus parking repair	120 sf
6.	Exterior Paint	5000 sf
INTERIOR WORK		
1.	Bird screen @ ceiling	664 sf
2.	Lighting fixtures led 24" x 24"	2 ea
3.	Bath exhaust fans	7 ea
4.	Rolling grilles 19" -6"x8'	3 ea
5.	Roll-up door 10'x8'	1 ea
6.	Metal door (36"x80") w/hard	2 ea
7.	Alum doors (30"x80") w/hard	9 ea
8.	Security Windows 24"x19"	8 ea
9.	Remove & rub peritext clg.	1,321 sf
10.	New fire hose cabinet	1 ea
11.	Interior paint (all surfaces)	5,000 sf
12.	Repair wall finish (all)	1 Ls
13.	Repair glaze tiles @ baths	16 sf
14.	Plumbing fixtures & acc. a. Water closets b. Lavatories c. Vanities	9 ea 5 ea 2 ea

Iniciales del Proponente: _____

	d. Urinals	2 ea
	e. Toilets part. Cubicles	4 ea
	f. Urinal screen	1 ea
	g. Mirrors 36"x 36"	2 ea
	h. Mirrors 24"x 12"	5 ea
	i. Waste basket & napk. Disp.	7 ea
	j. Soap dispenser	7 ea
	k. San paper holder	9 ea
15.	Electric outlets & switches	30 ea
16.	GFI Outlets	2 ea
17.	Electric panel @ coffee shop	1 ea
18.	Floor & wall cleaning	1 ls
ROOF WORK		
a.	Roof sealer @ concrete	2300 sf
b.	Repair lobby roof beams	1 ls
c.	Repair roof drains (lobby & MR)	6 ea
d.	Repair metal CLG. (lobby & MR)	1,168 sf
e.	Paint lobby beams	1 ls
f.	Clean ceilings metals	1 ls
OTHERS		
a.	Water Tank System	1 ls
b.	General conditions & insurances	

Iniciales del Proponente: _____

SCOPE OF WORK DETAILS

Exterior Work

1. Entrance Sidewalk Cleaning

Clean entrance sidewalk tiles to remove dirt and stains. Apply sealer after cleaning. Other sidewalks, clean them and apply water-sand and cement grout to improve their appearance.

2. Sidewalk Repair

Inspect entrance sidewalk finishes and slab, repair as needed. Repair sidewalk at rear exit area and at mechanical room entrance.

3. Entrance Canopy

Install new retractable canopy with canvas cloth finish.

4. Exit Canopy

Remove existing canvas cloth if any and replace it with new canvas cloth on both canopies. Clean and paint existing frames.

5. Bus Parking Repair

Inspect parking pavement finishes for irregularities, repair it properly with similar existing material.

6. Exterior Paint

Apply primer and 2 coats at concrete surfaces with Lanco paint or similar, and primer and 2 coats of Lanco oil paint or similar to metal surfaces.

Interior Work

1. Bird Screen at Ceiling

Install a 4' height bird screen at top of wall at the periphery of the main lobby room. Submit for approval.

2. Lighting Fixtures

Install 24"x24" LED lighting fixtures at Lounge Room. Submit for approval.

3. Bathroom Exhaust Fans

Replace exhaust fans in bathrooms. Submit for approval.

4. Rolling Grilles (19'-6"x 8')

Install new rolling grilles at 3 entrances, manual operated. Submit for approval. Inspect existing grille at coffee shop for proper functioning, clean and adjust it if necessary.

5. Roll-Up Door

Install roll-up door at warehouse, paint surfaces. Submit for approval.

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6. Metal Doors

Install heavy duty metal doors and frames at warehouse and coffee shop exterior walls, paint surfaces. Submit for approval.

7. Aluminum Doors

Install heavy duty aluminum doors according to plan schedule. Submit for approval.

Hardware

Metal Doors: provide 3 hinges, key lock and door closers

Aluminum Doors: Provide 3 hinges, combination locks, door closers and door stop. Provide aluminum thresholds. Submit for approval.

8. Security Windows

Install new security windows at coffee shop, see plan schedule.

Existing Windows & Glass Panels: Review functioning, clean them and apply spray paint to frames and awnings with similar existing color.

9. Remove & Rub Perltext Ceilings

Scrape properly deteriorated finishes at ceilings. Rub surface to a smooth finish. Apply white paint to the surfaces.

10. New Fire Hose Cabinet

Install a cabinet similar to the existing one.

11. Interior Paint

Apply primer and 2 coats at concrete surfaces with Lanco paint or similar and primer and 2 coats of Lanco oil paint or similar to metal surfaces.

12. Repair Wall Finishes (all)

Inspect all concrete walls interior and exterior for scratches, grooves and cracks, repair them as needed. Repair wall finishes at coffee shop walls.

13. Repair Glaze Tiles

Replace wall tiles with tiles similar to existing at principal bathrooms after water closets hanging.

14. Plumbing Fixtures & Accessories

- a. Water Closets: Wall hung, elongated bowls and flush valves on principal baths, floor mounted in others. Provide fittings as needed. Submit for approval.
- b. Lavatories: On vanities, use under the counter lavatories, wall hung lavatories on other baths. Provide faucets & fittings as needed. Submit for approval
- c. Vanities: Porcelain or pre-cast construction units. Dimensions as per plans. Submit for approval
- d. Urinals: Provide wall hung units with correspondent flush valves & fittings. Submit for approval.
- e. Toilet Partition Cubicles: Provide units on phenolic material or similar. Submit for approval.
- f. Urinal Screen: Provide unit on phenolic material. Submit for approval.
- g. Mirrors 36"x36": Provided Bobrick brand or similar. Submit for approval.
- h. Mirrors 24"x12": Provide in Bobrick brand or similar. Submit for approval.
- i. Waste Basket & Nap. Disp: Provide in Bobrick brand or similar. Submit for approval.
- j. Soap Dispenser: Provide in Bobrick brand or similar. Submit for approval.
- k. San Paper Holder: Provide in Bobrick brand or similar. Submit for approval.

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15. Electric Outlets & Switches

Install devices as per electrical code. Ivory Color.

16. GFI Outlets

Install GFI outlets as per electrical code. See plan for locations.

17. Electric Panel Coffee Shop

Replace existing panel and breakers with devices similar to the existing ones.

18. Floor & Wall Cleaning

Clean all floors for dirt and stains. Apply wax and sealer to all floors including bathrooms floor tiles.

19. Roof Work

a. Roof Sealer @ Concrete

Use 2 coats of Danosa system, review existing slopes, change or clean existing drains.
Metal Ceilings: Inspect metal deck for possible leaks, seal them properly if occur.

b. Repair Lobby Roof Beams

Inspect deteriorated beams and repair them properly. Re-paint repaired sections. Submit method for approval.

c. Repair Roof Drains Lobby & MR

Inspect roof drains condition. Replace or repair them as instructed. Submit drains and method for approval.

d. Repair Metal Ceiling. At Lobby and MR

Inspect metal deck at these areas. Replace or repair deteriorated ones as necessary.

e. Paint Lobby Beams

Paint beams with primer and 2 coats of oil paint

f. Clean Ceiling Metals

Clean existing structure and deck with appropriate method, remove dirt and stains.

20. Water Tank System

- a. Install a 600 gallons water tank with the correspondent pumping system. See plans for location and details.

El proyecto será completado en cuatro (4) meses, 120 días calendario.

Los licitadores examinarán los planos y especificaciones con los documentos relacionados, lugar del proyecto y evaluarán todas las condiciones que rodean la construcción del proyecto propuesto, incluyendo la disponibilidad de materiales y mano de obra. El licitador agraciado proporcionará toda la mano de obra, materiales y suministros, y realizará el proyecto de acuerdo con los términos contractuales dentro del tiempo establecido en ellos. Las propuestas deben cubrir todos los gastos a incurrir en la realización del trabajo requerido.

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E. CONDICIONES GENERALES

1. TRANSPORTACIÓN, ACARREO Y ENTREGA: Los precios licitados incluyen los gastos de transportación y acarreo hasta la entrega final de los bienes en la AMA, libre de cargo adicional para el gobierno.
2. PRECIOS COTIZADOS: Toda persona cotizará basándose en precios justos por sus bienes o servicios, considerando los aspectos técnicos. Los precios ofrecidos por el licitador se mantendrán fijos durante la vigencia del contrato que se otorgue, y **no estarán sujetos a cambios por aumento en el mercado o de cualquier otra índole**, ya sean previsibles o no.
3. AJUSTE DE PRECIO POR PRONTO PAGO: No se aceptan descuentos por pronto pago en esta Subasta Informal; se aceptarán descuentos por pago rápido.
4. MODO DE FACTURAR: El suplidor entregará las facturas en no más de diez (10) días luego de terminado el período o fecha de entrega del bien o servicio. Toda factura para el cobro de bienes o servicios que se presente ante las agencias deberá contener la siguiente certificación:

"Bajo pena de nulidad absoluta certifico que ningún servidor público del gobierno que emite le orden de compra) es parte o tiene algún interés en las ganancias o beneficios producto del contrato objeto de esta factura y de ser parte o tener interés en las ganancias o beneficios productos del contrato, ha mediado una dispensa previa. La única consideración para suministrar los bienes o servicios objeto del contrato ha sido el pago acordado con el representante autorizado de la (agencia que emite la orden de compras). El importe de esta factura es justo y correcto, los trabajos han sido realizados, los productos han sido entregados y los servicios han sido prestados y no se ha recibido pago por ellos."

F. CONDICIONES ESPECIALES

1. FIANZAS Y GARANTÍAS

- a) FIANZA DE LICITACIÓN ("Bid Bond"): La fianza de licitación será un respaldo provisional que prestará el licitador o proponente con el propósito de asegurar que habrá de sostener su oferta durante todo el procedimiento de la Subasta Informal. La fianza tiene que ser en original, y al ser presentada mediante compañía de seguro, en cheque certificado o giro postal deberá ser a favor de la Autoridad Metropolitana de Autobuses. La fianza de licitación se prestará en el mismo momento de presentar la oferta o anualmente mediante una suma global. Para esta Subasta Informal se requiere una fianza de licitación de un **cinco por ciento (5%)** del total de la oferta.

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- b) FIANZA DE EJECUCIÓN ("Performance Bond"): Garantía monetaria que se requiere a un licitador o proponente para asegurar el cumplimiento de una obligación contraída. Esta fianza la prestará(n) solamente el(los) licitador(es) agraciado(s) con la buena pro de la Subasta Informal. La fianza garantizará que el suplidor cumpla con su obligación de acuerdo con los términos y condiciones de su oferta. De no cumplir y tener que acudir al próximo suplidor, la diferencia en precio será cubierta por esta fianza. La fianza tiene que ser en original, y al ser presentada mediante compañía de seguro, en cheque certificado o giro postal será a favor de la Autoridad Metropolitana de Autobuses. Para esta Subasta Informal se requiere una fianza de ejecución de un **cuarenta por ciento (40%)** del total de la oferta.
2. GARANTÍA: Los artículos o servicios propuestos estarán garantizados por el período establecido en las especificaciones de esta Subasta Informal. En aquellas invitaciones a Subasta Informal donde no están especificados, indique en días, meses o años el período que los artículos estarán garantizados. Dicho período de garantía podrá ser determinante en la adjudicación de la buena pro de la Subasta Informal. **Para esta Subasta Informal se requiere una garantía de 1 año.**
3. TÉRMINO DE ENTREGA: Las entregas se efectuarán dentro del término solicitado por la AMA, o en su defecto, por el que haya dispuesto el licitador en la oferta, contando desde el recibo de la orden de compra o firma de contrato. El tiempo más corto para proveer el servicio, será un factor determinante para decidir la adjudicación a favor de un postor.
4. ALMACENAJE: Se requiere almacenaje físico para esta Subasta Informal.
5. MUESTRAS: No son requeridas en esta Subasta Informal.
6. CANTIDADES PARA COMPRAR: La orden de compra emitida, o contrato, indicará las servicios y bienes a ser adquiridos.
7. INSPECCIÓN DE LOS BIENES Y DESEMPEÑO DEL SERVICIO: funcionario asignado de GEO Engineers, P.S.C. estará a cargo de la inspección y aceptación del proyecto.

G. CRITERIOS DE EVALUACIÓN

Por tratarse de una subasta Informal, los criterios de evaluación serán los de licitador responsable, con licitación (oferta) responsiva, al precio más bajo y/o

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cualquier otro criterio pertinente que represente el mejor valor para la AMA y el Gobierno de Puerto Rico.

La División de Compras realizará determinaciones de hecho relacionadas a la solvencia moral y financiera, y así poder adjudicar si el licitador es uno responsable. La certificación del RUL puede ser un mecanismo para realizar dicha determinación. Adicionalmente, se podrán solicitar certificaciones de que el licitador, ni sus accionistas u oficiales en caso de ser personas jurídicas, han cometido fraude, abuso o malversación de fondos públicos, así como estados financieros. No cumplir con estos requisitos puede resultar en la descalificación del licitador.

La responsividad de la oferta se determinará cotejando que cada licitador cumple con todos y cada uno de los requisitos (de forma, de contenido, de documentos, de firma, etc.) dispuestos en estas instrucciones. No cumplir con los requisitos de especificaciones, términos y condiciones, fianzas y garantías, puede resultar en descalificación de la oferta.

Criterios de Evaluación:

1. La exactitud con la cual el licitador ha cumplido con las especificaciones, los términos y las condiciones del pliego de la Subasta Informal.
2. La calidad de los bienes, obras y servicios no profesionales ofrecidos y cómo éstos cumplen con las especificaciones y satisfacen las necesidades establecidas.
3. Si el precio es competitivo y comparable con el prevaleciente en el mercado.
4. La habilidad reconocida del licitador para llevar a cabo trabajos de la naturaleza bajo consideración en obras y servicios no profesionales.
5. La responsabilidad económica del licitador y las experiencias de la AMA con el cumplimiento de contratos anteriores de naturaleza igual o parecida.
6. El término de entrega de los servicios o bienes más próximo.

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7. La capacidad económica y financiera, así como la trayectoria y experiencia previa del licitador para proveer estos servicios o bienes y cumplir con los términos de entrega y garantías de la unidad.
8. El periodo específico o los términos aplicables a cada garantía, sus limitaciones y condiciones, los pasos requeridos para reclamar la garantía, qué entidad proveerá el servicio de reemplazo, subsanación, corrección o reparación del bien o el servicio.
9. Cualquier otro criterio pertinente que represente el mejor valor para el Gobierno de Puerto Rico.

H. IMPUGNACIÓN A LA INVITACIÓN O A ESTAS INSTRUCCIONES DE SUBASTA INFORMAL

Toda impugnación a la invitación de Subasta Informal deberá presentarse personalmente ante la División de Compras, dentro de los tres (3) días subsiguientes a la fecha de haberse publicado la invitación en la página cibernética de la AMA o el Registro Único de Subastas (RUS). Luego de dicho término, toda impugnación será rechazada de plano.

Toda impugnación al pliego de la Subasta Informal deberá presentarse personalmente ante la Directora de Compras, dentro de los tres (3) días subsiguientes a la fecha de la AMA haber hecho disponibles los pliegos de esta solicitud de Subasta Informal. Luego de dicho término, toda impugnación será rechazada de plano.

I. DOCUMENTACIÓN REQUERIDA

1. **CONTENIDO DE LA OFERTA:** Todo licitador entregará en original y dos copias, en sobres sellados, su oferta personalmente en la sede de la AMA (37 Ave. De Diego, Urb. San Francisco, Río Piedras, Puerto Rico 00927), y enviará a través de la siguiente dirección de correo electrónico: gcolon@ama.pr.gov y/o dmarti@ama.pr.gov, (ambas formas). En el ASUNTO ("SUBJECT") del correo electrónico que contenga la oferta, debe aparecer la siguiente información: **Número de Subasta Informal, nombre del licitador y compañía que representa.** además, deberá adjuntar los siguientes documentos:

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- a) Pliegos debidamente firmados y con las páginas inicialadas. Aunque algunas páginas no proveen un espacio determinado para que el licitador escriba sus iniciales, el licitador tiene que escribir sus iniciales en cada una de las páginas del pliego (instrucciones, especificaciones técnicas, planos, etc.)
- b) Fianza de Licitación ("Bid Bond") debidamente endosada (de ser requerida)
- c) Hoja de Ofertas en Formato "PDF"
- d) Literatura de cada producto ofertado identificado con el número de renglón, según aplique
- e) Listado de clientes y proyectos anteriores
- f) Enmiendas (de ser aplicable)
- g) Certificación del Registro Único de Licitadores de la Administración de Servicios Generales (ASG)
- h) Certificación del registro en la plataforma SAM (Federal Transit Administration) <https://www.sam.gov/portal/SAM>

Entregar original y dos copias de todo (pliego, anejos y propuesta).

Toda oferta recibida mediante correo electrónico que no contenga en el ASUNTO ("SUBJECT") la información antes señalada, no será considerada.

Bajo esta circunstancia, la División de Compras no será responsable si el remitente pierde su oportunidad de presentar la oferta a tiempo, como tampoco podrá requerir que se tome conocimiento de su oferta o imputar que la oferta haya sido divulgada o abierta antes de tiempo. El licitador **podrá ser descalificado** por no adjuntar a su oferta los documentos arriba mencionados.

La oferta deberá contener la **dirección física y postal** de la oficina principal del negocio, así como también, el nombre y la dirección del agente residente de la corporación, cuando sea el caso. Igualmente, todo licitador habrá de incluir su correo electrónico; las Notificaciones de Adjudicación podrán ser enviadas a dicha dirección electrónica.

El licitador tendrá que indicar en la oferta la marca y modelo del producto, así como incluir literatura técnica del manufacturero, la cual permita verificar que lo cotizado cumple con las especificaciones requeridas. Dicha

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literatura u hojas de especificaciones tienen que indicar claramente la partida de la solicitud de propuestas selladas a la que se refiere.

La oferta deberá estar firmada con bolígrafo de tinta color azul en el espacio provisto para ello, por la persona registrada en el RUL o su representante autorizado. Se autoriza la firma digital del licitador en la oferta presentada. De igual forma, se autoriza la presentación de documentos digitalizados. No cumplir con estos requisitos constituirá el rechazo de la oferta.

2. CERTIFICACIONES ADICIONALES: El licitador incluirá junto con su oferta en el formulario provisto, todas las certificaciones requeridas, además incluirá a éste, las certificaciones especiales solicitadas en este pliego. Se advierte que, entre otros, todo licitador deberá cumplir con lo siguiente:

- a) CÓDIGO DE ÉTICA PARA CONTRATISTAS: Todo licitador deberá cumplir con lo establecido en la Ley Núm. 2 del 4 de julio de 2018, según enmendada, conocida como Código Anti-Corrupción para el Nuevo Puerto Rico, el cual exige a todas las entidades gubernamentales funcionar bajo los estándares de integridad, eficiencia, probidad y transparencia. Este Código de Ética enfatiza la política pública del Gobierno de Puerto Rico en el uso adecuado y eficiente de los recursos públicos y la erradicación de la corrupción gubernamental.

Dicho Código requiere que todos los contratistas, proveedores de bienes o servicios y los solicitantes de incentivos se abstengan de llevar a cabo o participar en conducta que, directa o indirectamente, implique que servidores públicos infrinjan las disposiciones de la Ley de Ética Gubernamental. La aceptación de las normas establecidas en este Código de Ética es una condición esencial e indispensable para que los licitadores o sus representantes puedan efectuar transacciones o establezcan convenios con las agencias ejecutivas.

Toda persona está obligada a denunciar aquellos actos que estén en violación del referido Código que constituyan actos de corrupción, o se configuren en delitos constitutivos de fraude, soborno, malversación, o apropiación ilegal de fondos, y de los que tenga propio y personal conocimiento, que atañen a un contrato, negocio o transacción entre el gobierno y un contratista, proveedor de bienes o servicios. Los denunciantes estarán protegidos al amparo de la Ley Núm. 2-2018.

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- b) **CLÁUSULA ANTI-DISCRIMEN:** La AMA no discrimina por razón de raza, color, género, origen o condición social, ideas políticas o religiosas, edad, nacionalidad, por ser víctima o ser percibida como víctima de violencia doméstica, agresión sexual o acecho, condición de veterano, identidad u orientación sexual, real o percibida, impedimento físico, mental o sensorial. Cualquier proveedor o contratista de la AMA debe certificar que su entidad no discrimina por razón de raza, color, género, origen o condición social, ideas políticas o religiosas, edad, nacionalidad, por ser víctima o ser percibida como víctima de violencia doméstica, agresión sexual o acecho, servicio militar o condición de veterano, identidad u orientación sexual, real o percibida, impedimento físico, mental o sensorial.
- c) **CERTIFICACIONES GUBERNAMENTALES:** El licitador agraciado, es responsable por tener al día sus certificaciones de no deuda con entidades gubernamentales tales como el Departamento de Hacienda, el Centro de Recaudaciones de Impuestos Municipales (CRIM), la Administración para el Sustento de Menores (ASUME) y cualquier otra que le sea requerida para poder hacer negocios con el Gobierno de Puerto Rico.
- d) En caso de que el licitador subcontrate, deberá proveer certificación de que la compañía subcontratada tenga 4% DBE.

J. ANEJOS

En el caso de que fondos federales sufraguen la totalidad o parte de la adquisición realizada bajo esta solicitud de propuestas selladas, en los Anejos se encontrarán instrucciones adicionales, requeridas por las autoridades federales, con las que también se tiene que cumplir. Otros anejos provistos son parte de los requisitos mandatorios tales como: Hoja de Oferta; Certificación Ley 2-2018, según enmendada; Certificación de No Deudas con Instrumentalidades Gubernamentales; etc.

K. ADVERTENCIAS

- a) La AMA se reserva el derecho de cancelar parcial o total la Subasta Informal, independientemente de la fase en que se encuentre, siempre que sea antes de formalizar el contrato, o de haber emitido una orden de compra, cuando ello sirva los mejores intereses del Gobierno de Puerto Rico, según los términos del Reglamento Núm. I-23-01 (9415).

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- b) La AMA se reserva el derecho de hacer modificaciones en las instrucciones, términos, condiciones y especificaciones de la Subasta Informal cinco (5) días laborables antes de la celebración del acto de Apertura de las ofertas cuando la enmienda implique cambios o solicitudes adicionales que se deben incluir en la oferta, tres (3) días laborales antes del acto de Apertura cuando la enmienda no afecte la presentación de las propuestas u ofertas. De ser así se les notificará por escrito a todos los licitadores. La AMA podrá enmendar cualquier invitación y/o pliego de la Subasta Informal, cuando ello sirva a los mejores intereses del Gobierno de Puerto Rico, según los términos dispuestos en el Reglamento Núm. I-23-01 (9415), supra.
- c) Proveer cualquier tipo de información o documentación falsa o fraudulenta como parte de la oferta presentada para esta Subasta Informal, será causa suficiente para descalificar o rechazar la oferta de cualquier licitador, así como para cancelar o resolver cualquier orden de compra o contrato otorgado en virtud de esta.
- d) La AMA no aceptará una fianza por una cantidad menor o a nombre de otra entidad que no sea según el pliego de Subasta Informal. El incumplimiento con este requisito conllevará el rechazo de la oferta.
- e) Solo se aceptará una oferta por licitador. Empresas, naturales o jurídicas, que tengan socios, miembros o accionistas comunes, serán consideradas como *alter ego* una de las otras, por lo que se considerará un conflicto de intereses que activará la descalificación de los licitadores con intereses en común. Se prohíben prácticas de competencia desleal tal como el contubernio.
- f) Toda persona que en su vínculo con las agencias y demás instrumentalidades del gobierno de Puerto Rico participe de licitaciones en subastas, presente oferta, interese perfeccionar contratos con éstas, tendrá la obligación de divulgar toda la información necesaria para que las agencias puedan evaluar detalladamente las transacciones y efectuar determinaciones correctas e informadas.
- g) La AMA no se responsabiliza por los costos incurridos en la preparación de ofertas para esta Subasta Informal.
- h) La mera participación en esta solicitud de Subasta Informal no ofrece garantías de que se le ha de adjudicar un contrato u orden de compra. La notificación de adjudicación de la presente Subasta Informal no constituirá el acuerdo formal entre las partes. Será necesario que se

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suscriba el contrato correspondiente, o que la AMA emita una orden de compra por la persona autorizada.

- i) Toda oferta y/o propuesta presentada deberá incluir el detalle del precio ofertado; precio de unidad del bien o servicio (por cada partida), costos de transportación, entrega, ensamblaje, garantía, entrenamiento, mantenimiento o servicios, reemplazos, entre otros.
- j) Una vez se hayan sometido las ofertas, éstas y sus anejos, pasarán a ser propiedad de la AMA y no será devuelta.
- k) Tan pronto se adjudique esta Subasta Informal, el expediente será público, incluyendo las ofertas y sus anejos. Si un licitador no desea que se publique un secreto de negocio, o información protegida, deberá etiquetar dicha información como "Secreto de Negocio e Información Protegida".
- l) Los documentos o anejos incluidos en estos pliegos, deben ser completados por los licitadores y tienen que ser sometidos con las ofertas. Los licitadores son responsables de atender cualquier enmienda que surja en el transcurso de esta Subasta Informal.
- m) Los representantes exclusivos de marcas o servicios no profesionales deberán mencionarlo en la oferta y someter certificación del manufacturero a tales efectos.
- n) En el caso de que las ofertas se sometan en sobres abiertos, deteriorados o sin identificación, la División de Compras de la AMA habrá de realizar esfuerzos razonables con el licitador para que éste cumpla con el requisito de someterla en un sobre sellado, debidamente identificado.
- o) Es responsabilidad de cada licitador que entregue oferta, cerciorarse que la misma ha sido debidamente registrada.
- p) Los licitadores deberán cumplir con los requisitos de reglamentación vigente y de las normas aplicables de ingeniería y seguridad en aquellos casos en que se requiere la instalación de equipos.
- q) La División de Compras podrá utilizar la negociación individual respecto a los términos, condiciones, calidad, solución o precios, o combinación de factores, para obtener lo más ventajoso para la Autoridad. El precio no será necesariamente el factor de mayor peso de adjudicación. Puede existir la posibilidad de que la adjudicación pueda hacerse sin negociación.

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L. POLÍTICAS PREFERENCIALES

No es aplicable ninguna política preferencial cuando los bienes o servicios se sufraguen con fondos de la FTA.

M. ALTERACIONES

Toda oferta deberá presentarse en forma legible, clara, completa y precisa. Ofertas múltiples, variadas o ambiguas no serán consideradas. Todo borrón, tachadura, anotación o cualquier corrección en los pliegos tienen que estar refrendados **por la persona que firme la oferta** e incluya en cada página sus iniciales. De lo contrario quedará invalidada la oferta para la partida o las partidas correspondientes.

El uso de tinta de borrar para correcciones se considerará como una tachadura y para poder salvar la misma, deberá tener las iniciales de la persona que firme la oferta para ser considerado. El uso de papel con pega ("correction paper") para escribirle encima es inaceptable.

N. CORRECCIONES A OFERTAS

Las correcciones o modificaciones a las solicitudes de Subasta Informal están sujetas a las disposiciones del Reglamento I-23-01 (9415), Secciones 4.3.12 y 4.3.13. Nótese que no se aceptan modificaciones luego de fecha y hora límite para someter las ofertas, dispuesto en la Secc. C-1 de estas instrucciones; de hacerlo, serán rechazadas.

O. COMUNICACIONES PROHIBIDAS

Las comunicaciones verbales entre funcionarios (o empleados) de la AMA y potenciales licitadores, con respecto a esta solicitud de Subasta Informal, están prohibidas durante los procesos de presentación y selección de ofertas. El incumplimiento de este requisito puede resultar en el rechazo de las ofertas presentadas.

P. CÓMO SOMETER PREGUNTAS

Los licitadores que deseen solicitar alguna clarificación o someter preguntas sobre el proceso, deben hacerlo en o antes del día dispuesto en la Sección C-1 de estas instrucciones. Dichas preguntas se enviarán por correo electrónico a gcolon@ama.pr.gov y/o damrti@ama.pr.gov . La AMA debe responder dichas preguntas en o antes de la fecha dispuesta en la misma sección antes referida. La AMA someterá a todos los participantes una

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relación de todas las preguntas radicadas, quien la radicó, y la respectiva contestación en el día dispuesto en la Sección C-1.

Q. LICITADORES REGISTRADOS

A todo licitador que esté registrado en el RUL, que haya presentado oferta para una Subasta Informal y que luego del Acto de Apertura no se encuentre elegible, se le concederá un término improrrogable de cinco (5) días calendario, contados a partir del Acto de Apertura, para que someta la información o los documentos correspondientes en el RUL. Durante dicho periodo de cinco (5) días, no se realizará adjudicación alguna de la Subasta Informal. Será responsabilidad de la División de Compras comunicarse con el licitador para que éste actualice sus constancias en el RUL en el término provisto.

El licitador deberá someter todos los documentos solicitados y cumplir con todos los requisitos, términos y condiciones establecidos en el pliego de Subasta Informal al momento de entregar su oferta, lo cual siempre será antes de la apertura de la Subasta Informal. No se aceptará ningún documento por parte del licitador con posterioridad al acto de apertura, a excepción del certificado de elegibilidad del RUL, que estará sujeto a que se presente dentro del término de cinco (5) días calendario antes referido.

R. LICITADORES NO REGISTRADOS

Cuando un licitador que no esté registrado en el RUL comparece a un proceso de solicitud de Subasta Informal y presenta una cotización u oferta, la División de Compras no deberá rechazar la misma por el hecho de que dicho licitador no esté en el RUL y le dará cinco (5) días calendario, contados a partir del acto de apertura para que someta todos los documentos requeridos ante el RUL.

S. OFERTAS ADMISIBLES E INADMISIBLES

- a. UNIDAD DE COTIZACIÓN DE PRECIO: La oferta básica deberá hacerse en dólares y centavos. No serán consideradas ofertas que se expresen en términos de por ciento, en referencia a posibles precios indeterminados, cantidad de dinero o por cientos en exceso de ofertas más bajas.
- b. Para esta Subasta Informal, las ofertas admisibles serán todo o nada.
- c. NINGUNA OFERTA: Si el licitador no tiene interés en licitar en dicha Subasta Informal, deberá devolver el Anejo I (Oferta del Licitador) de la

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Invitación a Subasta Informal, con una anotación explicando las razones que tiene para no hacer oferta, así como notificar si tiene o no interés en ser invitado para futuras Subasta Informal en esos renglones. La falta de someter oferta sin notificación podrá ser informada al RUL.

- d. OFERTAS NO RESPONSIVAS O INACEPTABLES: Al hacer su oferta, el licitador se limitará a ofrecer lo que se le solicita dentro de las especificaciones enmarcadas y las condiciones fijadas. Las especificaciones establecen requisitos mínimos, cualquier oferta que sobrepase las especificaciones solicitadas, podrá ser aceptada siempre y cuando no altere sustancialmente lo solicitado de forma tal que pueda interpretarse como competencia desleal.
- e. No serán consideradas ofertas que hagan de la misma una **ambigua**, en cuanto a su significado, **incompleta** o **indefinida**. También, serán rechazadas ofertas que **alteren, incumplan, varíen o condicionen** los términos, condiciones y especificaciones establecidos por la AMA.
- f. OFERTAS INCOMPLETAS: Ofertas en las que no se completen todos los blancos serán rechazadas. Si un licitador no tiene información que suplir en un blanco deberá anotar "N/A" - (no aplica) o "N/B" – (no bid).
- g. VARIAS OFERTAS POR UN MISMO LICITADOR: Si un licitador presenta varias ofertas para una Subasta Informal, ya sea a nombre propio o seudónimos, de alguna de sus subsidiarias o sucursales, de alguno o varios de sus socios, agentes u oficiales, todas serán **rechazadas** y se le podrán imponer las penalidades que establece el Reglamento I-23-01 (9415), *supra*.
- h. OFERTA LIMITADA: Todo licitador que entienda que solamente puede sostener sus precios por un período de tiempo determinado, así lo hará constar en su oferta especificando el término.

T. RETIRO DE OFERTA

El retiro de una oferta se hará mediante solicitud escrita, dirigida a la División de Compras de la AMA, antes del acto de Apertura. No se puede volver a presentar una sustitutiva de la que se retiró ni se puede retirar ofertas luego de que se haya realizado el Acto de Apertura.

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U. RECHAZO GLOBAL

La División de Compras podrá rechazar todas las ofertas recibidas si éstas no cumplen con las instrucciones, términos, condiciones y especificaciones, o si los precios fueran irrazonables, o si existe colusión entre los licitadores comparecientes, o si los mejores intereses económicos del Gobierno de Puerto Rico pudieran verse afectados.

V. CANCELACIÓN DE CONTRATO POR CAUSA: NEGATIVA A ENTREGAR

Si el licitador se niega a entregar lo ordenado, se podrá cancelar la orden de compra y emitirla a otro licitador. Además, la AMA aplicará las sanciones correspondientes, según el Reglamento Núm. I-23-01 (9415), así como en y las acordadas en el contrato u orden de compra.

W. CANCELACIÓN DE CONTRATO POR CONVENIENCIA

La AMA podrá dar por terminado cualquier contrato cuando lo estime conveniente, notificando al menos treinta (30) días antes dicha determinación.

X. SOLVENCIA MORAL

La AMA no adjudicará Subasta Informal u otorgará contrato alguno para la realización de servicios o la venta o entrega de bienes, a persona natural o jurídica que haya sido convicta o se haya declarado culpable en el foro estatal o federal, en cualquier otra jurisdicción de los Estados Unidos de América o en cualquier otro país, de aquellos delitos constitutivos de fraude, malversación o apropiación ilegal de fondos públicos enumerados en la Ley Núm. 2-2018, según enmendada. Esta prohibición de adjudicar Subastas Informales u otorgar contratos, se extiende a aquellas personas jurídicas cuyos presidentes, vicepresidentes, director, director ejecutivo, o miembro de su Junta de Oficiales o Junta de Directores, o persona que desempeñe funciones equivalentes, haya sido convicto o haya sido declarado culpable en el foro estatal o federal, en cualquier otra jurisdicción de los Estados Unidos de América o en cualquier otro país, de aquellos delitos constitutivos de fraude, malversación o apropiación ilegal de fondos públicos, según enumerados en el Artículo 3 de la referida ley.

La prohibición para la contratación, subcontratación o adjudicación de una Subasta Informal contenida en la Ley 458, *supra*, tendrá una duración de veinte (20) años, a partir de la convicción correspondiente en casos por

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delito grave, y una duración de ocho (8) años en casos por delito menos grave.

La convicción o culpabilidad por cualquiera de los delitos enumerados en el Artículo 3 de la ley conllevará, además de cualesquiera otras penalidades, la rescisión automática de todos los contratos vigentes a esa fecha entre la persona convicta o culpable y la AMA. Además de la rescisión del contrato, la AMA tendrá derecho a exigir la devolución de las prestaciones que hubiese efectuado con relación al contrato o contratos afectados directamente por la comisión del delito.

Y. INCUMPLIMIENTO

Si el licitador incumpliera con cualquiera de los términos y condiciones de esta Subasta Informal una vez emitida la orden de compra o firmado el contrato, la AMA cancelará el mismo inmediatamente, ejecutará la Fianza de Ejecución ("Performance Bond") y podrá solicitar que se excluya al suplidor del RUL, por un término no menor de un (1) año y no mayor de tres (3) años, conforme según las disposiciones aplicables. Además, la AMA se reserva el derecho de aplicar cualesquiera otras sanciones, según provistas en el Reglamento Núm. 9352, *supra* y las acordadas en el contrato u orden de compra.

Las medidas a tomarse en caso de incumplimiento serán impuestas solamente por la AMA, previa investigación de los hechos, mediando comunicación y dando al licitador la oportunidad de ser escuchado.

Z. PENALIDAD POR ENTREGA TARDÍA O INCUMPLIMIENTO

Todo licitador que incurra en incumplimiento de entrega de mercancía o servicios, se le aplicará un cargo según dispuesto en el Reglamento I-23-01 (9415), Secc. 4.3.20, sobre importe de la orden de compra emitida, o contrato, por cada día que transcurra de atraso, sin que constituya una renuncia a cualquier otro procedimiento que en derecho proceda. Se entiende que ha habido atraso cuando el suplidor no cumpla con la fecha de entrega convenida o no cumpla con la fecha de comienzo de los servicios.

AA. RECONSIDERACIÓN Y REVISIÓN JUDICIAL

Una vez se emita una Notificación de Adjudicación, cualquier persona que haya participado en el proceso de esta Subasta Informal, y haya recibido una determinación adversa, tendrá oportunidad de solicitar una reconsideración o

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eventual revisión judicial, siguiendo las disposiciones legales aplicables. Según el Art. 4.2 de la Ley Núm. 38-2017, según enmendada, conocida como Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, “[l]a mera presentación de una solicitud de revisión al amparo de esta Sección no tendrá el efecto de paralizar la adjudicación de la Subasta Informal impugnada”.

Fin de las Instrucciones
*****Pase a los Anejos*****

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II. ESPECIFICACIONES TÉCNICAS



DIVISION 000 GENERAL CONDITIONS

GENERAL CONDITIONS

ARTICLE 1 DEFINITIONS

1.1 DEFINITIONS

- 1.1.1 **CONTRACT ITEM OR PAY ITEM.** A portion of work specifically described and for which a price either unit or lump sum is provided. It includes the performance of all work and the furnishing of labor, equipment, and materials described in the specifications.
- 1.1.2 **FORCE ACCOUNT WORK.** Additional work that is paid for on the basis of actual cost plus an established fee.
- 1.1.3 **FEDERAL AGENCY.** Any agency of the government of the United States of America or its succeeding agency.
- 1.1.4 **INSPECTOR.** An authorized representative of the Owner, assigned to make a detailed inspection of performance of any or all portions of the Work as defined at the "Reglamento para la Certificación de Obras y Permisos #12" of ARPE.
- 1.1.5 **LABORATORY.** One or several testing laboratories approved by the Owner for the performance of any tests required under the Contract.
- 1.1.6 **MAJOR AND MINOR CONTRACT ITEMS.** Any item having contract value equal to or greater than (5) per cent of the original contract amount shall be considered as a major item. All the other contract items shall be considered as minor items. A minor item may become a major item when the minor item is increased to the extent that the total cost of the item is equal to or greater than five (5) percent of the original contract amount.
- 1.1.7 **PLANS OR DRAWINGS.** The approved drawings and supplemental drawings that show the location, character, dimensions and details of the Work and which are to be considered an integral part of the Contract Documents.
- 1.1.8 **PROJECT.** The Project is total Construction as designed, of which the Work to be performed under the Contract Documents may be a whole or a part.
- 1.1.9 **RESIDENT ENGINEER OR RESIDENT INSPECTOR.** The authorized representation of the Inspector and the Owner in immediate charge of the inspection forces as defined at the "Reglamento para la Certificación de Obras y Permisos #12" of ARPE.
- 1.1.10 **RIGHT-OF-WAY.** The land, property or interest therein, usually in a strip, acquired or intended for a project or public utility.

- 1.1.11 **SPECIAL CONDITIONS.** Special requirements, regulations or directions covering conditions peculiar to the Project. Special Conditions shall prevail over General Conditions, Technical Specifications and Plans, as applicable.
- 1.1.12 **SUPPLEMENTAL AGREEMENT.** A written agreement executed by the Contractor and the Owner supplementing the contract to cover changes or changes conditions incidental to and necessary for the acceptable completion of the project.
- 1.1.13 **TECHNICAL SPECIFICATIONS OR SPECIFICATIONS.** The directions, provisions and requirements settings forth or relating to the performance of the Work and to the kind and quality of materials and labor to be furnished under the Contract for the execution of the Project, and to the method and manner of evaluating and paying for the Work.
- 1.1.14 **WORK.** The management, supply, construction and installation and other requirements set forth in the Contract Documents, whether completed or partially completed, temporary or permanent, including all labor, materials, tools, equipment, supplies, utilities, subcontracted services and other items provided or to be provided by the Contractor to fulfill each and every one of the Contractor's obligations under the Contract documents. Work includes, and is the result of, performing or furnishing Construction required by the Contract Documents.
- 1.1.15 **CONTRACT LIMITS.** (Property Limits) The portion of the site within which the work is to be performed.
- 1.1.16 **OFF-SITE WORK.** Work to be performed outside of the contract limits.
- 1.1.17 Any other definition needed for the proper interpretation of the contract documents will be in accordance with the definitions stated on the ARPE's "Reglamento para la Certificación de Obras y Permisos".

ARTICLE 2 CONTRACT DOCUMENTS

2.1 DEFINITIONS

- 2.1.1 **THE CONTRACT DOCUMENTS.** The Contract Documents consist of the following component parts:
1. The Agreement, including:
 - a. Performance Bond
 - b. Payment Bond
 - c. Workmen's Compensation Insurance
 - d. Employer Liability
 - e. Comprehensive General and Automobile Liability Insurance
 - f. Builder's Risk all risks form including earthquake
 - g. Installation Floater

2. Dated Contractor's Proposal
3. All Addenda issued prior to execution of the Contract
4. Special Conditions
5. Instructions to Bidders
6. General Conditions
7. Technical Specifications
8. The Drawings

2.1.2 **THE CONTRACT.** The Contract Documents listed above collectively comprise the "Contract". The Contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral, including the Bidding Documents. The Contract may be amended or modified only by a modification as defined in Subsection 2.1.3, below.

2.1.3 A "Contract Modification" is a written amendment to the Contract signed by both parties covering: (i) a Change Order; (ii) an extra Work Order; (iii) a Supplemental Agreement, or (iv) a written interpretation issued by the Supervisor or the Engineer pursuant to Subparagraph 2.2.5 or (v) A Written Order for A Minor Change in the Work issued by the Architect or Engineer, pursuant to Paragraph 13.3. A Contract Modification may only be executed after execution of the Contract by the Contractor and the Owner.

2.2 EXECUTION, CORRELATION, INTENT AND INTERPRETATIONS

2.2.1 The Agreement shall be signed in to less than triplicate by the Owner and Contractor or their authorized representatives. The other component parts of the Contract Documents, if not signed by the Owner or Contractor, shall be identified by their authorized representatives.

2.2.2 By executing the Contract, the Contractor represents and warrants that: (i) it has visited the Site, (ii) it is familiar with the local conditions under which the Work is to be performed, and (iii) has correlated such observations with the requirements of the Contract Documents.

2.2.3 The Contract Documents are complementary, and what is required by any one shall be as binding, as if required by all. The intention of the Contract Documents is to include all labor, materials, resources, equipment and other items as provided in Subsection 5.4.1 that are necessary for the proper execution of the Contract and completion of the Work.

2.2.4 The Contractor shall not be required to supply any work that is not covered under any heading, section, branch, class or trade of the Specifications, unless it is required elsewhere in the Contract Documents. Words which have well-known technical or trade meanings are used herein in accordance with such recognized meanings.

- 2.2.5 The organization of the Specifications into divisions, sections and articles, and the arrangement of the Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any specific trade.
- 2.2.6 Written interpretations necessary for the proper execution or progress of the Work in the form of drawings or otherwise, will be issued with reasonable promptness by the Architect or Engineer and in accordance with the schedule agreed upon. Either party to the Contract may be written request to the Architect or Engineer for such interpretations. Such interpretations shall be consistent with reasonably inferable from the Contract Documents and may be effected by Field Order. Interpretation drawings are not changes in the Work.

2.3 COPIES FURNISHED AND OWNERSHIP

- 2.3.1 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, six (6) complete sets of Drawings and Specifications reasonably necessary for the execution of the Work. Any additional copies will be subject to reasonable charges by the Owner.
- 2.3.2 All Drawings, Specifications and copies hereof furnished to the Contractor are and shall remain the property of the Owner.

ARTICLE 3 ARCHITECTS OR ENGINEER

3.1 DEFINITION

- 3.1.1 The Architect or the Engineer is the person licensed to practice architecture or engineering in Puerto Rico and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Architect or Engineer means the Architect or Engineer means the Architect or Engineer or his authorized representative.
- 3.1.2 Nothing contained in the Contract Documents shall create any contractual relationship between the Architect or Engineer and the Contractor.

3.2 ADMINISTRATION OF THE CONTRACT

- 3.2.1 The Architect or the Engineer will provide general Administration of the Construction Contract, including performance of the functions hereinafter described.

- 3.2.2 The Architect or the Engineer will be the Owner's representative. The Architect or Engineer will have the authority to act on behalf of the Owner to the extent provided in the Contract Documents, unless otherwise modified by written instrument which will be shown to the Contractor.
- 3.2.3 The Architect or Engineer shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access to the Architect or Engineer may perform his functions under the Contract Documents.
- 3.2.4 The Architect or Engineer will make periodic visits to the site to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. On the basis of his on-site observations as an architect, or engineer, he will keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor.
- 3.2.5 Based on such observations and the Contractor's Application for Payment, the Architect or Engineer will determine the amount owed to the Contractor and will issue Certificates for Payment in such amount, as provided in Paragraph 10.3.
- 3.2.6 The Architect or Engineer will be, in the first instance, the interpreter of the requirements of the Contract Documents. The Architect or Engineer will, within a reasonable time, render such interpretations as he may deem necessary for the proper execution or progress of the Work.
- 3.2.7 Claims, disputes and other matters or questions relating to the execution or progress of the Work or the interpretation of the Contract Documents shall be referred initially to the Architect or Engineer for decision which he will render in writing within a reasonable time.
- 3.2.8 All the interpretations and decisions of the Architect or Engineer shall be consistent with the intent of the Contract Documents. In his capacity as interpreter and judge, he will exercise his best efforts to insure faithful performance.
- 3.2.9 All dispute under his contract shall decided by the Architect or Engineer whose decision shall be final and binding, except disputes concerning the cost or amount of claims involving change in contract price, which shall be decided by the Owner based on the recommendation of the A/E and applying Laws and "Regulations.
- 3.2.10 The Architect or Engineer will have authority to reject Work which does not conform to the Contract Documents. Whenever, in his reasonable opinion, he considers it necessary or advisable to insure the proper implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the Work in accordance with Paragraph 8.9 whether or not such Work

be then fabricated, installed or completed. However, neither the Architect's or Engineer's authority to act under this Subparagraph 3.2.10, nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Architect or Engineer to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work, nor will the Contractor be relieved from his obligations under the Contracts.

3.2.11 The Architect or Engineer will review Shop Drawings and Samples as provided in Subparagraphs 5.12.1 through 5.12.8 inclusive.

3.2.12 The Architect or Engineer will prepare Change Orders, and Extra Work Orders, in accordance with Article 13.

3.2.13 The Architect or Engineer will conduct joint inspections to determine the dates of Substantial Completion and Final Completion of the Work and will receive and review written guarantees and related documents required by the Contract.

3.2.14 The Architect or Engineer will not be responsible for acts or omissions of the Contractor, or any Subcontractor, or any of their agents or employees, or any other persons performing any of the Work.

3.2.15 The Architect or Engineer shall have the authority to stop the Work wholly or in part when such stoppage is necessary to insure the proper execution of the Contract.

3.2.16 The Engineer may designate one or more assistants or representatives to represent the Engineer as Inspectors of the Work, fully empowered to represent the Engineer in all matters pertaining to the inspection of the Work and, materials furnished by the Contractors and Subcontractors. Such inspection may extend to all or any part of the Work and to preparation or manufacture of the materials to be used therein. In the case of dispute between the Contractor and any Inspector as to materials furnished or the manner or performing the Work, the Inspector shall have the authority to reject materials or suspend the Work until the questionat issued can be referred to and decided by the Engineer. Inspectors are not authorized to alter or waive any requirements of the Contract.

ARTICLE 4 OWNERS

4.1 DEFINITION

4.1.1 OMIT.

4.1.2 The Contracting Officer is the person who may officially be designated by the Owner as his authorized representative for signing the Agreement and providing the functions hereinafter described.

4.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

- 4.2.1 The Owner shall furnish all available information describing the physical characteristics, legal limits and utility locations for the Project.
- 4.2.2 Unless otherwise specified, the Owner will set construction stakes establishing property lines, slopes, continuous profile-grade, centerline, and bench marks for the project, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall establish other necessary controls and perform the Work. The Contractor shall be held responsible for the preservation of all stakes and marks, and if any of the construction stakes or marks have been carelessly or willfully destroyed or disturbed by the Contractor, the cost of replacing them will be charged against him and will be deducted from payment for the work. The Owner will be responsible for the accuracy of lines, slopes grades and other engineering work which is set forth under this section. When the Contractor is required to perform the stake out operations, he shall furnish and set all construction stakes and marks with his own personnel and he shall assume all responsibility for accuracy of staking and for its preservation and replacing until the work is completed. The Owner will provide information regarding references points for location and construction and may, at any time, check the stakes and marks set by the Contractor which, if found in error, shall be reset in the correct location by the Contractor at the Contractor's expense.
- 4.2.3 Information of services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

4.3 OWNER'S RIGHT TO STOP THE WORK

- 4.3.1 The Owner may order the Contractor to stop the work, or any portion thereof, until the cause for such order has been eliminated, if the Contractor fails to correct defective work, persistently fails to supply materials or equipment in accordance with the Contract Documents, or for any other reason deemed necessary to insure the proper execution of the Contract.

4.4 OWNER'S RIGHT TO CARRY OUT THE WORK WITHOUT TERMINATING THE EMPLOYMENT OF THE CONTRACTOR

- 4.4.1 If the Contractor neglects to carry on the Work in accordance with the Contract Documents or fails to perform any provision of the Contract, the Owner may, after written notice of the Contractor and Surety and without prejudice to any other remedy he may have, make good such deficiencies. In such case, an appropriate deduction shall be made from the payments then or thereafter due to the

Contractor of the cost correcting such deficiencies. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

ARTICLE 5 CONTRACTORS

5.1 DEFINITIONS

- 5.1.1 The Contractor is the person, or organization which whom this Contract is made by the Owner. The term Contractor identified as such in the Agreement means the Contractor or his authorized representative.

5.2 REVIEW OF CONTRACT DOCUMENTS

- 5.2.1 The Contractor shall carefully study and compare the Contract Documents and shall at once report to the Architect or Engineer any error, inconsistency or omission he may discover. The Contractor shall not be liable to the Owner for any errors, inconsistencies or omissions in the Contract Documents. The Contractor shall take no advantages of any such errors, inconsistencies or omissions. The Architect or Engineer after being notified by the Contractor of such errors, inconsistencies or omissions will make the corrections and interpretations as may be deemed necessary for fulfilling the intent of the Contract Documents.

5.3 SUPERVISION AND CONSTRUCTION PROCEDURES

- 5.3.1 The Contractor shall supervise and direct the work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequence and procedures and for coordinating all portions of the work under the contract. The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Architect or Engineer, the Inspectors and other Contractors in every way possible, in order to comply with the Contract Documents.

5.4 LABOR AND MATERIALS

- 5.4.1 Unless otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, construction equipment and machinery, water, light, power, transportation, superintendence, temporary construction of every nature, utilities, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the Work within the contact time.

5.5 WARRANTY

- 5.5.1 The Contractor warrants to the Owner that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of the best quality, free from faults and defects and in conform once with the Contract Documents. If required by the Architect or Engineer the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

5.6 TAXES

- 5.6.1 The Contractor shall pay all sales consumers, use and any other taxes required by law and necessary for the execution and completion of this Contract.

5.7 PERMITS, FEES AND NOTICES

- 5.7.1 The Contractor shall secure and pay for all permits, governmental fees and licenses necessary for the prompt of execution and completion of this Contract, which are applicable at the time the bids are received.
- 5.7.2 The Contractor shall give notice and comply with all Federal, Commonwealth and Municipal laws, ordinances, rules, regulation, by-laws and all orders or decrees as exist at present or may be enacted later by bodies or tribunals having any jurisdiction or authority which in any manner affect those engaged or employed on the work or which in any way affect the progress of the work. The Contractor shall save the Owner and its representatives harmless from any claim or liability arising from or based on the infraction or violation of any such laws, ordinances, rules, regulations, by-laws and all orders or decrees. Should the Contractor observe that the Contract Documents are at variance with any Federal, Commonwealth and Municipal Laws, ordinances, rules, regulations, by-law, and all orders or decrees, he shall promptly notify the owner in writing and the owner shall instruct the Contractor as to his further procedure. In the event of any change in the Contract Documents to, comply with any Federal, Commonwealth and Municipal laws, ordinances, rules, regulation, by laws and all orders or decrees and such change involves a change in the contract price, it will be adjusted as provided in the contract Documents. If the Contractor performs any work knowing it to be contrary to such Federal, Commonwealth and Municipal laws ordinances, rules, regulations, by-laws, and all orders or decrees and without such notice to the owner, the Contractor shall assume full responsibility therefore, and shall bear all costs arising there from.

5.8 SUPERINTENDENT

- 5.8.1 The Contractor shall employ a competent construction superintendent and necessary assistants who shall be in attendance at the Site at all times during the prosecution of the Work (the "Superintendent"). The superintendent shall be satisfactory to the Owner or its representatives and shall not be changed except

with the consent of the Owner, unless the Superintendent proves to be unsatisfactory to the Contract and ceases to be in his employ. The Superintendent shall be invested with authority to act Contractor on all matters that may arise during the prosecution of the Work and all the instructions given to him by the Owner or his authorized representatives shall be as binding as if given directly to the Contractor. Important communications will be so confirmed in writing. Oral communications will be confirmed in writing in each case. The Superintendent shall be furnished by the Contractor irrespective of the total amount of the Work. The Contractor shall, before commencing the Work, submit to the Owner that name qualifications of the Superintendent.

5.9 RESPONSIBILITY FOR THOSE PERFORMING THE WORK

- 5.9.1 The Contractor shall be responsible to the Owner for he acts and omissions of all of his employees and Subcontractors, their agents and employees and all other persons performing any portion of the Work under an agreement with the Contractor.
- 5.9.2 The Contractor shall at all time enforce strict discipline and good order among his employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.
- 5.9.3 The Contractor shall rebuild, repair, restore and make good any injuries or damages to any portion of the work before its completion and acceptance, and shall bear the expense thereof, except damage to the work due to unforeseeable causes beyond the control of and without fault or negligence of the Contractor, including but not restricted to acts of God as defined in Article 9, of the public enemy, acts of the government, or partial acceptance by the Owner.
- 5.9.4 In case of temporary suspension of Work from any cause whatsoever, the Contract shall be responsible for the Project and shall take such reasonable precautions as may be necessary to prevent damage to the Project, provide suitable drainage and erect necessary temporary structures, signs or other facilities, at its expense.

5.10 PROSECUTION AND PROGRESS

- 5.10.1 Immediately after being awarded the Contract, the Contractor shall deliver to the Owner a construction progress schedule in form satisfactory to the Owner showing the proposed dates of commencement and completion of each of the variation items of the work. This schedule after approved by the Owner shall become a part of the Contract Documents and shall be revised as required by the conditions of the Work, subject to the Owner's approval.
- 5.10.2 Immediately after receipt of award, the Contractor and the Architect or Engineer will establish a mutually agreeable date on which a preconstruction conference will be held.

5.10.3 After the Contract has been executed, the Contractor will be formally notified to proceed with the work or services provided in the Contract. The Notice to Proceed will stipulate the date in which it is expected the Contractor will begin construction and from which date contract time will be charged.

5.10.4 The Contractor shall start work on the part of the project set forth in the progress schedule, Special Provisions or Drawings, and the work shall be conducted in such manner and with sufficient materials, equipment and labor as considered necessary to insure its completion in accordance with the Contract Documents within the time set forth in the Contract.

5.11 DRAWINGS AND SPECIFICATIONS AT THE SITE

5.11.1 The Contractor shall keep available at the site for the Owner and his representative's one copy of the Contract Documents and all modifications, in good order and marked to record all changes made during construction.

5.12 SHOP DRAWINGS AND SAMPLES

5.12.1 Shop Drawings" are graphic depictions, drawings; diagrams, illustrations, schedules, performance charts, brochures and other data are prepared by eth Contractor or nay Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

5.12.2 Samples are physical examples furnished by the Contractor to illustrate materials, equipment or workmanship, and to establish standard by which the Work will be judged.

5.12.3 The Contractor shall review, stamp with his approval and submit, with reasonable promptness and in orderly sequence so as to cause no delay in the Work or in the work of any other contractor, all Shop Drawings and Samples required by the Contract Documents or subsequently by the Owner as covered by Contract Modifications. Shop drawings and Samples shall be properly identified as specifically as the Owner mat require. At the time of submission, the contractor shall inform the Owner in writing of any deviation in the Shop Drawings or Samples from the requirements of the Contract Documents.

5.12.4 By approving and submitting Shop Drawings and Samples, the Contractor thereby represents that its has determined ad verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that it has verified and coordinated each Shop drawings and Sample with the requirements of the Work and the contract Documents.

5.12.5 The Owner, through the Engineer and the Supervisor, will review and approved Shop Drawings and Sample with reasonable promptness so as to cause no delay, but only for conformance with the designed concept of the Project and with the information given in the Contract Documents. The Owner's approval of a separate item shall not indicate approval of an assembly in which the item functions.

5.12.6 The Contractor shall make any corrections required by the Engineer and shall resubmit the required number of corrected copy of Shop drawings or new Samples until approved. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Engineer on previous submissions.

5.12.7 The Owner's approval of Shop Drawings or Samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents, unless the Contractor has informed the Owner in writing of such deviation, nor shall the Owner's approval relieve the Contractor from responsibility for errors or omissions in The Shop Drawings or Samples.

5.12.8 No portion of the Work requiring a Shop Drawing or Sample submission shall be commenced until the submission has been approved by the Owner. All such portions of the Work shall be in accordance with approved Shop Drawings and Samples.

5.13 USE OF SITE

5.13.1 The Contractor shall confine operations at the Site areas permitted by Applicable Laws and the Contract Documents and shall not unreasonably encumber the Site with any materials or equipment.

5.14 CUTTING AND PATCHING OF WORK

5.14.1 Except as may be provided elsewhere, the Contractor shall do all cutting, fitting or patching of the Work as may be required to make its several parts fit together properly, and shall not endanger any portion of the Work by cutting, excavating or otherwise altering the Work or any part of it.

5.15 CLEANING UP

5.15.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the Work he shall remove all his waste materials and rubbish from and about the Project as well as his tools, construction equipment, machinery and surplus materials, and shall clean all glass surfaces and leave the Work "broom-clean", or its equivalent, except as otherwise specified.

5.15.2 If the Contractor fails to clean up, the Owner may do so and the cost thereof shall be charged to the Contractor as provided in Paragraph 4.4.

5.16 INDEMNIFICATION

5.16.1 The Contractor, for itself, its agents, employees, successors and assigns, agrees to protect, indemnify and save the Owner, its officers, agents, employees, successors and assigns harmless from every kind and character of damages, losses. Expenses, demands, claims, actions or causes of actions together with any and all losses, costs or expenses in connection therewith or related thereto, asserted by any person or persons arising or in any manner growing out of or incident to the Work performed or to be performed and operations to be conducted by the Contractor, its officers, agents and employees, and its subcontractors, its officers, agents and employees or any other persons, firm or corporation whatsoever under this contract or account of personal injuries, including death, and damages to property of every kind and character arising from any cause whatsoever, whether such injuries, death or damage result from or are claimed to have resulted from, the negligence of the Contractor, its officers, agents or employees, or the subcontractors, their officers, agents or employees, or whether resulting from alleged to have resulted from, concurrent negligence of the Owner, its officers, agents or employees and the Contractor, its officer, agents or employees and/or the subcontractors, their officers, agents or employees; and the Contractor at his own expense, shall defend any suit or action brought against the Owner based on any such alleged injury, death or damage and shall pay all damages, costs and expenses including attorney's fees, in connection therewith or in any manner resulting there from.

5.16.2 The policy shall be specifically endorsed to cover the liability assumed by the named insured under the contract, and shall quote the above "Save Harmless" clause.

5.16.3 The limits of insurance for this coverage shall be the same as for the Comprehensive General Liability Policy.

ARTICLE – 6 SUBCONTRACTORS

6.1 DEFINITION

6.1.1 A Subcontractor is a person or organization who has a direct contract with the Contractor to perform any of the work at the site. The term Subcontractor as referred throughout the Contract Documents means the Subcontractor or his authorized representative.

6.1.2 A "Sub-subcontractor" is a person or organization who has a direct or indirect contract with a Subcontractor to perform any Work at the site. The term Sub-subcontractor as referred throughout the Contract Documents means the Subcontractor or his authorized representative.

- 6.1.3 Nothing contained in the Contract Documents and specifically in this Article 6 shall create any contractual relationship or obligation between the Owner and any Subcontractor or Sub-subcontractor.

6.2 AWARD OF SUBCONTRACTS FOR PORTIONS OF THE WORK

- 6.2.1 Unless otherwise specified in the Contract Documents, the Contractor, as soon as practicable after the award of the Contract, shall furnish to the Owner in writing for his acceptance a list of the names of the Subcontractors proposed for the principal portions of the Work. The Owner shall promptly notify the Contractor in writing if, after due investigation, has reasonable objection to any Subcontractor on such list and does not accept him. If within fifteen (15) days from submittal by the Contractor, the Owner or the Engineer fails to make object to any Subcontractor on the list, it shall constitute acceptance of such Sub- contractor.
- 6.2.2 The Contractor shall not contract with any Subcontractor or any person or organization (including those who are to furnish materials or equipment fabricated to a special design) proposed for portions of the Work designated in the Contract Documents or, if none is so designated, with any Subcontractor proposed for the principal portions of the Work who has been rejected by the Owner.
- 6.2.3 If the Owner refuses to accept any Subcontractor or person or organization on a list by the Contractor in response to the requirements of the Contract Documents the Contractor shall submit an acceptable substitute. No increase in the Contract Price or the Contract Time shall be granted for any such substitution.
- 6.2.4 The Contractor shall not make any substitution any Subcontractor who has been accepted by the Owner, unless the substitution is acceptable by the Owner.
- 6.2.5 Unless otherwise specified, the Contractor's own forces shall no less than fifty (50) percent of the original Contract Price. Any items designated in the Contract Documents as "Specialty Items" shall be deducted from Contract Price before computing the amount of the work required to be performed by the Contractor with his own organization.

6.3 SUBCONTRACTUAL RELATIONS

- 6.3.1 All work performed for the Contractor by a Subcontractor shall be conducted pursuant to an appropriate agreement between the Contractor and the Subcontractor (and where appropriate between Subcontractors and Subcontractors) which shall, at a minimum, contain provisions that:

.1 Preserve and protect the rights of the Owner under the Contract with respect to the Work to be performed under the Subcontract so that the subcontracting thereof will not prejudice such rights.

.2 Require such Work to be performed in accordance with the requirements of the Contract Documents.

.3 Require submission to the Contractor of applications for payment under each subcontract to which the Contract is a party, in reasonable time to enable the Contractor to apply for payment in accordance with Article 8, below.

.4 Require that all claims for additional costs, extensions of time, damages for delays or otherwise with respect to subcontracted portions of the Work shall be submitted to the Contractor (via any Subcontractor or Sub-subcontractor where appropriate) in sufficient time so that the Contractor may comply in the manner provided in the Contract Documents for similar claims by the Contractor upon the Owner.

.5 Waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by the property insurance described in Section 10.5, except such insurance held by the Owner as trustee under Section 10.5; and

.6 Obligate each Subcontractor specifically to consent to the provisions of this Section.

6.4 PAYMENT TO SUBCONTRACTORS

6.4.1 The Contractor shall pay each Subcontractor upon receipt of payment from the Owner, an amount equal to the percentage of completion allowed to the Contractor on account of such Subcontractor's Work, less the percentage retained from payments to the Contractor. The Contractor shall also require each Subcontractor to make similar payments to his subcontractors.

6.4.2 If the Owner fails to issue a Certificate for Payment due to any of the Contractors and not the fault of a particular Subcontractor, the Contractor shall pay that Subcontractor on demand, made at any time after the Certificate for Payment should otherwise have been issued, for his Work completed, less the retained percent- age.

6.4.3 The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor under Article 12, and it shall require each Subcontractor to make similar payments to its subcontractors.

6.4.4 The Owner may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding percentage of completion certified to the Contractor on account of Work performed by such Subcontractors.

6.4.5 The Owner shall not have any obligation to pay or to see to the payment of any moneys to any Subcontractor except as may otherwise be required by law.

ARTICLE 7 SEPARATE CONTRACTS

7.1 OWNERS RIGHT TO AWARD SEPARATE CONTRACTS

- 7.1.1 The Owner reserves the right to award other contracts in connection with other portions of the Project under these or similar Conditions of the Contract.
- 7.1.2 When separate contracts are awarded for different portions of the Project, "The Contractor" in the Contract Documents in each case shall be the contractor who signs each separate contract.

7.2 MUTUAL RESPONSIBILITY OF CONTRACTORS

- 7.2.1 The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall properly connect and coordinate his Work with theirs.
- 7.2.2 If any part of the Contractor's Work depends for proper execution or results upon the work of any other separate contractor the Contractor shall inspect and promptly report to the Architect or Engineer any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor so to inspect and report shall constitute acknowledgement that the other contractor's work is suitable to receive his Work, except as to defects which may develop in the other separate contractor's work after the execution of the Contractor's Work. Nothing in this subparagraph shall, however, make the Contractor responsible for the acceptability of other Contractor's Work.
- 7.2.3 Should the Contractor cause damage to the work or property of any separate contractor on the Project, the Contractor shall, upon due notice, settle with such other contractor by agreement or arbitration, if he will so settle. If such other contractor by agreement or arbitration, if he will so settle. If such separate contractorsues the Owner or initiates an arbitration proceeding on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor who shall defend such proceedings at the Owner's expense; and if any judgment or award against the Owner arises there from the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorney's fees and court or arbitration costs which the Owner has incurred.

7.3 CUTTING AND PATCHING UNDER SEPARATE CONTRACTS

- 7.3.1 Each contractor under separate contracts shall be responsible for any cutting, fitting and patching that may be required to complete his Work except as otherwise specifically provided in the Contract Documents. A Contractor shall not endanger any work of any other contractors by cutting, excavating or otherwise altering any work and shall not cut or alter the work of any other contractor except with written consent of the Architect or Engineer.

7.3.2 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefore.

7.4 OWNER'S RIGHT TO CLEAN UP

7.4.1 If a dispute arises between the separate contractors as to their responsibility for cleaning up as required by Paragraph 5.5, the Owner may clean up and charge the cost thereof to several contractors as the Architect or Engineer shall determine to be just.

ARTICLE 8 MISCELLANEOUS PROVISIONS

8.1 GOVERNING LAW

8.1.1 The Contract shall be governed by the laws of the Commonwealth of Puerto Rico.

8.2 SUCCESSORS AND ASSINGS

8.2.1 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representative to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner.

8.3 WRITTEN NOTICE

8.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known by the person who gives the notice.

8.4 NOTICE OF INJURIES OR DAMAGES

8.4.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known by the person who gives the notice.

8.5 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

8.5.1 Unless otherwise specified in the Contract Documents, the Contractor shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of this Contract and also Labor and Material Payment Bond in an amount not less than one hundred percent (100%) of the Contract Sum as security for the payment of all persons performing

- 8.5.2 labor on the Project under this Contract and furnishing materials in connection with this Contract. The Performance Bond and Labor and Material Payment Bond shall deliver to the Owner not later than the date of execution of the Contract.

8.6 RIGHTS AND REMEDIES

- 8.6.1 The duties and obligations imposed by the Contract Documents and the rights and remedies available there under shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

8.7 ROYALTIES AND PATENTS

- 8.7.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from the loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner.

8.8 PROCUREMENT AND DELIVERY OF MATERIALS

- 8.8.1 The Contractor shall procure with reasonable diligence and deliver to the job site all materials required to insure timely execution and completion of the work.
- 8.8.2 Within a period of ten (10) calendar days after the Owner's approval, the Contractor will be required to place with the manufacturer or manufacturer's representative all orders for materials and or equipment not commercially produced or available in Puerto Rico.
- 8.8.3 Delivery at the site of materials and equipment required for the execution and completion of the work shall be schedule at a convenient time within the limits fixed for the termination of the contract so as to avoid delays in the prosecution and completion of the work.

8.9 SAMPLES AND TESTS

- 8.9.1 The Contractor shall furnish promptly for approval without additional charge to the Owner, all materials reasonably necessary for any test as stipulated under the Technical Specifications or as may be required by the Architect or Engineer.

8.10 FEDERAL PROVISIONS

- 8.10.1 When the United States Government pays all or any portion of the cost of a project, the Federal laws and the rules and regulations made pursuant to such laws must be observed by the Contractor, and the work shall be subject to the inspection of the appropriate Federal Agency.

8.10.2 Such inspection shall in no sense make Federal Government a party to this Contract and will in no way interfere with the rights of either party hereunder.

8.10.3 The Contractor shall extend the same courtesies to the representative of the Federal Government as are required to be extended to representatives of the Government of Puerto Rico.

8.11 MAINTENANCE DURING CONSTRUCTION

8.11.1 The Contractor shall maintain the work during construction and until the project is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that all work covered by the Contract is kept in satisfactory and acceptable conditions at all time.

8.11.2 All cost of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

8.11.3 If the Contractor, at any time fails to comply with the provisions of paragraph 8.11, the Architect or Engineer will immediately notify the Contractor of such non-compliance. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Architect or Engineer may immediately notify the Contractor of such notice, the architect or Engineer may immediately notify the Contractor of such non-compliance. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after the receipt of such notice, the Architect or Engineer may immediately proceed to maintain the project, and the entire cost of this maintenance will be deducted from monies due or to become due the Contractor on his Contract.

ARTICLE 9 TIME

9.1 DEFINITIONS

9.1.1 The Contract Time is the period of time allotted in the contract documents for completion of the work.

9.1.2 The date for commencement of the Work shall be the date established in the Notice to Proceed.

9.1.3 The date of substantial completion of the work or designated portion thereof is the date certified by the Architect or Engineer when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the work or designated portion thereof for the use for which it is intended.

9.1.4 The term day as used in the Contract Documents shall mean calendar day.

- 9.1.5 Acts of God are events in nature so extraordinary that the history of climate variations and other conditions in the particular locality affords no reasonable warning of them, such as an earthquake, hurricane or other cataclysmic phenomenon. A rain, windstorm, flood or other natural phenomenon of normal intensity of the particular locality shall not be constructed [considered].

9.2 PROGRESS AND COMPLETION

- 9.2.1 All time limits stated in the Contract Documents are of the essence of the contract.
- 9.2.2 OMIT.
- 9.2.3 OMIT.
- 9.2.4 The Contractor shall begin the work on the date of commencement as defined in subparagraph 9.2.1. He shall carry the work forward expeditiously with adequate forces and shall complete it within the Contract Time.
- 9.2.5 The date or time of completion included in the Contract, shall be the date of Substantial Completion as defined in Subparagraph 9.1.3, including authorized extensions.

9.3 DELAYS AND EXTENSIONS OF TIME

- 9.3.1 No extension of the completion date will be allowed for any reason as provided below:

.1 If satisfactory fulfillment of the Contract with authorized extensions and increase shall require the performance of work in greater quantities than those set forth in proposal so that the total final payment is greater than the total original contract price, then the time allowance may be increased on a basis commensurate with amount and difficulty of the added work.

.2 In case of total suspension ordered not due to any fault of the Contractor, the total number of calendar days during which the work is suspended shall be added to the Contract Time. In case of partial suspension ordered by the Owner not due to any fault of the Contractor, the Contract Time maybe extended to extent of the effect that such suspension may bear on the Contract, as determined by the Owner.

.3 In case of damages to the work due to unforeseeable causes such as Acts of God or by public enemy, the Owner may make allowance of Contract Time for the time required to repair the damage and allowance of Contract Time has been made for the cost therefore, said amount shall not be considered in the total cost of the contract for the purpose of time extension.

.4 In case of delays or interruptions of the Work caused by any Act of the Owner, or by separate Contractor employed by the Owner, or by labor disputes, fire, unusual delay in transportation, unavoidable casualties, by any other cause not attributable to the fault of negligence of the Contractor, then the Contract Time shall be extended by written order for reasonable time as the Architect or Engineer may determine.

.5 Additional time will be allowed if it at the time of executing a Change Order, Extra order, Extra Work Order Supplemental Agreement, a time extension is agreed upon and so stipulated in the written order or agreement, in which case the added cost of such work will not be considered for time extension. If no time extension is stated, any added cost resulting thereof will be considered for time extension.

.6 As certified by the Resident Engineer or Resident Inspector, additional time will be allowed due to weather conditions which render the performance of work impossible.

9.3.2 Extension in the Contract Time shall not be considered or allowed for allowing reasons:

1. Suspensions of work ordered by the Owner, Architect or Engineer due to the fault of the Contractor or his Subcontractor.
2. Unauthorized suspensions of work by the Contractor.

9.3.3 All claims for extensions of time shall be made in writing to the Architect or Engineer not more than fifteen (15) days after the occurrence of the delay is directly attributable to the Owner. These claims shall include: a) the circumstances as may be required by Architect or Engineer, b) the operation (s) alleged to have been delayed, c) the calendar dates on which the operation (s) were delayed and d) the number of calendar days by which he is requesting the completion date to be extended.

9.4 LIQUIDATED DAMAGES

9.4.1 Should the Contractor or, the Surety in case of default, fails to complete all the work within the time specified in the Contract or as extended by the written authorization of the Owner, a deduction of the amount stipulated in the Special Conditions and the Agreement will be made for each and every calendar day that such work remains uncompleted after the expiration of the date of completion up to the date of substantial completion. This amount will be deducted from any money due or that may become due or that may become due the Contractor or his Surety under the Contract.

9.4.2 The amount stipulated in the Special Conditions and the Agreement shall be considered and treated not as a penalty, but as fixed and agree liquidated damages due the Owner by the Contractor or, by the Surety in case of default, by reason of public inconvenience, obstruction to traffic, interference with business, increasing of engineering, inspection and administrative cost to the Owner; and

other items which have caused an expenditure of public funds, resulting from the Contractor's or in case of default of the Surety's failure to complete the work within the time specified in the Contract or as extended by written authorized by the Owner.

9.4.3 Permitting the Contractor to continue and finish the Work or any part thereof after expiration of the date of completion shall in no way operate as a waiver after expiration of the date of completion shall in no way operate as a waiver on the part of the Owner of any of its rights under this contract.

9.4.4 OMIT.

ARTICLE 10 PAYMENTS AND COMPLETION, PAYMENT AND MEASUREMENT

10.1 CONTRACT SUM

10.1.1 The Contract Sum is the Contract Price as stated in the Agreement and is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents subjected to additions and deductions. The amount payable to the Contractor shall be the actual total cost of the work performed and accepted.

10.2 SCHEDULE OF VALUES

10.2.1 In Lump-Sum Contracts, the Contractor within fifteen (15) days after the date of execution of the Contract will submit for approval to the Architect or Engineer whichever applicable, a schedule of values of the various portions of the Work aggregating the total Contract Sum, divided so as to facilitate monthly partial payments, prepared in approved forms. Each item in the schedule of values shall include its proper share of overhead and profit, except that such initial disbursements as the portion completed for mobilization, temporary facilities, premiums for insurance and bonds any government regulations shall be separately itemized to facilitate its request in the first partial payment. This schedule when approved by the Architect or Engineer shall be used only as a basis for the monthly partial payments.

10.2.2 In Unit-Price Contracts, the Contractor will submit for approval to the Architect or Engineer whichever applicable a schedule of values for those Lump-Sum bid items only. This schedule when approved by the Architect or Engineer shall be used only as a basis for the monthly partial payments.

10.3 PROGRESS PAYMENTS

10.3.1 After the Architect or Engineer has approved the schedule of values and progress submitted by the Contractor, partial payments will be made periodically as the work progresses, of the values of the work performed and accepted during the preceding calendar month on a basis of the periodically certificate for partial payment duly certified by the Resident Engineer or Resident Inspector and approved by the Architect or Engineer.

10.3.2 From each partial payment the Owner shall retain ten (10) percent of the estimated amount except as provided in subparagraph 10.3.3.

10.3.3 OMIT.

10.3.4 OMIT.

10.3.5 Advance payment may be made to the Contractor for the ninety (90) percent of the cost of the materials which are to be incorporated into the work and which are on hand at the job site or stored in acceptable storage places in the vicinity of the project. At the option of the Architect or Engineer payment may be made to the Contractor for materials fabricated, precast or otherwise produced for this specific project and stored at an approved site in Puerto Rico other than in the immediate vicinity of the project. No advanced payment will be made on living or perishable plant materials. In the case of materials which have been purchased by the Contractor, the cost shall be determined by the vendor's invoice. In the case of materials manufactured or obtained by the Contractor through the use of his own workmen or equipment, the cost shall be determined by the Architect or Engineer in accordance with and based upon that particular unit of the project in which the materials are to be utilized. The Contractor shall present signed receipts or other documentary evidence to prove that the cost of the materials for which he is to receive advance payment has been paid in full. If the materials have not been paid for, the invoice shall be accompanied by a release from the materials dealer expressing his conformity with the payment for such materials to the Contractor by the Owner. If at any time after the Contractor has received advance payment for materials, or any part or parts thereof, are defective, damaged or lost, or that said materials, or part thereof, do not conform to the specifications, the Architect or Engineer shall proceed to deduct from any of the succeeding partial payments due the Contractor for work actually performed, a sum sufficient to cover the cost of material, or part or parts thereof, found to be defective, damaged or lost (except as covered in Subparagraph 11.2.4). Materials for which the Contractor has received advance payment shall be properly housed or stored in a manner that will insure the preservation of their quality and fitness for the work. Moreover, the Contractor shall not withdraw said materials for any purpose other than incorporation into the project, unless he has written authority from the Owner to do so. An amount equal to the value of materials incorporated into the work and for which an advance payment has been made, shall be deducted from the partial estimates.

10.3.6 All work performed or labor and materials furnished on a force account basis shall be paid for as follows:

.1 Labor: For all labor, and for foremen in direct charge of specific operations, the Contractor shall receive the rate of wage agreed upon in writing before beginning work for each and every hour that said labor and foremen are actually engaged in such work. The Contractor shall also receive the actual cost paid to or on behalf of workmen by reason of subsistence and travel allowance, health and welfare benefits, pension fund benefits and other benefits when such amounts are required

by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work. To say cost an amount equal to 20 percent of the sum thereof shall be added, unless otherwise specified in the Special Conditions.

.2 Materials; For all materials accepted by the Architect or Engineer and use, the Contractor shall receive the actual cost of such materials, delivered on the work, including transportation charges paid by him. To said the cost an amount equal to 15 percent of the sum thereof shall be added, unless otherwise specified in the Special Conditions.

.3 Equipment:

a. Equipment on the Work: For all equipment authorized by the Architect or Engineer to be used on the force account work the Contractor shall receive rental payment computed using an hourly rate which is 1/176th of the monthly rate listed in the Associated Equipment Distributor's current rental book. Rental will be paid for the time in hours the equipment is in actual operation on the force account work. The minimum rental time to be paid for each day operation shall be not less than eight (8) hours except if the Contractor uses such equipment on other work, then he will be paid only for actual time used in the force account work. If monthly rates for the equipment actually being used are not listed in the Associated Equipment Distributor's current rental book, the rental rate shall be computed using an hourly rate which is 1/176th of the prevailing monthly rates being paid for such equipment in the area in which the project is located. To compensate for fuel, lubricants, all repairs. And all other operating and maintenance costs other than operation's wages, the Contractor will be reimbursed thirty five (35) percent of the rental rates specified above. To the rental rates specified above the amount equal to fifteen (15) percent shall be added, to equipment not owned by the Contractor.

b. Equipment not on the Work: For the use of equipment moved in on the Work and used exclusively for the work paid for on a force account basis, the Contractor will be paid the rental rates listed in the Associated Equipment Distributor's current rental book. If rental rates for the equipment are not listed in the Associated Equipment Distributor's current rental book, the Contractor shall receive the prevailing rental rates being paid for such equipment in the area which the project is located. The rental time to be paid shall be the time that the equipment is at the site of the force account work, and shall terminate at the end of the day on which the Architect or Engineer or his representative directs the Contractor to discontinue the use of such equipment, including the time required to move the equipment to and from the location of the force account work. If the Architect or Engineer determines that the contractor could not reasonably obtain the equipment at the rental rates listed in the Associated Equipment Distributor's current rental book, the Architect or Engineer may authorize payment for the use of such equipment at equipment rental rates in excess of those listed as applicable for the use of such equipment subject to the following conditions: 1) The Architect or

Engineer shall specifically approve the necessity for the use of particular equipment on such work, 2) The Contractor shall establish to the satisfaction of the Architect or Engineer that such equipment cannot be obtained from his normal equipment source at the rate listed in the Associated Equipment Distributor's current rental book, 3) The Contractor shall establish to the satisfaction of the Architect or Engineer that the proposed equipment rental rate for such equipment from his proposed source is reasonable and appropriate for the expected period of use, and that 4) the Architect or Engineer shall approve the equipment source and the equipment rental rate to be paid by the owner before the Contractor begins work involving the use of said equipment. The Contractor will be reimbursed for the force account work and its return to its original location. Should the Contractor desire the return of the equipment to a location other than its original location, the Owner will pay the cost of transportation, original location, the Owner will pay the cost of transportation, provided such payment shall not exceed the cost of moving the equipment to the site of the force account work. The minimum rental time to be paid for each of operation shall be not less than one day. It follows then that the rental time to be paid during the entire rental period will be in accordance with the followings: 1) If the equipment is operated less than 3 days rental time will be paid at a daily rate. 2) if operated more than three days but less than three (3) weeks, rental time will be paid at a weekly rate, and 3) if operated more than three (3) weeks, rental time will be paid at a monthly rate. Equipment which by its nature is rented on an hourly basis, the rental payment shall be computed using an hourly rate for the time in hours the equipment is in actual operation on the force account work as provided in Paragraph 10.3.6. 3a. rental time will not be allowed while equipment is inoperative due to breakdowns in excess of one day per breakdown. To compensate for fuel, lubricants, all repairs, and all other operating and maintenance costs other than operator's wages, the Contractor will be reimbursed thirty-five (35) percent of the rental rates specified above. To the rental rates specified above, an amount equal to fifteen (15) percent shall be added.

.4 Tools: No allowance shall be made for the use of small tools and manual equipment.

.5 Bond, Insurance, and Tax: For Workmen's compensation insurance premium unemployment insurance contribution, social security, taxes, any other employment taxes or fees required by law, and property damage and liability insurance premiums on the force account work, the Contractor shall receive the actual cost plus an amount equal to six (6) percent of actual cost. The Contractor shall furnish satisfactory evidence of the rate paid for such bonds insurance and taxes.

.6 Superintendence and Owner: No additional allowance shall be made for general superintendence, overhead or other costs for which no specific allowance is herein provided.

.7 Compensation as set forth above shall be received by the Contractor as payments in full of the extra work done on a force account basis.

.8 At the end of each day, the Contractor and the Resident Engineer or Resident Inspector shall compare records of the cost of work done on a force account basis. Copies of these records shall be made upon suitable forms and signed by both the Resident Engineer and Resident inspector and the Contractor or their authorized representatives and each party will retain one copy. All claims for extra work done on a force account basis shall be submitted each month to the Architect or Engineer together with receipted bills or certified statement of the cost of materials used and any other expenses in connection with said work.

.9 No payment will be made for force account work unless the contractor shall furnish the Architect or Engineer duplicate itemized statements of the cost of such force account work detailed as to the following:

1. Nature of work performed.
2. Name, classification, date, daily hours, total hours, rate benefits and extension for each laborer, foreman equipment operator.
3. Designation dates, daily hours, total hours, rental rate and extension for each unit of machinery and equipment.
4. Quantities of materials used, prices and extensions.
5. Transportation of materials.
6. Cost of insurance premiums and taxes.

10.3.7 Materials which have been delivered to the project in accordance with the requirement of the plans or Contract, but which, due to revisions or elimination of items authorized by the Architect or Engineer or due to discrepancies in the plans or Contract, are not used in the work, the Contractor upon request will be reimbursed for the actual verified cost of such material delivered at the project site, including handling charges less any discount allowed on the invoice, but with no percentage added, and such material will thereafter become the property of the Owner.

10.3.8 The Contractor warrants and guarantees that title to all work materials and equipment covered by a certification for payment, whether incorporated in the Project or not, will pass to the owner upon the receipt of such payment by the Contractor, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to this Article 10 as "liens", and that no Work, materials or equipment covered by a Certificate for Payment will have been acquired by the Contractor; or by any other person performing the Work at the site or furnishing materials and equipment for the Project subject to an agreement under which an interest therein or an encumbrance thereon is retained by seller or otherwise imposed by the Contractor or such other person.

10.3.9 The insurance of a Certificate for Payment will constitute a representation by the Resident Inspector, based on his observations at the site that the Work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the work is in accordance with the Contract Documents (subject to an evaluation of the Work in accordance with the Contract Documents 9subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to the results of any subsequent tests required by the Contract Documents correctable prior to completion, and to any specific, qualifications stated in his Certificate); and that the Contract is entitled to payment in the amount certified. In addition, the Owner's Final Certificate for Payment will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment have been fulfilled. However, by issuing a Certificate for Payment, the Owner or his representative shall not thereby be deemed to represent that he has made exhaustive or continuous on site inspections to check the quality or quantity of the Work or that he has re-viewed the construction means, methods, techniques, sequences or procedures, or that he has made any examination to ascertain how or for what purpose the Contractor has used the money's previously paid on account of the Contract Sum.

10.3.10 No certificate for progress payment, nor any progress payment, or any partial or entire use or occupancy of the Project by the Owner shall constitute an acceptance of any work not in accordance with the Contract Documents.

10.4 PAYMENTS WITHHELD

10.4.1 The Architect or Engineer without incurring in liability may decline to approve any certificate for Payment or, because of subsequently discovered evidence or subsequent inspection, he may nullify the whole or any part of any Certificate for payment previously issued, to such extent as may be necessary in his option to protect the Owner from loss because of:

1. Defective work not remedied
2. Failure of the Contractor to comply with any requirements of the Contract Documents.

10.5 MEASUREMENT AND PAYMENT

10.5.1 The determination of quantities of work acceptably completed under the terms of the contract will be made by the Architect or Engineer and based on measurements made by him or his assistants according to the units or measure for each item as shown in the proposal and by the method indicated in the corresponding specification for said item.

10.6 OMIT

10.7 SUBSTANTIAL COMPLETION AND FINAL PAYMENT

10.7.1 Partial Acceptance. If any time during the prosecution of the project Contractor substantially completes a unit or a portion of the project, he may request the Architect or Engineer to make final inspection of that unit portion. If the Architect or Engineer finds upon inspection that the unit has been substantially completed in compliance with the Contract Documents he may accept that unit as being completed and the contractor upon written notice may be relieved of further responsibility for that unit. Such partial acceptance shall in no way void or alter any of the terms of the contract.

10.7.2 Final Acceptance. Upon due notice from the contractor of presumptive completion of the entire project, the Engineer will make an inspection within (10) calendar days from notice. If all construction provided for and contemplated by the contracts is found completed to his satisfaction, that inspection shall constitute the final inspection and the Architect or Engineer will notify the Contractor in writing of the final acceptance. If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Architect or Engineer will give the Contractor the necessary instructions for correction of same, and the Contractor shall immediately comply with and execute such instruction. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the Architect or Engineer will notify the Contractor in writing of the final acceptance.

10.7.3 When the final acceptance has been duly notified by the Architect or Engineer as provided in Article 10.7.2, the Architect or Engineer shall prepare the final estimate of the various classes of work performed, and after the approval of such final estimate by the Owner and by the Contractor, there shall be paid to the Contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

10.7.4 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Owner 1) an Affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied, 2) consent of surety to final payment, 3) if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Owner and 4) the proper release from the Corporation of the State Insurance Fund (CFSE). If any Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund the Owner all moneys that the latter may be compelled to pay discharging such lien, including all costs and reasonable attorney's fees.

10.7.5 If after Substantial Completion of the Work final completion thereof is materially delayed through no fault of the Contractor, and the Architect or Engineer so confirms, the Owner shall, upon certification by the Architect or Engineer make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for work not fully completed or corrected is less than the retainage stipulated in the Contract Documents, and if bonds have been furnished as required in Subparagraph 8.5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Owner prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

10.7.6 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:

- 1) Unsettled liens and unsettled claims previously made in writing.
- 2) Faulty or defective work appearing after Substantial Completion, as specified in Subparagraph 14.2.2.
- 3) Failure of the Work to comply with the requirements of the Contract Documents, or
- 4) Terms of any special guarantees required by the Contract Documents.

10.7.7 The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and still unsettled.

10.7.8 OMIT.

ARTICLE 11 PROTECTIONS OF PERSONS AND PROPERTY

11.1 SAFETY PRECAUTIONS AND PROGRAMS

11.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the project.

11.2 SAFETY OF PERSONS AND PROPERTY

11.1.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

1. all employees on the Work and all other persons who may be affected thereby;
2. all the Work and all the materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors; and
3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities of construction.

- 11.2.2 The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.
- 11.2.3 When the use or storage of explosive or other hazardous materials or equipment is necessary for the execution of the project, the Contractor shall exercise the utmost care as not to endanger life or property and shall carry on such activities under supervision of property qualified personnel. The Contractor shall keep the Architect or Engineer informed as to his approval before blasting, when required. The Contractor, when required, shall use mats or other accepted means to reduce blasting. The contractor shall notify each public utility company and other private entities having facilities in the proximity to the site of the work of his intention to use explosives. Such notice shall be given sufficiently in advance to enable the companies and the private entities to take such steps as they may deem necessary to protect the property from injury.
- 11.2.4 All damage or loss to any property referred to in Subparagraph 11.2.12 and 11.2.13 caused in whole or in part by the contractor, any Subcontractor, or any one directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, shall be remedied by the Contractor, except damage or loss attributable to faulty Drawing or Specifications or to the acts or omissions of the Owner or Architect or Engineer or anyone employed by either of them or for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor.
- 11.2.5 The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents.
- 11.2.6 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.
- 11.2.7 The Contractor shall be responsible for the protection of all public and private property, monuments, telephone and telegraph lines and other public utilities along and adjacent to the project. He shall use every precaution to prevent damage to pipes conduits and underground structures and shall cooperate with the owners of utility companies in the removal or relocation of their facilities in such a way that their operation is not interrupted. The time and labor for the relocation of these facilities shall be reduced to a minimum, so that the services rendered by them be not unnecessarily interrupted. Any of these services that may be affected by the Contractor shall be repaired by him immediately. The Contractor shall protect carefully all property limit monuments. He shall notify theresponsible person or agency, if these must be moved or changes in any way, and shall not affect then until and authorized agent has referenced them and authorized their relocation or removal. All roads adjacent to or intersecting the project shall be protected from

damage. The contractor shall take all necessary precautions to preserve all objects of art, antique and minerals found in the area of work or in construction operations and he shall notify about them to the Engineer, Architect or Contracting Officer. All such articles or objects shall be delivered the Owner and shall be extracted and removed in accordance with the instructions of the Architects or Engineer. When any direct or indirect damage is done to the public or private property by an act, omission, neglect or fault of the Contractor in the execution of the work, such property shall be restored by the Contractor without the right to additional compensation. Otherwise the Contractor shall compensate the affected person or entity in a form acceptable to parties.

11.2.8 The Contractor shall provide and maintain in neat sanitary conditions such accommodations for the use of his employees as may be necessary to comply with requirements and regulations of the Health Department and other bodies having jurisdiction there over. He shall neatly clean up all camp sites, dispose of all rubbish and perishable material and leave the premises in a neat and sanitary conditions when he has completed the occupancy of the site.

11.2.9 The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent silting of rivers, streams, lakes and reservoirs. Construction of drainage facilities as well as performance of other contract work which will contribute to the control of situation shall be carried out in conjunction with earthwork operations as soon thereafter as is practicable. Unless otherwise approved in writing by the Architect or Engineer, construction operations in rivers, streams, lakes, and reservoirs shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. Rivers, streams, lakes and reservoirs shall promptly cleared of all false work, pilling, debris, or other obstructions placed therein or caused by the construction operations. Frequent fording or live streams with construction equipment will not be permitted. Temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Architect or Engineer, mechanized equipment shall not be operated in live streams except as may be required to construct channel and temporary or permanent structures. The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent pollution of rivers, streams, lakes or reservoirs. Pollutants such as chemicals, fuels, lubricants, bitumen's, raw, sewage and other harmful waste shall not be discharged into or alongside of rivers, streams, lakes or reservoirs or into natural or manmade channels leading thereto. The Contractor shall also comply with the applicable regulations relating to the prevention and abatement of water pollution.

11.2.10 In carrying out the work within or adjacent to Commonwealth National Forests, the Contractor shall comply with all regulations of the Commonwealth Fire services, Conservation Commission, Department of Agriculture, or other authority having jurisdiction, governing the protection of forests and the carrying out work within forests, and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep the areas in an orderly

condition, dispose of all refuse, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cess- pools, septic tanks and other structures in accordance with the requirements of the Forest Supervisor. The Contractor shall take all reasonable precaution to prevent and suppress forest fires and shall require his employees and subcontractors, both independently and at the request of Forest officials, to do all reasonable within their power to prevent and suppress and to assist in preventing and suppressing forest fires and to make every possible effort to notify a Forest official at the earliest possible moment of the location and extent of any fire seen by them.

11.3 EMERGENCIES

11.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion to prevent threatened damage injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in article 9 and 13 for Time and Changes in the Work.

ARTICLE 12 INSURANCE

12.1 CONTRATOR'S BOND

12.1.1 The Contractor must, within ten (10) consecutive calendars days from the date of Notice Award, furnish and file with the Owner, in form satisfactory to and with sureties approved by the Owner the following:

1. Performance Bond to guarantee the faithful performance of the Contract, in an amount equal to (100) percent of his bid.
2. Payment Bond including Labor Bond in a amount equal to (100) percent of his bid.
3. Evidence of the following insurance overages if required in the Contract Documents:
 - a. Workmen's Compensation Insurance Policy issued by the Puerto Rico State Insurance Fund.
 - b. Employer's Liability.
 - c. Comprehensive General and Automobile Liability Insurance.
 - d. Builder's Risk all risks form including earthquake.
 - e. Installation Floater Policy.

12.1.2 All the above referred to bonds and policies must be satisfactory to the Owner in compliance with the law, and in form and amount properly sufficient to protect the Owner.

12.1.3 It shall be the responsibility of the Contractor to maintain adequate insurance coverage at all times. Failure to maintain adequate coverage shall not relieve the Contractor of any contractual responsibility or obligation. The certificates filed with the Owner shall state that thirty (30) days written notice will be given to the Owner before any policy covered thereby is changed or canceled.

12.1.4 If at the due date of the policies, the project is still under construction and the Contractor has not renewed the policies the Owner can renew them and deduct the amount paid for the premium from the next payment.

12.2 WORKMEN'S COMPENSATION AND EMPLOYEES LIABILITY

12.2.1 This insurance shall protect the Contractor against all claims under applicable state workmen's compensation law. The Contractor shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not all within the provisions of workmen's compensation law. The liability limits shall not be less than:

Workmen's compensation	Statutory
Employer's Liability	\$1,000,000 each person

12.3 COMPREHENSIVE GENERAL AND AUTOMOBILE LIABILITY INSURANCE

12.3.1 Public liability insurance shall be written in comprehensive form and shall protect the Contractor against all claims arising out of any act or omission of the Contractor or his agents or employees. In addition, this policy shall specifically insure the contractual liability assumed by the Contractor under the General Conditions. The liability limits shall not be less than:

Bodily injury	1,000,000.00 each occurrence
Property damage	1,000,000.00 each occurrence
	1,000,000.00 aggregate

12.3.2 After the execution of the contract, in the event that the work may require blasting, explosive conditions, or underground operation, the comprehensive general liability coverage shall contain an endorsement relative to blasting, explosion, collapse of building, or damage to underground property at the expense of the owner.

12.3.3 The public liability insurance shall carry an endorsement in form satisfactory to the Owner to the effect that the Contractor shall save harmless the Owner from any claims and damages as per paragraph 5.16 (INDEMNIFICATION).

12.3.4 Automobile Liability insurance shall be written in comprehensive form and shall protect the Contractor against all claims for injuries to member of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles, and shall cover operation on or off the site of all motor vehicle, whether they are owned, no owned, or hired. The liability limits shall not be less than:

Bodily injury	\$1,000,000	each person
	\$1,000,000	each occurrence
Property Damage	\$1,000,000	each occurrence
	\$1,000,000	aggregate

12.4 BUILDER'S RISK

12.4.1 This insurance shall be written under and all risks form including earthquake and shall protect the Contractor and the Owner against damages to buildings, structures, and materials and equipment not otherwise covered under installation floater insurance. The amount of such insurance shall be not less that the insurance value of the work at completion less the value of the materials and equipment insured under installation floater insurance. Equipment such pumps, engine-generators, compressors, basin equipment, motors switchgear, transformers, panel boards, control equipment, and other similar equipment shall be insured under installation floater insurance when the aggregate value of the equipment exceeds \$10,000.00. If the work does not include the construction of structures, builders risk insurance may be omitted at the option of the owner as indicated in the contract documents. Builder's risk insurance shall provide for losses to be payable to the Contractor and the Owner as their interests may appear and shall contain a waiver of subrogation rights against the insured parties.

12.5 INSTALLATION FLOATER

12.5.1 The insurance shall protect the Contractor and the Owner from all insurable risks of physical loss or damage to materials and equipment not otherwise covered under builder's risk insurance, while in warehouses or storage areas, during installation, testing, and after the work is completed. It shall be of the "all risks" type, with coverage's designed for the circumstances which may occur in the particular work included in this contract. The coverage shall be for an amount not less than the insurable value of the work at completion, less the value of the materials and equipment insured under builder's risk insurance. The values shall include the aggregate value of the Owner's furnished equipment and materials to be erected or installed by the Contractor not otherwise insured under builder's risk insurance. Installation floater insurance shall provide for losses to be payable to the Contractor and the Owner as their interests may appear and shall contain a

waiver of subrogation rights against the insured parties. If the aggregate value of the Owner's furnished and Contractor's furnished equipment is less than \$10,000, such equipment may be covered under builder's risk insurance, and if so covered this installation floater insurance shall quote the insuring agreement and all exclusions as they appear in the policy; or in lieu of certificates, copies of the complete policy may be submitted.

12.6 SUBCONTRACTOR'S AND SUB-SUBCONTRACTOR'S INSURANCE

12.6.1 The contractor shall, throughout the performance of work under the contract, procure and maintain in effect, and require all subcontractors and others performing any such work to maintain in effect, insurance of the types and with limits not less than the minimum amounts specified above, of insure the activity of his subcontractors in his own policy.

ARTICLE 13 CHANGES IN THE WORK

13.1 CHANGE ORDERS AND EXTRA WORK ORDERS

13.1.1 The Owner without invalidating the Contract may order extra work or make changes in the Work within the general scope of the Contract consisting of additions, deletions of any or all of the quantities in the items of the Bid schedule or other revisions, the Contract sum and the Contract time being adjusted accordingly. All such alterations shall be authorized by Change Orders or Extra Work Orders and shall be executed under the applicable conditions of the Contract Documents. On Municipal projects the Change Orders will be tramited guided by the "Ley de Municipios Autónomos" and the "Reglamento de Subastas" that apply.

13.1.2 A Change Order is a written order to the Contractor signed by the Owner or his representatives, authorizing a change in the work or an adjustment in the Contract Time. In unit-price Contracts the Contractor shall perform the work as altered at the original unit prices.

13.1.3 In Lump Sum Contracts the cost or credit to the Owner resulting from Change in the Work shall be determined in one of the following ways:

.1 by mutual acceptance of a lump sum properly itemized;

.2 by unit prices stated in the Contract Documents or subsequently agreed upon; or

.3 by cost and a mutually acceptable fixed or percentage fee.

13.1.4 If none of the methods set forth in Subparagraph 13.1.3 is agreed upon, the Contractor, provided he receives a Change Order, shall promptly proceed with the Work involved. The cost of such Work shall then be determined as per paragraph 10.3.6.

- 13.1.5 If unit prices are stated in the Contract Documents of subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of work proposed will create a hardship.
- 13.1.6 The amount of credit to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in cost will be the amount of the actual net decrease as confirmed by the Architect or Engineer. When both additions and credits are involved in any one change, the allowance for overhead and profit shall be figured on the basis of net increase, if any.
- 13.1.7 Should concealed conditions encountered in the performance of the Work below the surface of the ground be at variance with the conditions indicated by the Contract Documents or should unknown physical conditions below the surface of the ground of an unusual nature, differing materially from those ordinary encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum shall be equitable adjusted by Change Order upon claim by either party made within twenty days after the first observance of the conditions.
- 13.1.8 If the Contractor claims that additional cost is involved because of (1) any written interpretation issued pursuant to Subparagraph 2.2.6, (2) any order by the Owner to stop the Work pursuant to Subparagraph 4.3 where the Contractor was not at fault, or (3) any written order for a minor change in the Work issued pursuant to Paragraph 13.3, the contractor shall make such claim as provided in Paragraph 13.2.
- 13.1.9 An Extra Work Order is a written order signed by the Owner or his representative authorizing a change in the Work, adjustment in the Contract Sum and the Contract time for services or work for which there is no applicable basis payment, either direct or indirect, provided in the proposal or the contract or if the resulting overruns or under runs of any item or items exceed certain percentages. The percentages and the method to be followed for unit price adjustment shall be as follows:
- .1 Overruns of more than twenty-five (25) percent of any major item or items shall require a negotiated unit price which shall be covered by a Supplemental Agreement. The original unit price shall apply to all work performed up to one hundred twenty-five (125) percent of the original proposal quantity for the item, and the negotiated unit price shall apply only to the quantity of work performed in excess of said 125 percent. If a satisfactory negotiated price cannot be agreed upon for any item or items, the Owner reserves the right to require the Contractor to perform the work by Force Account or to eliminate the increased quantity from the contract.

.2 Under runs of more than twenty-five (25) percent of any major item or items shall require a negotiated unit price for the units of work finally performed which shall be covered by a Supplemental Agreement. The total quantity of work finally performed shall be paid at the negotiated unit price, but in no case will the amount paid for the total quantity performed exceed seventy-five (75) percent of the original total amount for the item.

.3 Overruns of a minor item to the extent that the amount of the item calculated at the original unit price, exceeds 6.25 percent of the original contract amount, shall require a negotiated unit price which shall be covered by a Supplemental Agreement. The original unit price shall apply to all work performed in the item up to a value of 6.25 percent of the original contract amount and the negotiated unit price shall apply to the additional work. If a satisfactory negotiated price cannot be agreed upon, the Owner reserves the right to require the Contractor to perform the work by force account or to eliminate the increased quantity from the Contract.

13.1.10 Subparagraphs 13.1.9, 13.1.9.1, 13.1.9.2. and 13.1.9.3 shall not apply to Lump Sum Contracts.

13.2 CLAIMS FOR ADDITIONAL COST

13.2.1 If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Architect or Engineer written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life property. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order or Extra Work Order.

13.3 MINOR CHANGES IN THE WORK

13.11 The Owner shall have authority to order minor changes in the Work not involving and adjustment in the Contract Sum or an extension of the Contract time and not inconsistent with the intent of the Contract Documents. Such changes may be effected by Field Orders or by other written order. Such changes shall be binding on the Owner and the Contractor.

13.4 FIELD ORDERS

13.4.1 The Architect or Engineer may issue written Field Orders covering minor changes in the Work without change in Contract Sum or Contract Time. The Contractor shall carry out such Field Orders promptly.

ARTICLE 14 UNCOVERING OF WORK

14. 1 UNCOVERING WORK

- 14.1.1 If any Work should be covered contrary to the request of the Architect or Engineer, it must, if required by the Architect or Engineer, be uncovered for his observation and replace, at the Contractor's expense.
- 14.1.2 If any other work has been covered which the Architect or Engineer has not specifically requested to observe prior to being covered, the Architect or Engineer may request to see such work and it shall be uncovered by the Contractor. If such work be found in accordance with the Contract Document, the cost of uncovering and replacement shall, by appropriate Change Order or Extra Work Order, be charged to the Owner. If such work be found no in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by a separate contractor employed as provided in Article 7 and in that event the Owner shall be responsible for the payment of such costs.

14. 2 CORRECTION OF WORK

- 14.2.1 The Contractor shall promptly correct all work rejected by the Architect or Engineer as defective as failing to conform to the Contract Documents whether observed before or after Substantial Completion shall bear all cost of correcting such rejected of work.
- 14.2.2 If, within one year after the Date of Substantial Completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any of the Work is found to be defective of not in accordance with the Contract Documents, the Contractor shall correct it promptly.
- After receipt of a written notice form the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition as provided in Subparagraph 14. 3. 1. The Owner shall give such notice promptly after the discovery and confirmation of the condition.
- 14.2.3 All such defective or non-conforming Work under Subparagraph 14.2.1 and 14. 2. 2 shall be removed form the site within a reasonable time fixed in a written notice form the Architect or Engineer to that effect, and the Work shall be corrected to comply with the Contract Documents without cost to the Owner.
- 14.2.4 The contractor shall bear the cost of making good all work separate contractors destroyed or damaged by such removal or correction.
- 14.2.5 If the Contractor does not remove such defective or non-conforming Work within a reasonable time fixed by written notice form the Architect or Engineer, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage

within ten days thereafter, the Owner may upon ten additional days written notice sell such material and equipment at auction or at private sale and shall account for the net proceeds thereof, after deducting all the cost that should have been borne by the Contractor including compensation for additional expenses incurred by the Owner. In such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

14.2.6 If the Contractor fails to correct such defective or non-conforming Work, the Owner may correct it in accordance with Paragraph 4. 4.

14.3. ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

14.3.1 If the Owner prefers to accept defective or non-conforming Work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the Contract Sum, or if the amount is determined after final payment, it shall be obtained from the Contractor or surety by any appropriate means.

ARTICLE 15 DISPUTES AND APPEALS

15.1. SETTLEMENT OF DISPUTES

15.1.1 All claims, disputes and other matters in question arising out of, or relating to, this Contract or the breach thereof, except for claims which have been waived by the making or acceptance of final payment as provided by Subparagraphs 10. 7. 7, shall be decided by the Architect or Engineer as provided in Subparagraphs 3. 2. 7, 3. 2. 8 and 3. 2. 9.

15.2 ARBITRATION (This section will not apply to Municipal projects)

15.2.1 In case of any dispute involving a change in contract price, the party not satisfied with the Architect or Engineer's written decision may request arbitration by filing a demand in writing with the Architect or Engineer within thirty (30) calendar days from the date of the decision.

15.2.2 In case a demand for arbitration is filed as contemplated above, the parties may agree on one arbitrator only; otherwise there shall be three, one named in writing by each party within fifteen (15) calendar days after demand has been given, and a third arbitrator to be chosen by the two appointed within fifteen (15) calendar days following their appointment. In case that his third arbitrator is not selected within the fifteen days period, then this arbitrator shall be appointed by the Court Administrator Judge.

- 15.2.3 If no demand for arbitration is filed, on time, or should the demanding party fail to appoint an arbitrator fifteen (15) calendar days after the filing of such demand, it shall be interpreted that the demand has been withdrawn and the Architect or Engineer's decision will stand final and binding. If the other party fails to appoint an arbitrator within the fifteen days period, then this arbitrator shall be appointed by the Court Administrator Judge.
- 15.2.4 The demand for arbitration shall be made within the time limits specified in Subparagraphs 15. 2. 2 and 15. 2. 3 after the claim, dispute or other matter in question has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such claim, disputes or other matter in question would be barred by the applicable statute of limitations.
- 15.2.5 The arbitrators so appointed shall then proceed in accordance with the provisions of the Puerto Rico Arbitration Law.
- 15.2.6 The arbitrators shall fix their own compensation, unless otherwise provided by agreement, and shall assess the cost and charges of the arbitration equally upon both parties. The arbitrators shall have the right to retain and consult experts and competent authorities skilled in the matter or matters under arbitration.
- 15.2.7 If there be one arbitrator, his decision shall be binding; if there be three, the decision of any two shall be binding.
- 15.2.8 The Contractor shall carry on the work and maintain the progress schedule during any arbitration proceedings, unless otherwise agreed by him and the Owner in writing.

ARTICLE 16 TERMINATION OF CONTRACT

16. 1 OWNER'S RIGHT TO POSTPONE OR DISCONTINUE OPERATIONS

- 16.1.1 If the Owner shall consider it necessary or desirable, for any reason whatsoever, before completion of the work hereunder, to postpone or abandon further operations, the Contract may be terminated by the Owner and in that event the Owner shall the Contractor, a full settlement of all claims by him hereunder, an amount to be determined as follows:
- .1 The Work performed and accepted by the Owner shall be paid in accordance with the terms of the Contract.
 - .2 The actual cost of all acceptable materials for which orders have been placed by the contractor for use under this contract, it being agreed that, if required by Owner, the Contractor shall make very possible effort, to cancel such orders.

- .3 The actual cost of acceptable fabricated materials, called hereunder, and already fabricated whether in the shop, or in transit thereof;
- .4 The actual amounts paid by the Contractor for construction equipment rentals up to the time of the aforementioned termination, plus any amounts accrued or payable under written contract for the rental of such equipment it being agreed that the Contractor shall make every possible effort to cancel any such contracts. If the equipment is owned by the Contractor, he will be paid the prevailing rental rates.
- .5 The actual cost to the Contractor of bonds, insurances and taxes as required under the contract; for the period of the work's stoppage.
- .6 Fixed Expenses for the period of the work's stoppage, such as supervisory, administrative, and operations personnel salaries, utilities, equipment, and miscellaneous expenses such as safety and vigilance.
- .7 Overhead and profit in the amount of 15% of all expenses detailed under .2, .3, .4 and .5 above only, provided, however, that such costs are not in excess of reasonable market prices for the same or similar materials, equipment and services. From the total of all the foregoing costs of determined there shall be deducted all payments thereon previously made and all proper changes to the Contractor in relation therewith.

16.1.2 In case the Contract is terminated under the above provision the Contractor shall be under no further obligation to the Owner with reference to the work eliminated.

16.1.3 Termination of a contract, stated above, will not relieve the Contractor of his responsibilities for the completed work, nor shall relieve his surety of its obligation for and concerning any just claims arising out of the completed work.

16. 2 OWNER'S RIGHT TO TERMINATE THE EMPLOYMENT OF THE CONTRACTOR

16.2.1 If the Contractor (1) should be adjudged a bankruptcy or (2) if he should make a general assignment for the benefit of his creditors, or (3) if a receiver should be appointed on account of his insolvency or (4) if an attachment should be made upon his properties and it is not vacated or the claim otherwise secured within five (5) days, thereafter, or (5) if he should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or sufficient and proper materials, or equipment, or (6) if he should fail to make prompt payment to subcontractors or for materials, service or labor, or (7) persistently disregard laws, ordinances or the instruction of the Architect or Engineer or (8) if he fails to begin the work within the period of time specified in the order to proceed, or (9) if he refuses or fails to prosecute the work, or any part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or (10) if he should fail to complete the work within said time, or (11) if he should neglect or refuse to

remove condemned work materials or satisfactorily perform a new such work as may have been rejected as being defective or unsuitable, or (12) if he should abandon or discontinue the prosecution of the work without authority; or (13) if he should otherwise be guilty of a substantial violation of any provision of the Contract, then the owner may, without prejudice to any other right or remedy under the provisions of the Contract, and after giving the Contractor and his sureties five (5) days written notice, terminate the employment of the Contractor and take possession of the premises and all materials, tools and appliances thereon as may be acceptable, suitable and necessary, and proceed with the work until completion by contract or by whatever other method it may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished.

16.2.2 If the unpaid balance of the contract price shall exceed the total expense of finishing the work, including liquidated damages, and compensation for additional engineering and managerial and administrative services, such excess shall be paid to the Contractor.

16.2.3 If the total expense of finishing the work, including liquidated damages, and compensation for the additional services listed above shall exceed the unpaid contract price, the contractor and his sureties shall pay the difference to the Owner.

16.2.4 In computing the liquidated damages contemplated above and fixing the date of final completion by the Owner by Contract or otherwise, unnecessary delays by the Owner or the subsequent contractor shall be taken in consideration with reference to the time for completion as originally set or extended.

16.2.5 The foregoing provisions are in addition to, and not in limitation of the rights of the Owner under any other provisions the contract.

16.3 CONTRACTOR'S RIGHT TO TERMINATE THE CONTRACT

16.3.1 If the work should be substantially stopped by the Owner by any reason whatsoever though no act or fault of the Contractor for a period of ninety (90) calendar days from written notice of the Owner and the Architect or Engineer, the Contractor may terminate the Contract and recover from the Owner payment for all work executed as specified in Subparagraph 16.1.1.1, 16.1.1.2, 16.1.1.3, 16.1.1.4, 16.1.1.6 and 16.1.1.7.

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01300

SUBMITTALS AND SUBSTITUTIONS

PART ONE - GENERAL

1.01 DESCRIPTION

A. Work Included: Wherever possible throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.

B. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for their review by the Architect.

C. Make all submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

D. Related Work Described Elsewhere: Individual requirements for submittals are describe in pertinent other Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Coordination of Submittals: Prior to each submittal, carefully review and coordinate all aspects of each item being submitted and verify that each item the submittal for it conforms in all respects with the requirements of the Contract Documents. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

B. Certificates of Compliance: Certify that all materials used in the work comply with all specified provisions thereof. Certification shall not be construed as relieving the Contractor from furnishing satisfactory materials if, after tests are performed on selected samples, the material is found to not meet specified requirements.

C. Show on each certification the name and location of the work, name and address of Contractor, quantity and date or dates of shipment or delivery to which the certificate applies, and name of the manufacturing or fabricating company. Certification shall be in the form of letter or company-standard forms containing all required data. Certificates shall be signed by an officer of the manufacturing or fabricating company.

D. In addition to the above information, all laboratory test reports submitted with Certificates of Compliance shall show the date or dates of testing, the specified requirements for which testing was performed, and results of the test or tests.

1.03 SUBMITTALS

A. Submittal Schedule: Within 35 days after award of Contract, and before any items are submitted for approval, submit to the Architect two copies of the scheduled described in Article 2.1 of this Section.

B. Certificates of Compliance: Upon completion of the work, and as a condition of its acceptance, submit to the Architect all Certificates of Compliance.

C. Make all submittals of Shop Drawings, Samples, request for substitution, and other items, in strict accordance with this Section.

PART TWO - PRODUCTS

2.01 General: Compile & complete and comprehensive schedule of all submittals anticipated to be made during progress of the work. Include a list of each type of item for which Contractor's drawings, Shop Drawings, Certificates of Compliance, material samples, guarantees, or other types of submittals are required. Upon approval by the Architect this schedule will become part of the Contract at the Contractor will be required to adhere to the schedule except when specifically otherwise permitted.

A. Coordination: Coordinate the schedule with all necessary subcontractors and materials suppliers to ensure their understanding of the importance of adhering to the approved schedule and their ability to so adhere. Coordinate as required to ensure the grouping of submittals as described in Paragraph 3.2 below.

B. Revisions: Revise and update the schedule on a monthly basis as necessary to reflect conditions and sequences. Promptly submit revised schedules to the Architect for review and comment.

2.02 SHOP DRAWINGS AND COORDINATION DRAWINGS

A. Shop Drawings: Scale and Measurements: Make all Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method connection to the work.

B. Type of Prints Required: Submit all Shop Drawings in the form of one sepia transparency of each sheet plus one blue line or black line print of each sheet. Blueprints will not be acceptable.

C. Reproduction of Review Shop Drawings: Printing and distribution of review Shop Drawings for the Architect's use will be by the Architect. All review comments of the Architect will be shown on the sepia transparency when it is returned to the Contractor. The Contractor shall make and distribute all copies required for his purposes.

2.03 MANUFACTURER'S LITERATURE

A. General: Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.

B. Number of Copies Required: Submit the number of copies which are required to be returned plus two copies which will be retained by the Architect.

2.04 SAMPLES

A. Accuracy of Samples: Samples shall be of the precise article proposed to be furnished.

B. Number of Samples Required: Unless otherwise specified, submit all samples in the quantity which is required to be returned plus one which will be retained by the Architect.

C. Reuse of Samples: In situations specifically so approved by the Architect, the Architect's retained sample may be used in the construction as one of the installed items.

2.05 COLORS AND PATTERNS

A. Unless the precise color and pattern is specifically described in the Contract Documents, and whenever a choice of color and pattern is available in a specified product, submit accurate color and pattern charts to the Architect for review and selection.

2.06 SUBSTITUTIONS

A. Approval Required: The Contract is based on the standards of quality established in the Contract Documents.

B. All products proposed for use, including those specified by required attributes and performance, shall require approval by the Architect before being incorporated into the work.

C. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the Architect.

D. "Or Equal": Where the phrase "or equal" or "or equal as approved by the Architect" occurs in the Contract Documents, do not assume that materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the Architect.

E. The decision of the Architect shall be final.

PART THREE - EXECUTION

3.01 IDENTIFICATION OF SUBMITTALS

A. General: Consecutively number all submittals. Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of submittals.

B. Internal Identification: On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly indicate the submittal number in which the item was included.

C. Re-submittals: When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new submittal number.

D. Submittal log: Maintain an accurate submittal log for the duration of the Contract, showing current status of all submittals at all times. Make the submittal log available for the Architect's review upon request.

3.02 COORDINATION OF SUBMITTALS

A. General: Prior to submittal for approval, use all means necessary to fully coordinate all material including, but not necessarily limited to:

(1) Determine and verify all interface conditions, catalog numbers, and similar data.

(2) Coordinate with other trades as required.

(3) Clearly indicate all deviations from requirements of the Contract Documents.

B. Grouping of Submittals: Unless otherwise specified, make all submittals in groups containing all associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the Contract Documents and the Contractor shall be strictly liable for all delays so occasioned.

3.03 TIMING OF SUBMITTALS

A. General: Make all submittals for enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.

B. Architect's review time: In scheduling, allow at least 10 calendar days for review by the Architect following his receipt of the submittal.

C. Delays: Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the Contract completion data.

3.04 ARCHITECT'S REVIEW

A. General: Review by the Architect shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the Contractor from responsibility for errors, which may exist.

B. Authority to Proceed: The notations "Reviewed, no exceptions noted" or "Reviewed, exceptions noted" authorize the Contractor to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, if any, required by the Architect's review comments.

C. Revisions: Make all revisions required by the Architect. If the Contractor consider any required revision to be a change, he shall so notify the Architect as provided for under "Changes" in the General Conditions. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the Architect.

D. Revisions After Approval: When a submittal has been reviewed by the Architect, resubmitted for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART ONE - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. Definitions: Construction photographs required by this section are intended to provide a visual record of construction progress at regularly scheduled intervals. They provide a means of confirming visually the status of work, insofar as photographed, on the dates recorded on photographs. They are to be used together with other recorded indication of work progress in determining questions, which may arise.

1.02 RESPONSIBILITIES

A. General: Contractor shall engage a commercial photographer to take black-and-white photographs during construction, in the number, times and locations indicated, and to submit prints as indicated.

B. Associated Services: Cooperate with photographer's work at site. Provide auxiliary services as may be reasonably requested, including access and use of temporary facilities including temporary lighting.

1.03 PHOTOGRAPHIC REQUIREMENTS

A. General: Except as additionally required, take 5 project photographs at monthly intervals, coinciding with work cutoff date associated with each monthly payment request. Photographer shall select vantage point for each shot each month so as to best show status of construction and work progress since taking previous photographs.

B. Vantage Points: Comply with Architect's directions from time to time, concerning desired vantage points for shots.

C. Additional Photographs: Architect will issue request to photographer for additional photographs from time to time (in addition to periodic photographs as specified). Additional photographs will be paid for by way of change order; and, except as otherwise indicated, are not included in Contract Sum or Allowance. Architect will give photographer 3 day's notice where feasible; otherwise and in emergency situations, photographer shall respond by taking additional photographs within 24 hours of Architect's request.

1.04 SUBMITTALS

A. General: Refer to Division 1 section on "Submittals" for general requirements of submitting photographs. Submit 3 prints of construction photographs, directly to

Architect within 5 days of shot (exposure). Architect will distribute to Owner one print as Owner's permanent record.

B. Photographer shall retain photographic negatives of submitted photographs, for a period of 3 years after date of substantial completion; and prior to end of 3 year period shall fill orders by Architect for extra photographic prints, priced at prevailing commercial prices.

PART TWO - PRODUCTS

2.01 PHOTOGRAPHIC COPIES

A. General: Provide 8" by 10" glossy color prints or single-weight commercial-grade stock, with extra 1/2" wide margin punched for standard 3-ring binder. Place margin on left edge of vertical shots and at top of horizontal shots. Identify each print on back side by mark-up of either an applied label or a rubber stamped impression; provide the following information:

Name/address of photographer

Name of project

Date of shot (exposure)

Description of vantage point, in terms of location, direction and elevation or story of construction.

PART THREE - EXECUTION

NOT USED.

SECTION 01400

QUALITY CONTROL

PART ONE - GENERAL

1.01 SURVEYS AND LAYOUT

A. The Contractor shall provide the services of qualified personnel, during the contract period, for layout of lines and elevations of buildings and structures including foundation systems, footings and piers, floor and roof systems, pavements, sidewalks, grading, utilities, and landscaping.

1.02 INSPECTION AND TESTING AGENCIES

A. The Contractor shall pay all costs and arrange for a testing agency to provide on site testing of soil compaction, concrete and other items as specified herein. The test shall be fully documented and certified.

B. Individuals performing inspection and testing must be certified by an organization whose certification program is recognized by the jurisdiction involved and is acceptable to the Owner.

1.03 COORDINATION

A. Each subcontractor shall cooperate fully with the inspection and testing required.

B. Subcontractor shall not assume to use the testing by this section as being adequate. Each subcontractor shall maintain his own quality methods in addition to the required testing.

1.04 INSPECTIONS

A. At least twenty-four hours shall be allowed for inspection prior to any test or concrete placement. The inspection will be made after notification that all items have been installed for the test or preparatory for concrete placement. Should the inspection reveal that corrective measures are required or that the work is not complete, and additional twenty-four hours will be allowed to complete the inspection after all work has been corrected or completed.

B. Notification shall be given at least twenty-four hours in advance of backfilling/encasing of any underground utility in order that an inspection may be made of the installation. Failure to provide such notification may require reopening of the trench at the Contractor's expense.

1.05 ACCEPTANCE OF SUBSTRATES

A. Work of the various sections shall not begin until the installing contractor has examined the substrates and has determined that they are acceptable. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer. Notice of unsatisfactory conditions shall be given to the Contractor in writing. Proceeding with the work shall indicate acceptance of the substrate by that installer or Contractor.

SECTION 01500
TEMPORARY FACILITIES

PART ONE - GENERAL

1.01 General

A. The Contractor shall arrange and provide temporary facilities and controls as specified herein and as required for the proper and expeditious completion of the work. Pay all cost, except otherwise specified, until final acceptance of the work, unless the Owner makes arrangements for the use of complete portions of the work after substantial completion in accordance with the provisions of the General Conditions.

B. Make all temporary connections to utilities and services in locations acceptable to the Owner, Architect and local authorities having jurisdiction thereof; furnish all necessary labor and materials and make all installations and connections when no longer required; restore the services and sources of supply to proper operating condition.

1.02 PROJECT IDENTIFICATION

A. No signs or advertisements shall be permitted on the premises without the approval of the Inspecting Architect.

1.03 SANITARY CONVENIENCES

A. Contractor shall provide a temporary chemical type sanitary convenience, at an approved location, for use by employees on the Contract. The convenience premises shall receive daily attention and shall be maintained in a clean and sanitary condition and be removed from the site upon completion of the Contract.

1.04 TEMPORARY WATER

A. The Contractor shall make his own arrangements for water for construction and drinking purposes as required.

1.05 TEMPORARY LIGHT AND POWER

A. The Contractor shall furnish and install temporary electric facilities including lamps for construction and safety operations. All temporary facilities shall remain the property of the Contractor, and be removed after permanent which are part of the permanent electrical systems, shall not be used for temporary electrical facilities, unless specifically approved by the Architect. The Contractor shall be responsible for any damage or injury to equipment, materials or personnel caused by temporary electrical installations. Costs for materials and installation of temporary electrical facilities shall be at the Contractor's expense. Contractor shall arrange and pay for energy consumed in providing temporary electrical facilities.

1.06 SECURITY

A. Take sufficient precautions as required to prevent illegal entry or damage during nights, holidays or other periods when work is not being executed and such other control as required during working hours.

B. Provide all temporary enclosures required for protecting the project from the exterior for providing passageways, for the protection of openings both exterior and interior and any other location where temporary enclosures and protection may be required.

C. Take adequate precautions against fire; keep flammable material at an absolute minimum; and ensure that such material is properly handled and stored. Except as otherwise provided herein, do not permit fires to be built or open salamanders to be used in any part of the work.

1.07 TEMPORARY ROADS

A. Provide and maintain in good usable condition temporary roads and access to the site as required. At points of access insure that no mud or debris is carried onto adjacent streets or properties. Any material deposited on adjacent roads or properties shall be removed daily.

1.08 TEMPORARY, LADDERS, RAMPS, RUNWAYS, ETC.

A. Provide and maintain all equipment such as temporary stairs, ladders, ramps runways, chutes, etc. as required for the proper execution of the work.

B. All such apparatus, equipment and construction shall meet all requirements of the local laws applicable thereto.

C. As soon as permanent stairs are erected, provide temporary protective treads, handrails and shaft protection.

1.09 MATERIAL HOIST

A. Provide material hoist as required for use by all trades complete with all guards, safety devices, signals and runways necessary for safe operation in accordance with ANSI A 10.5, the AGC Manual of Accident Prevention in Construction and all applicable state and local codes.

1.10 TEMPORARY FIELD OFFICES

A. Provide and maintain a field office of sufficient size to conduct progress meetings complete with light, toilet facilities, plan racks, desks, tables, chairs, telephone service and other facilities as required to executed the Contract. Contractor is responsible to pay all air conditioning and telephone charges.

B. Construction shanties, sheds and temporary facilities provided as construction required above, or for the Contractor's convenience, shall be maintained in good condition and neat appearance.

1.11 WASTE REMOVAL

A. Provide all labor materials and services for complete waste material disposals. Contractor shall pay for and secure any necessary permits and abide by all applicable local jurisdictional requirements and health codes.

1.03

PROTECTION OF NATURAL RESOURCES

A. Confine construction activities to areas defined by work description, plans and specifications. Preserve in their existing condition or restore to an equivalent or improved condition the natural resources within the project boundaries.

D. Temporarily protect erodible soils by mechanical retardation and control of runoff (ie, diversion ditches, benches, berms) or by the establishment of vegetation and mulch. Slopes too steep for stabilization by other means shall be hydro seeding mulching anchored in place, covering by anchored matting, nodding or any combination of these to insure effective erosion control.

1.05 CONTROL AND DISPOSAL OF SOLID, CHEMICAL AND
SANITARY WASTES (DS3)

A. Wastes shall be picked up and placed in containers, which are emptied on a regular schedule.

B. Disposition of wastes shall be as follows:

- (a) Rubbish and debris: Remove from site and dispose in a manner that complies with federal and state requirements.
- (b) Garbage: If located in an area where garbage scheduled collection is available, place garbage in appropriate containers for pickup and disposal. Otherwise, transport garbage to a disposal area that complies with federal and state requirements.

- (c) Sanitary or Chemical: Provide chemical toilets with wastes periodically emptied in an approved state supervised facility.

1.06 DUST CONTROL ("PFE")

A. Dust shall be kept down at all times, including non-working hours, weekends and holidays. Soil at the site, haul roads and other areas disturbed by the Contractor's operations shall be sprinkled or treated with dust suppressors as necessary to control dust. No dry power brooming will be permitted. Vacuuming, wet mopping, wet sweeping or were power brooming shall be used instead. Air blowing will be permitted only for cleaning off non-particulate debris, such as that from reinforcing bars. No sandblasting will be permitted unless the dust there from is confined. Only were cutting of concrete blocks, concrete, and asphalt will be permitted where concrete mortar and plaster milling is done.

1.07 NOISE CONTROL

A. Noise shall be kept down at all time. Follow standard working hours schedule. Comply with the noise control requirements of the environmental quality board.

SECTION 01700

CONTRACT CLOSEOUT

PART ONE - GENERAL

1.01 CLEANING UP

A. The premises and the job site shall be maintained in a reasonably and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period. Remove crates, cartons, and other flammable waste materials or trash from the work areas at the end of each working day.

B. Elevator shafts, electrical closets, pipe and duct shafts, chases, furred spaces and similar spaces that are generally unfinished shall be cleaned and left free from rubbish, loose, plaster, mortar drippings, extraneous construction materials, dirt and dust.

C. Rubbish shall be lowered by way of chutes, taken down on hoists or lowered in receptacles. Under no circumstances shall any rubbish or waste be dropped or thrown from one level to another within or outside the building.

D. Care shall be taken by workmen not to mark, soil or otherwise, deface finished surfaces. In the event that finished surfaces become defaced, clean and restore such surfaces to their original condition.

E. Clean up immediately upon completion of each trade's work.

F. Clean areas of the building in which painting and finishing work is to be performed just prior to the start of this work and maintain these areas in satisfactory condition for painting and finishing. This cleaning includes the removal of trash and rubbish from these areas, broom cleaning of floors, and removal of any plaster, mortar, dust, and other extraneous materials from finish surfaces.

G. In addition to the cleaning specified above and the more specific cleaning that may be required in various sections of the Specifications, the building shall be prepared for occupancy by a through cleaning throughout, including washing (or cleaning by other approved methods) of surfaces on which dirt or dust has collected and by washing glass on both sides. Leave equipment in an undamaged and clean condition. Re-cleaning will not be required after the work has been inspected and accepted unless later operations of the Contractor make re-cleaning of certain portions necessary.

H. Upon completion of the work, remove temporary buildings and structures, fences, scaffolding, surplus materials and rubbish of every kind from the site of the work.

1.02 DOCUMENTS REQUIRED PRIOR TO FINAL PAYMENT

A. Prior to final payment and before the issuance of a final Certificate for Payment in accordance with the provisions of the General Conditions, file the following papers with the Inspecting Architect:

- (1) The guarantee required by the General Conditions and any other extended guarantees stated in the technical sections of the Specifications.
- (2) Consent of surety to release of retention of final payment as required by the General Conditions.
- (3) Release of the State Insurance Fund.
- (4) Affidavit, in which the contractor certified that all payments to subcontractors and supplier has been made.

1.03 OPERATION AND MAINTENANCE MANUALS (Record and Information Booklet)

A. Furnish three (3) complete sets of manuals containing the manufacturer's apparatus furnished under the Contract and any additional data specifically under the various sections of the Specifications.

B. Arrange the manuals in proper order, indexed and suitably bound. Certify by endorsement thereon that each of the manual's is complete and accurate. Assemble these manuals and submit them to the Architect. Provide suitable transfer cases and deliver the manuals therein, indexed and marked for each division of the work.

1.04 PROJECT RECORD DOCUMENTS

A. As the work progresses keep a complete and accurate record of approved changes from the Contract Documents and the shop drawings indicating the work as actually installed. Changes shall be neatly and correctly shown on the respective portion of the affected document using black line prints of the drawings affected or the Specifications with appropriate supplementary notes. This record set of "As Built Drawings", shop drawings and Specifications shall be kept at the job site for inspection by the Architect and Owner.

B. The records above shall be arranged in order, in accordance with the various sections of the Specifications and properly indexed. At the completion of the work, certify by endorsement thereof that each of the revised prints of the Drawings and Specifications is complete and accurate. Prior to application for final payment and as a condition to its approval by the Architect and Owner, deliver the record Drawings and Specifications

arranged in proper order, indexed, and endorsed as hereinbefore specified. Provide suitable transfer cases and deliver the records therein, indexed and marked for each division of the work.

C. No review or receipt of such records by the Architect or Owner shall be a waiver of any deviation from the Contract Documents or the shop drawings or in any way relieve the Contractor from his responsibility to perform the work in accordance with the Contract Documents and the shop drawings to the extent they are in accordance with the Contract Documents.

1.05 CERTIFICATE OF OCCUPANCY

A. Obtain and pay any fees related to the Certificate of Occupancy (Permiso de Uso) and deliver to the Architect.

SECTION 01720

PROJECT RECORD DOCUMENTS

PART ONE - GENERAL

1.01 WORK INCLUDED

A. Throughout progress of the work of this contract, maintain an accurate record of all changes in the Contract Documents, as described in this section.

B. Upon completion of the work of this contract, transfer the recorded changes to a set of Record Documents, as described in this section.

1.02 RELATED WORK DESCRIBED ELSEWHERE

Section 01300 submittals

1.03 QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved in advance by the Architect.

B. Thoroughly coordinate all changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of drawings and other documents where such entry is required to properly show the change. Accuracy of records shall be such that future search for items shown in the Contract Documents may reasonably rely on information obtained from the approved Record Documents.

C. Make all entries within 24 hours after receipt of information.

1.04 SUBMITTALS

A. The supervisory Architect's approval of the current status of Record Documents will be a prerequisite to the Architect's approval of requests for progress payment and request for final payment under the Contract.

B. Prior to submitting each request for progress payment, secure the Architect's approval of the Record Documents as currently maintained.

C. Prior to submitting request for final payment, submit the final Record Documents to the Architect and secure his approval.

1.05 PRODUCT HANDLING

A. Use all means necessary to maintain the job set of Record Documents

completely protected from deterioration and from loss and damage until completion of the work and transfer of the recorded data to the final Record Documents. In the event of loss of recorded data, use all means necessary to secure the data to the Architect's approval; such means shall include, if necessary in the opinion of the Architect, removal and replacement of concealing materials and, in such case, all replacements shall be to the standards originally specified in the Contract Documents.

PART TWO - PRODUCTS

2.01 RECORD DOCUMENTS

A. Promptly following award of Contract, secure from the Architect one complete set of all Documents comprising the Contract. Pay the nominal fee per set as determined by the Architect.

B. At a time near the completion of the work, secure from the Architect one complete set of sepla transparencies of all drawings included in the contract. Pay the nominal fee per set as determined by the Architect.

PART THREE - EXECUTION

3.01 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described above, identify each of the Documents with the title "RECORD DOCUMENTS-JOB SET"

B. Preservation:

(1) Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examinations, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set to the approval of the Architect.

(2) Do not use the job set at the site of work as that site is designated by the Architect.

3.02 ENTRIES ON THE JOB SET

A. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line, as required. Date all entries. Call attention to the entry by a "cloud" around the area or areas affected, in the event of overlapping changes, different colors may be used for each of the changes.

B. Where changes are caused by directives issued by the Architect, clearly indicate the change by note in-ink, colored pencil, or rubber stamp.

C. Where changes are caused by Contractor-originated proposals approved by the Architect, including inadvertent errors by the Contractor which have been accepted by the Architect, clearly indicate the change by note in erasable colored pencil.

3.03 CONVERSION OF SCHEMATIC LAYOUTS

A. In most cases on the drawings, arrangements of conduits and circuits, piping, ducts, and other similar items, is shown schematically and is not intended to portray precise physical layout. Final physical arrangement is as determined by the Contractor, subject to the Architect's approval. However, design of future modifications of the facility may require accurate information as to the final physical arrangement of items. Which are shown only schematically on the drawings.

B. Show on the job set of Record Drawings, by dimension accurate to within 25 mm (1"), the centerline of each run of items such as are described above. Clearly identify the item by accurate note such as "cast iron drain", "galv. water", etc. Show, by symbol or note, the vertical location of the item ("under slab", in ceiling plenum", "exposed", etc.") Make all identification sufficiently descriptive that it may be related reliably to the Specifications.

C. The architect may waive the requirements for conversion of schematic data where, in the Architect's judgment, such conversion serves no beneficial purpose. However, do not rely upon waivers being issued except as specifically issued except as specifically issued in writing by the Architect.

3.04 ACCURACY OF ENTRIES

A. Use all means necessary, including the proper tools for measurement, to determine actual locations of the installed items.

3.05 FINAL RECORD DOCUMENTS

A. The purpose of the final Record Documents is to provide factual information regarding all aspects of the work, both concealed and visible, to enable future modification of design to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Following receipt of the sepia transparencies described above, and prior to start of transfer of recorded data thereto, secure a review by the Architect of all recorded data. Make all required revisions.

C. Carefully transfer all change data shown on the job set of Record Drawings to the corresponding sepia, coordinating the changes as required, and clearly indicating at each affected detail and other drawing the full description of all changes made during construction and the actual location of items described above. Call attention to each entry

by drawing a "cloud" around the area or areas affected. Make all change entries on the sepias neatly, consistently, and in ink or crisp black pencil.

D. Submit the completed total set of Record Documents to the Architect. Participate in review meeting or meetings as required by the Architect, make all required changes in the Record Documents, and promptly deliver the final Record Documents to the Architect.

3.06 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor shall have no responsibility for recording changes in the work subsequent to acceptance of the work by the Owner, except for changes resulting for replacements, repairs, and alterations made by the Contractor as part of his guarantee.



PROJECT NO. RFP

TECNICAL SPECKS ITURREGUI BUS STATION

Capital Projects:

Permanent Repairs to PRMBA Facilities &
Equipment: New Projects

(RFQ/P: 2024-01)

DIVISION 2 SITE WORK

SECTION 02072

MINOR DEMOLITION FOR REMODELING

PART ONE - GENERAL

1.01 WORK INCLUDED

- A. Remove designated building equipment and fixtures.
- B. Remove designated partitions and components.
- C. Cap and identify utilities.
- D. Temporary partitions to allow building occupancy.

1.02 RELATED WORK

- A. Section 01400 Testing Laboratory Services

1.03 EXISTING CONDITIONS

- A. Conduct demolition to minimize interference with adjacent building areas. Maintain protected egress and access at all times.
- B. Provide, erect, and maintain temporary barriers and security devices.

PART TWO - PRODUCT

Not used.

PART THREE - EXECUTION

3.01 EXECUTION

- A. Erect and maintain waterproof closures for exterior openings.
- B. Erect and maintain temporary partitions to prevent spread of dust, fumes, noise, and smoke to provide for owner occupancy.
- C. Protect existing items, which are not indicated to be altered.
- D. Disconnect, remove, and cap designated utility services within demolitions areas.
- E. Mark location of disconnected utilities. Identify and indicate capping

locations on project record documents.

3.02 EXECUTION

- A. Demolish in an orderly and careful manner. Protect existing supporting structural members and remaining elements.
- B. Except where noted otherwise, immediately remove demolished materials from site.
- C. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect under provisions of Special Conditions Section.
- D. Remove the following material and equipment to become property of the contractor and disposal made off-site under provisions of Special Conditions Section:
 - 1. Doors and windows.
 - 2. Toilets, lavatories, shower heads, medicine cabinets and shower stall tiles.
 - 3. Accessories.
 - 4. Mirror and lighting fixtures.
- E. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.
- F. Do not burn or bury materials on site.
- G. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.

SECTION 02100

DEMOLITION AND CLEARING

PART ONE - GENERAL

1.01 DESCRIPTION

A. WORK INCLUDED

Demolition and clearing, required for this work includes:

1. Items identified as "to be demolished" or "to be removed" on drawings and/or any specification.
2. Removal of all debris.

B. RELATED WORK DESCRIBED ELSEWHERE

1. Section 07.

C. DEFINITIONS

The term "demolition and clearing", as used herein, includes the removal of all existing objects (except for those objects designated to remain) down to the existing slab level, plus such other work as is described in this section of this specifications.

1.02 JOB CONDITIONS

A. DUST CONTROL

Use means necessary (as approved by owner) to prevent the spread of dust during performance of the work of this section; to prevent dust being a nuisance to the public, neighbors, and concurrent, performance of the other work on the site.

B. BURNING

On site-burning will not be permitted.

PAR TWO - PRODUCTS

2.01 NO PRODUCTS ARE REQUIRED UNDER THIS SECTION

2.02 TEMPORARY BARRICADES

Unless otherwise specifically approved by the Owner, use only new and solid lumber or utility grade or better to construct temporary barricades around the objects designated to remain.

PART THREE - EXECUTION

3.01 PREPARATION

A. NOTIFICATION

Notify the Owner at least two full working days prior to commencing the work of this section.

B. SITE INSPECTION

Prior to all work of this section, carefully inspect the entire site and, all objects designated to be removed, and to be preserved.

C. SCHEDULING

1. Schedule all work in a careful manner with all necessary consideration for neighbors, and the public.
2. Avoid interference with the use of, and passage to and from, adjacent buildings and facilities.

D. PROTECTION OF UTILITIES

Preserve in operation all active utilities traversing the site and designated to remain.

3.20 REMOVAL OF DEBRIS

Remove all debris from the site and leave the site in a neat and orderly condition to the approval of the owner.

PART THREE - REQUIREMENTS

The work includes the demolition or removal of all construction indicated, specified, or necessary to accomplish the work under this contract. The work indicated or specified in this section or other sections of the specifications is included, but is not intended that all items of demolition work be specifically indicated, specified, or listed. After carefully reviewing, the drawings and specifications to determine intent, the Contractor shall visit the site and determine the extent of demolition work required to properly complete the work under this contract.

3.01 Demolition and removal shall be conducted in a manner that will eliminate hazards to persons and property in the area and shall prevent the release of dust and rubbish into the air. All debris resulting from demolition or removal work shall be removed from the project daily or as directed by the Owner. Trash and rubbish shall not be allowed to accumulate either within or outside the buildings. Demolished materials and debris which in the opinion of the Owner cannot practicably be removed from the site the same day as removed, may be temporarily stacked or stored in a designated location on the site as directed by the Owner. All materials resulting from demolition work, except as indicated or specified otherwise, shall become the property of the Contractor and shall be removed from the limits of the project.

3.02 DUST CONTROL

The amount of dust resulting from demolition shall be controlled to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution.

3.03 PROTECTION OF EXISTING WORK

Before beginning any cutting or demolition work, the Contractor shall carefully survey the existing work and examine the drawings and specifications to determine the extent of the work. The Contractor shall take all necessary precautions to insure against damage to existing work to remain in place, to be reused, or to remain the property of the Owner and any damage to such work shall be repaired or replaced, as approved by the Owner, at no additional cost to the Owner. The Contractor shall carefully coordinate the work of this section with all other work and construct and maintain shoring, bracing and supports, as required. He shall insure that structural elements are not overloaded and be responsible for increasing structural supports or adding new supports or reinforcing as may be required as a result of any cutting, removal, or demolition work performed under any part of this contract.

3.03.1 Protection of buildings from the weather: The interior of the buildings and all materials and equipment shall be protected from the weather at all times. Where removal of existing roofing is mandatory to accomplish new work, materials and workmen

necessary to provide adequate and approved temporary covering of exposed areas shall be kept attended to insure their effectiveness and prevent displacement.

3.03.2 Trees within the project site which might be damaged during demolition and which are indicated to be left in place shall be protected.

3.04 USE OF EXPLOSIVE

Use of explosives will not be permitted.

3.05 FILLING

Holes, open basements and other hazardous openings shall be filled as specified in Section entitled Earth Work.

3.06 STRUCTURES (WALLS AND PARTITIONS)

Existing structures indicated shall be removed 24" below grade. All interior walls and partitions shall be removed as shown on drawings.

3.07 EXISTING ROOFING

Where removal of built-up roofing is required to effect the connections with new flashing or roofing, the existing felts and insulation shall be cut along straight lines. Gravel surfacing shall be removed from the existing roofing felts for a distance of not less than 18 inches back from the cut edges of the felts. Removal of the gravel shall be down to the top ply of felt and shall be accomplished without damage to the felts. Removal of roofing shall be accomplished without damage to the roof deck.

Where removal of built-up roofing is required to install a new roofing system, the existing system shall be removed as per requirements of new roofing manufacturer.

3.08 REMOVAL OF MASONRY

Removal of masonry shall be accomplished so as to prevent damage to existing surfaces of units remaining in exposed locations and to facilitate the installation of new work. Where new masonry adjoins existing units, the new work shall abut or be toothed into the existing construction as necessary to maintain the existing bond and surface pattern.

3.09 REMOVAL OF CONCRETE

Where existing concrete work is to be removed, the concrete shall be sawn along straight lines to a depth of not less than 2 inches. Each cut in walls shall be perpendicular to the face and in alignment with the cut in the opposite face. The remainder of the concrete shall be broked out, provided that the broken area is concealed in the

finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, it shall be ground smooth or the saw cut shall be made entirely through the concrete.

3.10 UTILITIES

Remove all existing utilities, as indicated, and terminate in a manner and at a time satisfactory to the utility companies involved. Where the Utility Company desires to effect the removal of their materials, they shall be permitted to do so. Meters and related equipment shall be removed and delivered to a location as directed by the Owner without additional cost. When utility lines are encountered that are not indicated on the drawings, they shall be disposed of as directed by the Owner and disposal shall be covered by Differing Site Conditions in accordance with the General Provisions.

PART FOUR - DISPOSITION OF MATERIAL

4.01 TITLE OF MATERIALS

Title to all materials and equipment to be demolished, except as specified otherwise, is vested in the Contractor upon receipt of notice to proceed. The Owner will not be responsible for the condition, loss or damage to such property after notice to proceed.

4.02 Materials and equipment to be reused or relocated shall be carefully removed and stored to prevent damage, and reinstalled as the work progresses.

4.03 Materials and equipment that are indicated or specified to be removed by the Contractor and remain the property of the Owner shall be carefully removed and delivered by the Contractor to a storage site as directed.

SECTION 02542

INTERCEPTORS

PART 1 – GENERAL

1.01 SUMMARY

A. Provide interceptors located outside the building for use with sewerage and drainage systems.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Garage Interceptors: Precast or cast-in-place, reinforced-concrete garage interceptor, ACI 318, ACI 350R.

B. Grease Interceptors: Precast or cast-in-place, reinforce concrete, [single] [double] chamber grease interceptor, ACI 318, ACI 350R.

C. Sediment Interceptors: Steel body and cover; with settlement chambers; baffles; and removable basket, strainer, or screens.

D. Oil Interceptors: Steel body and cover; with baffles; removable basket, strainer, or screens; and flow-control fitting on inlet.

E. Pipes and Fittings: Hub-and-Spigot, Cast-Iron Soil Pipe and Fittings; ASTM A 74, service class, gray cast iron, for gasket joints.

F. Gaskets: ASTM C 564, rubber, thickness matching service class pipe.

- G. Sleeve-Type Couplings: Rubber or elastomeric sleeve and band assembly.
- H. Cleanouts: ASME A112.36.2M, with round-flanged, cast-iron housing; and secured, scoriated, medium-duty loading class, cast-iron cover.
- I. Concrete: Cast-in-place concrete, ACI 318, ACI 350R; Portland-cement design mix, 4000 psi (27.6 MPA) minimum, with 0.45 maximum water-cement ratio.
- J. Identification: Detectable, warning tapes over outside edges of underground interceptors.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.
- B. Test for proper operation. Clean out system and protect work form damage.

SECTION 02713

WATER SYSTEM

PART ONE - GENERAL

1.01 SCOPE

A. The work under this section includes furnishing all the materials, machinery, equipment and labor necessary to install the underground water distribution system and exercising all the care required not to damage the possible existing underground utilities.

B. Work includes water distribution system outside of buildings. Water piping within buildings and within five foot building line drawn five feet outside the outside face of building walls and parallel thereto is specified in the appropriate section under Division 15.

C. Excavating, trenching, backfilling and density tests shall be in accordance with Section 02200 Earthwork of these specifications.

1.02 QUALITY ASSURANCE

A. Comply with all the requirements of the Puerto Rico Aqueduct and Sewer Authority.

B. Pay for all permits and fees necessary to carry out the work and obtain the Puerto Rico Aqueduct and Sewer Authority approval of the System.

1.03 DRAWINGS

A. Attention is called to the fact that location shown on the drawings is approximate only, and the right to slightly alter any location up to the time of final approval of stake position is reserved by and without additional cost to the Owner.

1.04 SUBMITTALS

A. Provide manufacturer's data, test reports and materials certification.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Store all piping and fittings on sills above flood water.

B. Deliver for laying only when trench is excavated.

PART TWO - PRODUCTS

2.01 MATERIALS

A. Water Pipe and Appurtenances

1. All underground water pipe and fittings, 4" and over shall be cast iron, class 150, tyton joint bell and spigot. (FSWW-P-406-b (1)-64).

2. All underground water pipe and fittings, less than 4" shall be K soft tempered copper service tubing. (FS USA S1-H-231-67).

B. Gate and Tapping Valve

All 2" and larger gate and tapping valves shall be iron body, bronze standards, double seat, double disc, wedge type, bronze stem, opening to the left and designed for a working pressure of 150 psi. and a test pressure of 300 psi. Gate and tapping valves shall be encased in cast iron of pattern or design as shown on the drawings.

C. Fire Hydrants

Comply with the requirements of P.R.A.S. Authority and the Puerto Rico Fire Service. Each hydrant shall be provided with and auxiliary valve, cast iron valve box, necessary drain and a concrete supporting base. Fire hydrants shall be 4" in diameter with hose connections as required by the Puerto Rico Fire Service.

D. Concrete

Comply with the requirements of Section 03300.

PART THREE - EXECUTION

3.01 INSPECTION

A. Examine areas to receive water pipes and appurtenances for:

1. Completion of excavation to elevations and slopes indicated.
2. Obstructions which would interfere with water system installation.

B. Begin work only when conditions are corrected satisfactorily.

C. Each section of pipe shall be carefully examined before being laid and

defective or damaged pipe shall not be used.

3.02 INSTALLATION

A. Piping shall be laid true to line and without objectionable break in grade and with a cover of not less than 18". The pipe interior shall be cleaned before lowering the pipe into the trench and joint surfaces wiped clean before joints are made. Line junctions and changes in direction shall be made with proper fittings.

B. Where ground conditions or bends make it necessary, clamps, braces, bolted flanges or mass concrete shall be used to prevent blowing out of joints and special supports meeting the approval of the Architect shall be used to prevent settlement.

C. Whenever, in the opinion of the Architect the soil is unsuitable to support water lines, provisions shall be made as directed by him and equitable adjustment therefore made in the contract price.

3.03 SERVICE CONNECTIONS

A. Pipe connections shall be made as follows:

1. Tees or crosses shall be provided where the diameter of the smaller pipe exceeds 1/6 of the diameter of the larger pipe; reducers shall be provided where necessary.

2. Where the smaller pipe is equal to or smaller than 1/6 of the larger pipe, a direct tapping may be made. In such case, the connection shall be made using lead gooseneck fitted with proper joints, but equipment with a Mueller Thread Corporation cock. Where smaller pipe is flexible tubing, lead gooseneck may be omitted.

3.04 EXCAVATION

A. Trenches for mains in water distribution system, except as otherwise specified, shall be a minimum depth of 1'-6" to the upper part of the mains and only of sufficient to provide a free working space of not over 9" on each side of the conduit. Bottom of trenches shall be evenly graded with bell holes provided to insure uniform bearing for the pipe line. Excavations below required depths shall be refilled with gravel and firmly compacted.

B. There is no classification for material to be excavated for the installation of underground water distribution. The contract price covers full compensation to the Contractor for excavation whatever material be encountered.

C. No blasting shall be allowed, except with the written consent of the Owner.

3.05 BACKFILL

A. After installed piping has been given a preliminary test, inspection and approval, excavation shall be backfilled and hand tamped under, around, and 12" over pipe, in 6" layers. The balance of the backfilling shall then be performed with approved material, each layer tamped compactly into place.

B. Special precautions shall be observed to obtain thorough compaction of backfill, under streets, drives, walks and other surfaced areas.

C. Final testing and inspection of sewers shall not be performed until backfilling, tamping, heavy and paving over pipe lines is completed.

3.06 TEST

A. All water mains shall be tested at the expense of the Contractor under the supervision of the Architect and P.R.A.S. to a hydrostatic pressure of not less than 150 psi., after being laid and before joints are covered and trenches backfilled.

B. The maximum leakage rate allowed shall be 180 gallons during a 24 hour period, per mile of pipe line, per inch of pipe diameter. The minimum testing period shall be 15 minutes. Any defects resulting from the tests shall be corrected by the Contractor to the satisfaction of P.R.A.R.A. and the Owner.

C. Upon completion and approval of the water lines, the Contractor shall arrange for their sterilization as required by P.R.A.S.A. and the Department of Health. Lines shall be flushed out, after sterilization, until all traces of chemicals used are removed.

SECTION 02730

SANITARY SEWER SYSTEM

PART ONE - GENERAL

1.01 DESCRIPTION OF WORK

- A. The extent of sanitary sewer work is shown on the drawings.

1.02 QUALITY ASSURANCE

- A. Codes and Standards:

1. ASTM A 48 "Specification for Gray Iron Casting".
2. ASTM C 478 "Specification for Precast Reinforced Concrete Manhole Sections".
3. ASTM D 2564 "Specification for Solvent Cements for Polyvinyl Chloride (PVC) Plastic Pipe and Fittings".
4. ASTM D 2657 "Practice for Heat Joining of Polyolefin Pipe and Fittings".
5. ASTM D 2855 "Practice for Making Solvent Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings".
6. ASTM D 3034 "Specifications for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings".
7. FS-RR-F-621 "Frames, Cover, Gratings, Steps, Sumps and Catch Basins, Manhole".

- B. Allowable Tolerances:

1. Rate of leakage for any gravity line section or sections, or for total length of pipe lines may not be greater than 50 gallons per inch of pipe diameter per mile per 24 hours.

2.03 CONCRETE INLETS

- A. Concrete Base:

1. Precast or cast-in-place, at Contractor's option. Use concrete which will attain in 28 day compressive strength of not less than 3000 psi.

B. Precast Concrete Inlets:

1. ASTM C 478, sized as indicated.

C. Cast-in-place Manholes (at Contractor's Option).

2.04 METAL ACCESORIES

A. Manhole Frames and Covers:

1. ASTM A 48, Grey Cast Iron, Class 30 A.
2. Comply with requirements of FS RR-F-621 for type and style indicated.
3. Furnish covers with cast-in-legend "SANITARY" on roadway face.

B. Manhole Steps:

1. Aluminum extrusions, integrally cast into manhole sidewalls, unless otherwise indicated.
2. Comply with requirements of FS RR-F-621, for type and style required.

PART THREE - EXECUTION

3.01 EXCAVATION AND PREPARATION FOR SANITARY SEWERS

A. Perform trench excavation for sanitary sewer to line and grade shown in accordance with section titled Trenching as modified herein.

B. If the excavation exceeds the indicated dimensions, encase the pipe or install pipe of higher strength.

C. Excavate test pits sufficiently in advance of construction so that reasonable changes in line and grade can be made where the location of existing structures varies from that shown. Work occasioned by failure to take such precautions will be performed at no extra cost to the Owner.

D. Excavate trenches to provide a uniform continuous bearing and support for the pipe or structure on solid ground between bell joints.

E. Wherever the character of the material at the bottom of the excavation is found unsuitable, excavate below subgrade to a depth of 3 feet maximum and install either gravel or concrete cradle for whatever distance is required. Subgrade is defined as the underside of the barrel of the pipe or the pipe or the underside of the masonry structure.

F. Keep all trenches and excavations free of water during construction and until final inspection.

3.02 INSPECTION

A. Installer must examine the areas and conditions under which storm sewer system work is to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.03 INSTALLATION OF PIPE

A. General:

1. Install pipe in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.
2. Inspect pipe before installation to detect any apparent defect. Mark defective materials with white paint and promptly remove from the site.
3. Lay pipe beginning at the low point of a system, true to the grades and alignment indicated with unbroken continuity of invert.

B. Horizontal Piping, Underground:

1. Lay Piping on a firm bed for the entire trench length except where otherwise supported.
2. Employ partial backfilling and cradling to secure piping during backfilling operation.
3. Firmly brace piping laid on grade prior to embedment in concrete.

C. Cleaning Pipe:

1. Clear the interior of pipe of dirt and other superfluous material as the work progresses. Maintain a swab or drag in the line and pull past each joint as it is completed.
2. Place plugs in the ends of uncompleted pipe at the end of the day or whenever work stops.
3. Flush lines between manholes, if required to removed collected debris.

D. Junction with other Materials:

1. Use type of adapter and technique recommended by pipe manufacturer.

E. Joint Workmanship:

1. Solvent cement joints:

a. ASTM D 2855-73

2. Fusion welded joints:

a. ASTM D 2657-73

3. Threaded Joints:

a. Tighten by strap wrench to not more than one full turn beyond hand tight.

3.04 UNDERGROUND STRUCTURES

A. Precast Concrete Manholes:

1. Place precast concrete sections as shown on the drawings. Where manholes occur in pavements, set top of frames and covers flush with finish surface. Elsewhere, set tops 3 inches above finish surface, unless otherwise indicated.

2. Use epoxy bonding compound where manhole steps are mortared into manhole walls.

a. Provide rubber joint gasket complying with ASTM C 433.

3.05 TAP CONNECTIONS

A. Make connections to existing conduits and underground structures, so that the finished work will conform as nearly as practicable to the requirements specified for new work.

1. Branch connections made from the side into existing 12 to 21 inch conduit shall have a wye sprung into the existing line, and the entire wye encased with not less than 6 inches of 3000 psi 28 day compressive strength concrete.

2. For branch connections from the side into an existing 24 inch or larger conduit or to underground structures, cut an opening into the unit sufficiently large to allow 3 inches of concrete to be packed around the entering connection. Cut the ends of the connection passing through conduit or structure wall to conform to the shape of and be flush with the inside wall,

unless otherwise indicated. On the outside of the conduit or structure wall, encase the entering connection in 6 inches of concrete for a minimum length or 12 inches to provide additional support of collar from the connection to undisturbed ground.

a. Provide concrete which will attain a minimum 28 day compressive strength or 3000 psi, unless otherwise indicated.

b. Use an epoxy bonding compound as an interface between new and existing concrete materials.

3. Take care while making tap connections to prevent concrete or debris from entering the existing structure. Remove any debris, concrete, or other extraneous material which may accumulate.

3.06 BACKFILLING

A. General:

1. Conduct backfill operations of open-cut trenches closely following laying, jointing and bedding of pipe, and after initial inspection and testing are completed.

2. Backfill around and over pipe lines for a distance of 2 feet above the top of pipe with clean earth free of large stones, refuse or other material of an unsatisfactory character.

3. Begin backfilling by depositing and ramming earth in layers not more than 4 inches thick, under, around, and over the pipe to a point not less than 2 feet above the top of pipe. Continue remainder of backfilling as specified in Section 02225, Trenching.

a. To minimize local area traffic interruptions, allow no more than 100 feet between pipe laying and the point of complete backfilling.

DIVISION 3 CONCRETE

SECTION 03100

CONCRETE FORMWORK

PART ONE - GENERAL

1.01 DESCRIPTION

A. The extent of formwork is indicated by the concrete structures shown on the drawings.

B. The work includes providing formwork and shoring for architectural cast-in-place concrete, and the installation into formwork of anchor bolts, setting plates, bearing plates, anchorages, inserts, frames, nosings and other items to be embedded in concrete.

1.02 QUALITY ASSURANCE

A. Codes and Standards: Unless otherwise shown or specified, design, construct, erect, maintain and remove forms and related structures for cast-in-place concrete work in compliance with the American Concrete Institute standard AC1 347. "Recommended Practice for Concrete Formwork".

B. Design of Formwork: Design, erect, support, brace and maintain formwork so that it will safely support all vertical and lateral loads that might be applied until such loads can be supported by the concrete structure. Carry vertical and lateral loads to the ground by the formwork system and by the in-place construction that has attained adequate strength for that purpose. Construct formwork so that concrete members and structures are of the correct size, shape, alignment, elevation and position.

Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.

Provide shores and struts with positive means of adjustment capable of taking up all formwork settlement during concrete placing operations, using wedges or jacks or a combination thereof. Provide trussed supports when adequate foundations for shores and struts cannot be secured.

Support form facing materials by structural members spaced sufficiently close to prevent deflection of the form facing material. Fit forms placed in successive units for continuous surfaces to accurate alignment to assure a smooth completed surface, free from irregularities and within the allowable tolerances. Provide camber in formwork as required for anticipated deflections in formwork due to weight and pressure of fresh

concrete and construction loads for long-span members without intermediate supports.

Provide temporary openings in wall forms, column forms and at other locations necessary to permit inspection and facilitate clean-out.

Design formwork to be readily removable without impact, shock or damage to the cast-in-place concrete surfaces and adjacent materials.

Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt all joints and provide backup material at joints as may be required to prevent leakage and fins.

Side forms of footings may be omitted and concrete placed directly-against the neat excavation only when requested by the Contractor and accepted by the Owner. When omission of forms is accepted, provide additional concrete required beyond the minimum design profiles and dimensions of the footings as detailed.

C. Allowable Tolerances: Construct formwork to provide completed concrete surfaces complying with the tolerances specified in ACI 347, Section 2.4, after removal of forms and prior to patching and finishing of cast-in-place formed surfaces.

D. Applicable Publications: The following publication form a part of this specifications to the extent indicated by references thereto:

1. American Concrete Institute (ACI)
2. ACI 347-68 Recommended Practice for Concrete Formwork
3. American Plywood Association (APA)
4. APA Form V 345-72, Plywood for Concrete Forming
5. Product Standards (P.S.)
6. PS 1-66, Softwood Plywood-Construction and industrial
7. PS 20-70, American Softwood Lumber Standard

E. Quality Control: Approvals, except those required for field installations, field applications and field test shall be obtained before custom fabrication is started and before delivery of materials or equipment or the project site. All materials and materials sources shall be approved not less than 30 days prior to their use in the work.

- (a) Certified Laboratory Test Reports: The testing requirement for materials incorporated in referenced documents will be waived

provided the manufacturer submits notarized certificates stating that previously manufactured materials meet testing requirements specified, and that the materials furnished for this project are of the same type, quality, manufacture and make as that tested. Copies of the test reports need not be submitted except as specifically requested by the Owner.

1.03 SUBMITTALS

A. Shop Drawings: Shop drawings shall cover all formwork required. They shall show general arrangement of forms, sizes, and grades of lumber, panels and related components. Shop drawings shall indicate schedules of placement, construction, and control joints and their method of forming; locations of inserts, tees, sleeves and other related items. Drawings or descriptions of shoring and rehorning methods proposed for floor and roof slabs, spandrel beams, and other horizontal concrete members shall also be furnished.

B. Sample Panel: Provide formwork for mock-up or sample panels as may be required for the Cast-in-Place concrete work specified in Section 03300. Construct forms using facing materials required to provide the specified finishes and textures. Do not proceed with structure formwork until sample units and forms have been accepted by the Owner.

1.04 DELIVERY AND STORAGE

A. On delivery to job site, place materials in area protected from weather. Store materials above ground on framework or blocking and covering providing for adequate air circulation or ventilation. Handle materials to prevent damage.

PART TWO - PRODUCTS

2.01 MATERIALS FOR FORMS

A. Forms shall be of wood, plywood, steel or other suitable material, except on curves, shall be metal, on curves, flexible or curved except as otherwise specified. Forms for concrete pavements, except on curves, shall be metal; on curves, flexible or curved forms on metal or wood may be used. Wood forms, for surfaces exposed to view in the finished structure and requiring a standard finish, shall be tongue-and-groove boards or plywood. For unexposed surfaces, undressed square-edge lumber may be used forms for surfaces requiring special finishes shall be plywood or tongue-and-groove boards, or shall be lined with plywood, a non-absorptive, hard-pressed fiberboard, absorptive-type lining or other suitable material. Tongue-and-groove boards shall be dressed to a uniform thickness, evenly matched, and free from loose knots, holes, and other effects which would affect the concrete finish. Plywood, other than for lining, shall be concrete-form plywood not less than 5/8-inch thick and shall conform with Department of Commerce Product

standard PS-1. Surfaces of steel forms shall be free from irregularities, dents, and sags.

B. Softwood framing lumber, board less than 1 1/2 inch thick and 2 inch wide used for basic forms and form liners shall be kiln dried. Grade marked by grading rules agency approved by American Lumber Standards Committee. Light framing or studs for board or plywood forms, 2-4 inch width and thickness shall be construction standard grade. Softwood framing lumber shall have smooth board surface.

C. Each panel shall be stamped or branded indicating veneer grades, species, type, and identification. Wood faced plywood for architectural concrete surfaces milled sides and mill-sealed edges of panels, grade A.

2.02 FORMS FOR ORNAMENTAL CONCRETE

Forms for ornamental concrete shall be of smooth straight-grained wood, reusable plastic, or plaster waste molds. Wood molds shall be kerfed on the back where necessary to prevent wedging and shall be constructed so that joints will remain tight. Joints shall be staggered and shall be painted where necessary. Plaster waste molds shall be reinforced with fiber and wood frames. Point or patching of waste molds shall be done by a mechanic skilled in such work. Waste molds and the adjacent forms shall be arranged so that the forms can be removed without disturbing the waste mold. The form sheathing shall be fitted neatly to the mold and the joints shall be pointed carefully.

2.03 COATING

Before placing the concrete, the contact surfaces of forms shall be coated with a non-staining mineral oil or suitable non-staining form coating compound, or shall be given two coats of nitrocellulose lacquer, except as specified otherwise. Mineral oil shall not be used on forms for surfaces which are to be painted. For surfaces not exposed to view in the finished structure and when the temperature is above 40 degrees Fahrenheit, sheathing may be wetted thoroughly with clean water. All excess coating shall be removed by wiping with cloths. Reused forms shall have the contact surfaces cleaned thoroughly; those which have been coated shall be given an additional application of the coating. Plaster waste molds shall be sized with two coats of thin shellac or lacquer and coated with soft or thinned nonstaining grease.

2.04

Permanent steel forms shall be formed of zinc-coated sheet, strip, or coil steel having a minimum yield strength of 95,000 pounds per square inch. The unit design stress of the forming shall, in no case, exceed the minimum yield strength of the steel, divided by 1.65. Zinc-coating on the steel shall conform to class E of specification QQ-S-775. The forming shall be designed in accordance with the requirements of AISI manual, "Light Gauge Steel Cold-Formed Design Manual", to obtain the indicated structural properties. All necessary closure strips, fillers and welding washers shall be provided with

the forms.

PART THREE - EXECUTION

3.01 GENERAL

Construct forms complying with AC1 347, to the exact sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades, level and plumb work in the finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required on the work. Use selected materials to obtain the required finishes.

Fabricates forms for easy removal without hammering or prying against the concrete surfaces. Provide crush plates where strapping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.

Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent the loss of concrete mortar. Locate temporary openings on forms in as inconspicuous location as possible consistent with requirements of the work.

Where chamfer exposed external corners and edges occur use chamfer strips accurately fabricated to produce uniform smooth lines and tight edge joints. Provide chamfers of wood, metal, or PVC, to form the required corner or edge shapes as shown. Select one material and use throughout entire job.

Carefully form intersecting planes to provide true, clean-out coners.

Provide all openings in forms to accommodate other work, including mechanical and electrical work. Accurately place and securely support all items required to be built into the forms.

3.02 FALSEWORK: Erect falsework and adequately support, brace and maintain it to safely support vertical, lateral and asymetrical loads applied until such loads can be supported by the in-place concrete structure. Construct falsework so that adjustments can be made for take-up and settlement.

Provide suitable wedges, jacks or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine any abnormal deflection or signs of failure in the work; make necessary adjustments to produce work of the required dimensions.

3.03 **FORMS FOR EXPOSED CONCRETE:** Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.

Do not use metal cover plates for patching holes or defects in forms.

Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.

Use extra studs, walers and bracing as required to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of forms material which will produce bow.

Assemble forms so they may be readily removed without damage to exposed concrete surfaces.

Form molding shapes, recesses and projection with smooth-finish materials, and install in forms with sealed joints to prevent displacement.

3.04 **FORM TIES:** Provide factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.

Unless otherwise shown, provide ties so that the portion remaining within the concrete after removal of the exterior parts is at least 1-1/2" inside from the concrete surface. Unless otherwise shown, provide form ties which will not leave a hole larger than 1" diameter in the concrete surface.

Form ties fabricated on the project site and wire ties are not acceptable.

3.05 **CORNER TREATMENT:** Form exposed corners of beams and columns to produce square, smooth, solid, unbroken lines, except as otherwise shown. Where chamfered corners occur form chamfers with 3/4" x 3/4" strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extend terminal edges to required limit and miter chamfer strips at changes in direction.

Unexposed corners may be formed either square or chamfered.

3.06 **PROVISIONS FOR OTHER TRADES:** Provide openings in concrete formwork to accommodate work of other trades. Size and location of openings, recesses and chases are the responsibility of the trade requiring such items. Accurately place and securely support items to be built into forms.

3.07 **CLEANOUTS, CLEANING AND TIGHTENING:** Provide temporary openings

in forms as required to facilitate cleaning and inspection. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.08 TOLERANCES AND VARIATIONS: The Contractor shall set and maintain concrete forms to ensure that, after removal of the forms and prior to patching and finishing, no portion of the concrete work will exceed any of the tolerances specified. Variations in floor levels shall be measured before removal of supporting shores. The Contractor shall be responsible for variations due to deflection, when the latter results from concrete quality or curing other than that which has been specified. The tolerances specified shall not be exceeded by any portion of any concrete surface; the specified variation for one element of the structure will not be applicable when it will permit another element of the structure will not be applicable when it will permit another element of the structure to exceed its allowable variations.

3.09 PERMANENT STEEL FORMS: Permanent steel forms shall be installed on steel joists by welding using approved welding washers. End laps shall occur over structural supports. Minimum end lap shall be 2 inches. Sheets shall overlap at sides a minimum of one corrugation. Forming shall be secured with a minimum of 25 welds per 100 square feet in a pattern as recommended by the manufacturer.

3.10 PREPARATION OF FORM SURFACES: Coat the contact surfaces of forms with a form-coating compound before reinforcement is placed. Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion nor impede the wetting of the form-coating material to accumulate in the forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with the manufacturer's instructions.

Coat steel forms with a non-staining, rust-preventive form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.11 SHORES AND SUPPORTS: Extend shoring from ground to roof for structures 4 stories or less, unless otherwise permitted.

Extend shoring at least 3 floors under floor or roof being placed for structures over 4 stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space out shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums if required to ensure the proper distribution of loads throughout the structure.

Perform removal of shores and reshoring in a planned sequence to avoid

damage to partially cured concrete. Locate and provide adequate reshoring to safely support the work.

Remove forms from one girder at a time, and reshore before other supports are removed. After orders are reshores. Forms for one beam and its adjacent slab may be removed and immediately reshored before other supports are removed.

In flat-slab construction, allow shores for area within intersection of middle strips of each panel to remain in place during stripping and reshoring operations. After other shores in each panel are removed, place reshores at midpoints between columns and on column lines before next panel is stripped. Keep reshores in place until the concrete has attained its required 28-day strength and heavy loads due to construction operations have been remove.

3.12 REMOVAL OF FORMS

A. General: Form and supports shall remain in place for not less than the following periods of time:

Walls	24 hr
Columns	24 hr
Sides of beams and girders	24 hr
Pan joist forms 3Q in. wide or less	3 days
Over 3Q in. wide	4 days
Arch centers	14 days
Joist, beam, or girder soffits	
Under 10ft. clear span between	
Supports	7 days
Over 20ft. clear span between	
Supports	14 days
Over 20ft. clear span between	
Supports	21 days
Floor slabs under 10ft. clear	
span between supports	4 days
10 to 20ft. clear span between	
Supports	7 days
Over 20ft. clear span between	
Supports	10 days

3.13 RE-USE FORMS: Clean and repair the surfaces of forms that are to be re-used in the work, except that split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to all concrete contact form surfaces as specified for new formwork.

When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure all joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Owner.

SECTION 03200

STEEL BAR AND WELDED WIRE FABRIC REINFORCING

PART ONE - GENERAL

1.01 SCOPE

A. The extent of concrete reinforcement is shown on the drawings and in schedules.

The work includes fabrication and placement of reinforcement for cast in place architectural and structural concrete, including bars, welded wire fabric, ties and supports.

1.02 QUALITY ASSURANCE

A. Applicable Publication

American Society for Testing and Materials (ASTM)

A 82-70 Cold Drawn Steel Wire for Concrete Reinforcement

A 185-70 Welded Wire Fabric for Concrete Reinforcement

A 306-64 Carbon Steel Bars Subject to Mechanical Property Requirements

A 496-70 Deformed Steel Wire for Concrete Reinforcement

A 497-70 Welded Deformed Steel Wire Fabric for Concrete Reinforcement

A 615-68 Deformed Billet- Steel Bars for Concrete Reinforcement

A 616-68 Rail- Steel Deformed Bars for Concrete Reinforcement

A 617-68 Axle- Steel Deformed Bars for Concrete Reinforcement

E 99-63 Reference Radiographs for Steel Welds

American Welding Society (AWS)

A 5.1-69 Mild Steel Covered Arc Welding Electrodes

D 12.1-61 Welding Reinforcing Steel, Metal inserts and Connections in
Reinforcement Concrete Construction

Concrete Reinforcing Steel Institute (CRSI)

CRSI 63 Recommended Practice for Placing Reinforcing Bars

CRSI 65 Recommended Practice for Placing Bar Supports,
Specifications and Nomenclature

CRSI Manual of Standard Practice

B. Approvals

Approvals, except those required for field installations, field applications, and field tests shall be obtained before custom fabrication is started and before delivery of materials or equipment to the project site. All materials and materials sources shall be approved not less than 30 days prior to their use in the work.

Certified Laboratory Test Reports: The testing requirements for materials incorporated in referenced documents will be waived provided the manufacturer submits notarized certificates stating that previously manufactured materials meet testing requirements specified, and that the materials furnished for this project are of the same type, quality, manufacture and make as that tested. Copies of the test reports need not be submitted except as specifically requested by the Owner.

C. Codes and Standard

Comply with the requirements of the following codes and standards, except as herein modified.

American Concrete Institute, ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures".

American Concrete Institute, ACI 318 "Building Code Requirements for Reinforced Concrete". (Latest Edition).

Concrete Reinforcing Steel Institute, "Manual of Standard Practice".

D. Allowable Tolerances

a) Bars used for concrete reinforcement shall meet the following requirements for fabricating tolerances:

1. Sheared length: plus or minus 1 in.
2. Depth of truss bars: plus 0, minus 1/2 in.
3. Stirrups, ties, and spirals: plus or minus 1/2 in.
4. All other bends: plus or minus 1 in.

b) Bars shall be placed to the following tolerances:

1. Concrete cover to formed surfaces: plus or minus 1/4 in.
2. Minimum spacing between bars: minus 1/4 in.
3. Top bars in slabs and beams:
 - a. Members 8 in. deep or less: plus or minus 1/4 in.
 - b. Members more than 8 in. but not over 2 ft. deep: plus or minus 1/2 in.
 - c. Members more than 2 ft. deep: plus or minus 1 in.
4. Crosswise of members: spaced evenly within 2 in.
5. Lengthwise of members: plus or minus 2 in.

c) Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to approval.

E. Rejected Materials

1. Reinforcement with any of the following defects will not be permitted in the work.
2. Bar lengths, depths and bends exceeding the specified fabrication tolerances.
3. Bends or kinks not indicated on drawings of final shop drawings.

4. Bars with reduced cross-section due to excessive rusting or other cause.

F. Identification

1. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

1.03 SUBMITTALS

A. Manufacturer's Data, Concrete Reinforcement

1. Submit 2 copies of manufacturer's specifications and installation instructions for all proprietary materials and reinforcement accessories.

B. Mill Certificates, Concrete Reinforcement

1. Submit 2 copies of steel producer's certificates of mill test for all reinforcing steel.

C. Shop Drawings, Concrete Reinforcement

Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures", showing bar sizes, bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for the fabrication and placement of concrete reinforcement. Include all special reinforcement required and openings through concrete structures. Show wall reinforcement on elevations drawn at a scale of not less than 1/4" to 1'-0".

PART TWO - PRODUCTS

2.01 MATERIALS

A. Reinforcing bars: All reinforcing steel except #2 bars shall be deformed. Reinforcing bars shall conform to ASTM A615, and with grades given on drawings.

B. Galvanized Reinforcing Bars: Hot-dip galvanize reinforcing bars after fabrication and bending, complying with ASTM A153.

C. Welded Wire Fabric: Welded wire fabric shall be electrically-welded fabric of cold-drawn wire of gage and mesh size shown on the drawings or specified herein, and shall conform to ASTM A185. Where the size, mesh and weight of the fabric are not indicated or specified otherwise, fabric shall be 6 inch by 6 inch mesh, No. 6 gage of 0.192-inch nominal diameter wire weighing approximately 42 lbs. per 100 square foot. Welded deformed steel shall conform ASTM A497.

D. Column Spirals: Provide plain, cold-drawn wire complying with ASTM A82, or hot-rolled rods for spirals complying with ASTM A615.

E. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices suitable for proper spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with PS 7-66. Wood, brick, and other devices will not be acceptable.

For slabs on grade, use supports with sand plates or horizontal runners where wetted base materials will not support chair legs.

For exposed-to-views concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are hot-dip galvanized, or plastic protected.

PART THREE - EXECUTION

3.01 GENERAL REQUIREMENTS

All reinforcement bars, stirrups, hagar bars, wire fabric, spirals, and other reinforcing materials shall be provided as indicated on the drawings or required by this specification together with all necessary wire ties, chairs, spacers, supports, and other devices necessary to install and secure the reinforcement properly. All reinforcement, when placed, shall be free rust, scale, oil, grease, clay, and other coatings, and foreign substances that would reduce or destroy the bond. Rusting of reinforcement shall not be a basis of rejection, provided that the rusting has not reduced the effective cross sectional area of the reinforcement to the extent that the strength is reduced beyond specified values. Heavy, thick rust or loose, flaky rust shall be removed by rubbing with burlap or other approved method, prior to placing. Reinforcement which has bends not shown on the project drawings or on approved shop drawings or is reduced in section by rusting such that its weight is not within permissible ASTM tolerances shall not be used. All reinforcement shall be supported and wired together to prevent displacement by construction loads or by the placing of concrete. Unless directed otherwise by the Owner, reinforcement shall not be bent after being partially embedded in hardened concrete. Detailing of reinforcing shall conform to ACI 315. Where cover over reinforcing steel is not specified it shall be in accordance with ACI 318.

3.02 PLACING

Reinforcement shall be placed accurately and secured. It shall be supported by suitable chairs or spacers or by metal hangers. On the ground, and where otherwise subject to corrosion, concrete or other suitable non-corrodible material shall be used for supporting reinforcement. Where the concrete surface will be exposed to the weather in the finished structure or where rust would impair the appearance or finish of the structure,

all reinforcement supports, within specified concrete cover, shall be galvanized or made of a suitable non-corrosible material.

A. Reinforcing Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items, but not so as to impair design strengths of the members. If bars are moved more than one bar diameter the resulting arrangement of bars shall be subject to the approval of the Owner.

B. Placing Welded Wire Fabric: Welded wire fabric used as structural reinforcement in slabs shall be supported and adequately secured as required for reinforcing steel. Temperature reinforcement shall be extended across supporting beams and walls and to within 4 inches of concrete edges. It shall be extended through contraction joints and construction joints, except expansion joints in slabs on ground. Where welded wire fabric is used as temperature reinforcement and adequate support or securement is not provided, the wire fabric shall be lifted during placing of the concrete to insure proper positioning in the slab.

C. Splicing of Reinforcement: Splicing of reinforcement shall be in accordance with ACI 318, except as indicated otherwise or modified herein. Where splices in addition to those indicated on the drawings are necessary, they shall be approved by the Owner prior to their use. Splices shall not be made in beams, girders and slabs at points of maximum stress. Except as indicated, or specified otherwise herein, in lieu of lapping, butt splicing of reinforcement may be permitted provided the splicing materials, equal or greater in cross-sectional area to the spliced steel, shall possess a minimum of 125 percent of the yield strength or 90 percent of the ultimate strength of the reinforcing steel, whichever is the greater. Butt splicing shall be used for bar sizes #11 and above. Splices to be welded shall conform to AWS D12.1; certification of weldability of the reinforcement by the manufacturer, shall splicing of reinforcing, he shall submit complete details of the process to be used for approval. The Contractor shall demonstrate that the splice meets the requirements specified herein by performing at least three test splices which shall be submitted for tests to a testing laboratory that has been approved by the Owner for such testing. The costs of these tests shall be borne by the Contractor.

D. Splicing of Welded Wire Fabric

In regions of maximum stress, where the wires are carrying more than one-half of the permissible stress, splicing in structural slabs shall be avoided wherever possible; such splices, where used, shall be made so that the overlap measured between outermost cross wires of each fabric sheet is not less than the spacing of the cross wires plus two inches. Splices of wires stressed at not more than one-half the permissible stress shall be made so that the overlap measured between outermost cross wires is not less than two inches.

E. Moving Reinforcing Steel: All placement or movement of reinforcing steel after placement, to positions other than indicated or specified, shall be subject to the

approval of the Owner.

F. Future Bonding: Exposed reinforcing bars left for future extension shall be intermediate grade steel; the exposed bars shall be encased in concrete with a minimum compressive strength at 28 days of 2000 pounds per square inch.

G. Reinforcement in Construction Joints: All reinforcing steel and welded wire fabric shall be continued across joints keys and inclined dowels shall be provided as directed by the Owner. Longitudinal keys at least 1 1/2 inches deep shall be provided in all joints in walls and between walls and slabs or footings. The surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed.

SECTION 03300

CAST IN PLACE CONCRETE

PART ONE - GENERAL

1.01 SCOPE

A. The extent of cast in place concrete work is shown on the drawings.

The work includes providing cast in place standard weight concrete consisting of portland cement, fine aggregate, coarse aggregate, water, admixtures, designed, proportioned, mixed, placed finished and cured as herein specified.

1.02 QUALITY ASSURANCE

A. Applicable Publications

The following publications of the issues listed below, but referred to elsewhere by basis designation only, form a part of this specification to the extent indicated by the reference thereto (where a number is suffixed to the specification number, it denotes the effective amendment to the specification):

a) American Concrete Institute (ACI)

ACI 331 "Specifications for Structural Concrete for Buildings".

ACI 318 "Building Code Requirements for Reinforced Concrete".

ACI 614 "Recommended Practice for Measuring, Mixing and Placing Concrete".

ACI 311 "Recommended Practice for Concrete Inspection".

b) American Society for Testing and Materials (ASTM)

C 29-71 Unit Weight of Aggregate.

C 31-69 Making and Curing Concrete Test Specimens in the Field.

C 33-74a Concrete Aggregates.

C 39-72 Compressive Strength of Cylindrical Concrete Specimens.

C 87-69(1975) Effect of Organic impurities in Fine Aggregate on Strength of Mortar.

C 94-74a Ready-Mixed Concrete.

C 125-74 Concrete and Concrete Aggregates; Definition of Terms Relating To.

C 136-71 Sieve or Screen Analysis of Fine and Coarse Aggregates.

C 130-75 Unit Weight, Yield and Air Content (Gravimetric) of Concrete.

C 143-74 Slump of Portland Cement Concrete.

C 150-76a Portland Cement.

C 156-74 Water Retention by Concrete Curing Materials.

C 171-69(1975) Sheet Materials for Curing Concrete.

C 172-71 Sampling Fresh Concrete.

C 173-75 Air Content for Freshly Mixed Concrete by the Pressure Method.

C 227-71 Potential Alkali Reactivity of Cement-Aggregate

Combinations (Mortar Bar Method).

C 231-75	Air Content for Freshly Mixed Concrete by the Pressure Method.
C 260-74	Air-Entraining Admixtures for Concrete; Specifications.
C 309-74	Liquid Membrane-Forming Compounds for Curing Concrete.
C 595-74	Blended Hydraulic Cements.
D 75-71	Sampling Aggregates.
D 98-74	Calcium Chloride.
D1329-72	Low-Temperature Characteristics of Rubber and Rubber-Like Materials by a Temperature Retraction Procedure.
D 1751-73	Performed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-Extruding and Resilient Bituminous Types).
D1752-67(1973)	Performed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
D 1850-74	Concrete Joint Sealer, Cold Application Type.
G 21-70	Resistance of Synthetic Polymeric Materials to Fungi.

c) Portland Cement Association (PCA)

B. Qualifications of Contractors Testing Laboratory: Contractor's selection of a Testing Laboratory is subject to the Owners acceptance.

Select a testing laboratory thoroughly experienced in design and testing of concrete materials and mixes. Submit a written description of the proposed concrete testing laboratory giving qualifications of personnel, laboratory facilities and equipment, and other information as may be requested by the Owner.

a) Concrete Testing Service

The Contractor shall employ, at his own expense, a testing laboratory accepted by the owner to perform all other test and to submit test reports to the

Owner. The testing laboratory shall be responsible for conducting and interpreting the tests, and shall state in each report whether or not the test specimens comply to the specified requirements, and shall indicate any deviations therefrom.

Materials and installed work may require testing and retesting as directed by the Owner at anytime during the progress of the work. Allow free access to material stockpiles and facilities at all times. Tests not specifically indicated to be done at the Owner's expense, including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.

b) Test for Concrete Materials

Sample and test proposed concrete materials for design concrete mixes as listed below:

Test fine aggregate from each material source and report the following:

- Sieve Analysis: ASTM C 136
- Fineness Modulus: ASTM C 125
- Material Passing No. 200 Sieve: ASTM C 117
- Amount of Friable Particles: ASTM C 142
- Amount of Organic Impurities: ASTM C 40
- Magnesium Sulphate Soundness Tests: ASTM C 88

The coarse aggregate from each material source and each grading, and report the following:

- Sieve Analysis: ASTM C 136
- Fineness Modulus: ASTM C 125
- Amount of Friable Particles: ASTM C 142
- Amount of Soft Particles: ASTM C 235
- Material Passing No. 200 Sieve: ASTM C 117
- Magnesium Sulphate Soundness Tests: ASTM C 88
- Compacted Unit Weight: ASTM C 29
- Los Angeles Abrasion Test: ASTM C 131 04 C 535

Test portland cement from each material source, type and color, and report the following:

- Chemical Analysis: ASTM C 114
- Fineness of Grind: ASTM C 115
- Autoclave Expansion: ASTM C 151
- Time of Setting: ASTM C 266
- Air Content of Mortar: ASTM C 185

Compressive Strength: ASTM C 109
Heat of Hydration: ASTM C 186
False Set: ASTM C 451

Submit written reports to the Owner for each material sampled and tested prior to the start of work. Provide the project identification name, number, date of report, name of contractor, name of concrete testing service, source of concrete aggregates, manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results.

c) Quality Control Testing During Construction

Concrete shall be sampled and tested for quality control during the placement of concrete as follows:

Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

Slump: ASTM C 143; one test for each concrete load at point of discharged; and one for each set of compressive strength test specimens.

Compression Test Specimens: ASTM C 31; one set of 6 standard cylinders for each compressive strength test.

The Contractor shall provide for test purposes:

- a- One at 7 days
- b- Two at 21 days
- c- One at discretion of Owner

For portions of the work where concrete of deficient strength has resulted, as outlined in above, the Engineer may, at his option, require load tests to be performed. When load tests are required, the members of portions of the structure to be tested shall be loaded in such a way as to produce twice the design stresses in that member.

Concrete Temperature: Test hourly when air temperature is 80°F and above; and each time a set of compression test specimens is made.

Compressive Strength Test: ASTM C 39; one set for each 100 cu. yards or fraction thereof, or each concrete class placed in any one day; 2 specimen retained in reserve for later testing if required.

d) The testing service shall take core samples of in-place concrete when test results are such that the specified concrete strengths and other characteristics have

not been attained in the structure. The testing and other characteristics of the in-place concrete by compression tests on cored cylinders complying with ASTM 42 or by load as outlined in ACI 318, or other as directed. The Contractor shall pay for such tests conducted and any other additional testing as may be required.

C. Workmanship: All concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes, shall be corrected as directed by the Owner at the Contractor's expense, without extension of time therefore. The Contractor shall also be responsible for the cost of corrections to any other work affected by or resulting from corrections to any other work affected by or resulting from corrections to the concrete work.

D. Concrete Evaluations

a) Evaluation of Quality Control Tests

The concrete quality control testing as herein before specified will be evaluated by the following criteria:

Do not use concrete delivered to the final point of placement which has a slump outside the values specified.

Strengths of working stress type concrete shall be considered satisfactory if the average of any five consecutive strength test of the laboratory cured specimens representing each specified strength of concrete is equal to or greater than the specified strength, and if not more than 20 percent of the strength tests have values less than the specified strength.

Strengths of ultimate strength type concrete shall be considered satisfactory if the average of any three consecutive strength tests of the laboratory cured specimens representing each specified strength of concrete is equal to or greater than the specified strength, and if not more than the specified strength, and if not more than 10 percent of the strength tests have values less than the specified strength and no individual strength test result fails below the required strength by more than 500 PSI.

b) Formed Concrete Dimensional Tolerances

Formed concrete having any dimension smaller or greater than required, and outside the specified tolerance limits, will be considered deficient in strength and subject to additional testing as herein specified.

Formed concrete having any dimension greater than required will be rejected if the appearance or function of the structure is adversely affected, or if the large dimensions interfere with other construction. Repair, or remove

and replace rejected concrete as required to meet the construction conditions. When permitted, accomplish the removal of excessive material in a manner to maintain the strength of the section without affecting function and appearance. Such corrections will not carry any additional expense to the Owner.

c) Strength of Concrete Structure

The strength of the concrete structure in-place will be considered potentially deficient if fails to comply with any of the requirements which control the strength of structure, including the following condition:

Failure to meet compressive strength tests requirements.

Concrete which differs from the required dimensions or location in such a manner to reduce strength.

Concrete subjected to damaging mechanical disturbances; particularly load stresses, heavy shock, and excessive vibration.

Poor workmanship and quality control likely to result in deficient strength.

d) Testing Concrete Structure for Strength

When there is evidence that the strength of the concrete structure in place does not meet specifications requirements the concrete testing service shall take cores drilled from hardened concrete for compressive strength determination, complying with ASTM C 42 and as follow:

Take at least 3 representative cores from each member or area of suspect strength, from locations directed by the Owner.

Test cores in a saturated-surface-dry condition if the concrete will be wet during the use of the completed structure.

Test cores in an air-dry condition if the concrete will be dry at all times during use of the completed structure.

Strength of concrete for each series of cores will be considered satisfactory if their average compressive strength is at least 90% of the 28 day design compressive strength.

A. Test Reports: Submit two (2) copies of laboratory test reports in writing to the Owner on the same day that tests are made. Include in test reports the project identification name and number, date, name of Contractor, name of concrete testing service, location of test core in the structure, type or class of concrete represented by core samples, nominal maximum size aggregate, design compressive strength, compression breaking strength and type of break (corrected for length-diameter ratio), direction of applied load to core with respect to horizontal plane of the concrete as placed, and the moisture condition of the core at time of testing.

Fill core holes solid with patching mortar, and finish to match adjacent concrete surfaces.

Conduct static load tests and evaluations complying with ACI 318, Chapter 2, if the results of the core tests are unsatisfactory; or if core tests are impracticable to obtain, as directed by the Owner.

B. Manufacturer's Data: Submit 2 copies of manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures, bonding agents, epoxy-resin grout, patching compounds, waterstops, joint systems, chemical floor hardeners, and dry shake finish materials.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Cement: Cement shall be stored immediately upon receipt at the site of the work. Cement in bags shall be stored in a suitable weatherproof structure which shall be as air-tight as practicable; floors shall be elevated above the ground a distance sufficient to prevent the absorption of moisture. Bags shall be stacked close together to reduce circulation of air but shall not be stacked against outside walls; the manner of storage shall permit easy access for inspection and identification of each shipment. Bulk cement shall be transferred to elevated airtight and weatherproof bins. At the time of use all cement shall be free-flowing, and free of lumps. Cement that has been in storage longer than 6 months will be tested by standard mortar tests or other tests as deemed necessary by the Owner to determine its suitability for use and such cement shall not be used without approval of the Owner.

B. Aggregates: Aggregates shall be stored on areas covered with tightly laid wood planks, sheet metal, or other hard and clean surface, and in a manner that will preclude the inclusion of foreign material. Aggregates of different sizes shall be stored in separate piles. Stock piles of coarse aggregate shall be built in horizontal layers not exceeding 4 feet in depth to minimize segregation. Should the coarse aggregate become segregated it shall be remixed to conform to the grading requirements given herein before.

C. Admixtures: Admixtures shall be stored in a manner that will not damage the containers. An air-entraining admixture which has been in storage for longer than 6

months shall not be used until retest proves it to be satisfactory. Store to prevent contamination, evaporation, or damage. Agitate emulsions prior to use.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete during rain unless protection is provided.

PART TWO - PRODUCTS

2.01 MATERIALS FOR CONCRETE MIX

- A. Cement: Only one brand of cement may be used for each required type throughout the project, unless otherwise accepted by the Owner.

Cement shall be type 1, conforming to ASTM C 150 for all concrete. All cement for exposed surfaces shall be the same manufacturer.

- B. Aggregates: Comply with the requirements of ASTM C 33 and as herein specified.

Do not use aggregates containing soluble salts or other substances such as iron sulphides, pyrite, marcasite or ochre which can cause stains on exposed concrete surfaces.

Provide aggregates from a single source for all exposed aggregate finish and exposed architectural concrete.

a) Fine Aggregates

Fine aggregates from different sources of supply shall not be mixed or stored in the same stockpile, or use alternately in the same structure. The fine aggregate shall be not less than 2.40 or greater than 2.90 except that for 0.375 inch maximum size, the fineness modulus shall be not less than 2.60 and not more than 3.00. Fineness modulus shall be defined according to ASTM C 125. Aggregate which shows a variation in fineness modulus greater than 0.20 more or less than that of the representative sample submitted will be rejected, unless at the option of the Owner the aggregate is accepted subject to such changes in the concrete proportions as may be directed by the Owner and for which no change in the contract price will be made. Fine aggregate shall be graded as specified in ASTM C 33. Fine aggregate shall be clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances.

b) Coarse Aggregate

Coarse aggregate shall be clean, uncoated, processed aggregate containing

no clay, mud, loam, or foreign matter, as follows:

Crushed stone, processed from natural rock or stone.

Washed gravel, either natural or crushed with water that is clean, fresh and free of oil, acid, organic matter or other deleterious substances.

Grading of coarse aggregate shall be in accordance with the following tables with respect to the coarse aggregate size specified.

Percentage by Weight Passing Sieves

Size of Coarse Aggregate (inches)	2"	1-1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16
1-1/2	100	95-100	---	35-70	---	10-30	0-5	---	--
1		100	90-100	---	25-60	---	0-10	0-5	
3/4			100	90-100	---	20-55	0-10	0-5	
1/2				100	90-100	40-70	0-15	0-5	
3/8					100	85-100	10-30	0-10	
0-5									

Acceptability of the aggregate shall be based on satisfactory evidence furnished by the Contractor that the aggregate is sound and durable. Such evidence shall include the following:

a) Certification from the aggregate producer that the aggregates are produced from raw materials which do not have to be treated after burning to eliminate the destructive forces caused by the burning of calcium and magnesium salts.

Class of concrete and percent air-entrainment, if any, should be stated. The date of the tests shall not be more than 6 months prior to the date of submission for approval.

C. Water: Water for mixing and curing, including free moisture and in the aggregates shall be fresh, clean, and potable. Turbidity of the water shall not exceed 2,000 parts per million. Mortar specimens made in accordance with ASTM C 87, when compared with similar mortar specimens made with water of known satisfactory quality and using the same sand and cement, shall show no unsoundness or marked change in setting, and the compressive strength of mortar specimens at 28 days shall be at least 95 percent of the compressive strength of the specimens made with water of known satisfactory quality.

D. Concrete Admixture: Provide admixtures produced by recognized admixture manufacturers and use in compliance with the manufacturer's printed directions. Do not use admixtures which have not been incorporated and tested in the accepted design mixes, unless otherwise authorized in writing by the Owner.

Air-entraining admixtures shall comply with the requirements of ASTM C 260.

Water reducing set retarding admixtures shall comply with the requirements of ASTM C 494. The material added shall be pozzolanic, cementitious or siliceous.

Do not use calcium chloride in concrete, except as otherwise authorized in writing by the Owner. Do not use any admixtures containing calcium chloride where concrete is placed against any galvanized steel, or in any mix using high-early strength cement. When more than one admixture is used in a mix, the Contractor shall furnish satisfactory evidence that the admixtures to be used are compatible in combination with the cement and aggregates to be used for the project and will be suitable at the job temperatures. The cost of the admixtures to be used for this project shall be included in the contract bid price.

2.02 MATERIAL FOR CURING CONCRETE

A. Absorptive Cover: Provide absorptive cover for curing concrete consisting of burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd. and complying with AASHTO M 132, Class 3, or provide cotton mats complying with ASTM C 440.

B. Moisture Retaining Cover: Provide moisture retaining cover for curing concrete of any of the following:

Waterproof paper, complying with ASTM C 171, Type 1 or Type 2 .
Polyethylene sheeting, complying with AASHTO M 171.
Polyethylene- coated burlap.

C. Membrane-Forming Curing Compound: Provide a liquid type membrane-

forming curing compound complying with ASTM C 309.

Use Type 1, clear with fugitive dye, for interior and exterior surfaces to receive applied finishes.

2.03 JOINT SEALING MATERIALS

Joint sealing materials shall conform to ASTM D1850, or SS-S-1401, except that all joints exposed to the weather shall be sealed with material conforming to SS-S-1401.

2.04 SLOTS AND INSERTS FOR MASONRY ANCHORS

Dovetail anchor slots shall be formed of zinc-coated sheet steel, U.S. 24 minimum gage, shall be provided in concrete faced with or abutting masonry.

Inserts shall be formed of 9 minimum gage zinc-coated steel wire, engaged between a two-piece half-round wood core, and having loops for embedding in concrete.

2.05 Bonding Materials

Concrete bonding agent provide an aqueous phase, film forming compound suitable for brush or spray application complying with Mil-B-19235.

2.06 FLOOR FINISH MATERIALS

A. Liquid Chemical Floor Hardener: Provide a colorless aqueous solution containing a blend of magnesium fluosilicate and zinc fluosilicate combined with a wetting agent, containing not less than 2 lbs. of fluosilicates per gallon.

Products offered by manufacturers to comply with the requirements include the following:

Euco Surfhard: Euclid Chemical Co.
Homolith: A.C. Horn/W.R. Grace
Saniseal 50: Master Builder's Co.
Lapidolith: Sonneborn Building Products
Riw Flintox Liquid: Toch Bros.

B. Abrasive Aggregate for Hon-Slip Finish: Provide fused aluminum oxide grits, or crushed emery, as abrasive aggregate for non-slip finish with emery aggregate containing not less than 40% aluminum oxide and not less than 25% ferric oxide. Use material that is factory-graded, packaged, rust-proof and non-glazing, and is unaffected by moisture and cleaning materials.

2.07 CONCRETE MIXES

Provide the classes of concrete shown on the drawings.

Use water-reducing admixtures in strict compliance with the manufacturer's directions. Admixtures to increase cement dispersion, or provide increased workability for low-slump concrete, may be used at the Contractor's option subject to the Owner acceptance. When admixtures are used, a reduction in the specified minimum cement content of concrete mixes will not be permitted.

Use amounts of admixtures as recommended by the manufacturer for climatic conditions prevailing at the time of placing. Adjust quantities of admixtures as required to maintain quality control.

Proportion and design mixes to result in concrete slump at the point of placement as follows:

Ramps and Sloping Surfaces: Not more than 3". Reinforced Foundation Systems: Not less than 1" and not more than 3". All other Concrete: Not less than 1" and not more than 4".

2.08 PROPORTIONING, MEASUREMENT AND MIXING

A. General: Concrete may be mixed at batch plants or it may be transit-mixed as specified herein. Batch plants must comply with the requirements of ACI 614, with sufficient capacity to produce concrete of the qualities specified in quantities required to meet the construction schedule. All plant facilities are subject to the acceptance of the Owner.

B. Proportioning of Materials: Proportioning of materials shall be accomplished by weighing, except as otherwise provided herein. In urgent situations, volumetric proportioning may be used temporarily, if permitted by the Owner, who will stipulated the length of the period during which volumetric proportioning may be used. The Contractor shall furnish the necessary equipment and shall establish accurate procedures for determining the quantities of free moisture in the aggregates, the true volume of the fine aggregate if volumetric proportioning is used, and the air content of the freshly mixed concrete if air-entrained concrete is used. Moisture, volumetric and air determinations shall be made at intervals as specified hereinafter under testing requirements. Allowable tolerances for measuring cement and water shall be 1 percent; for aggregates 2 percent, and for admixtures 3 percent.

a) Weight Measurement:

The fine aggregate and each size of coarse aggregate shall each be weighed separately. Cement in standard packages (bags) need not be weighed, but

bulk cement or fractional packages shall be weighed on a scale separate from that used for weighing the other material.

b) Volumetric Measurement:

The weight proportions shall be transposed into equivalent volumetric proportions by weighing representative samples of the aggregate in the condition in which they will be measured and in accordance with ASTM C 29. In determining the true volume of the fine aggregate, allowance shall be made for the bulking effect from the moisture contained therein. Suitable allowances shall also be made for variations in the moisture conditions of the aggregates.

C. Mixing: All concrete shall be machine mixed. In emergencies, the mixing may be done by hand if so authorized by the Owner. Mixing shall begin within 30 minutes after the cement has been added to the aggregates. The time of mixing after all cement and aggregates are in the mixer drum shall be not less than one minute for mixers having a capacity of one cubic yard or less; for mixers or larger capacities, the minimum time shall be increased 15 seconds for each additional cubic yard or fraction thereof of additional capacity. A reduction in the aforementioned mixing times shall be permitted in accordance with ASTM C 94 if mixer performance tests, made at the Contractor's option and at his expense, indicate adequate mixing with the reduced time. All mixing water shall be introduced in the drum before contents of the mixer drum shall be discharged before recharging. The time elapsing between the introduction of the mixing water to the cement and aggregates or the cement to the aggregates and placing of the concrete in final position in the forms shall not exceed 60 minutes, if the air temperature is less than 85 degrees Fahrenheit and 45 minutes if the air temperature is equal or greater than 85 degrees Fahrenheit. The retempering of concrete, i.e., remixing with or without additional cement, aggregate, or water, will not be permitted. Provide a batch ticket for each batch discharged and used in the work, indicating the project identification name and number, date, mix type, quantity and amount of water introduced.

D. Ready Mixed Concrete: Ready-mixed concrete shall conform to ASTM C 94 as modified herein. Ready-mixed concrete is defined in this specification as concrete produced regularly by a commercial establishment and delivered to the purchaser in the plastic state. Ready-mixed concrete may be used provided that (a) the plant has sufficient capacity and transportation equipment to deliver the concrete at the rate desired and (b) the plant meets the requirements specified hereinbefore for equipment, measurement of materials and mixing, except as modified herein. The cement aggregates, water and admixtures shall conform to all applicable requirements of this specification. Ready-mixed concrete not specified otherwise hereinafter shall be mixed and delivered by one of the following methods:

a) Truck Mixing

Concrete shall be mixed and delivered in a truck mixer. Mixer shall be charged with a ribbon fed mixture of aggregates and cement, or, in the absence of facilities for ribbon feeding, the aggregates shall be charged before the cement. When mixing is begun during or immediately after charging, a portion of the mixing water not in excess of that required to produce the minimum acceptable slump, shall be added ahead of, or with, the other ingredients. Total mixing shall be for not less than 50 not more than 100 revolutions of the drum at the manufacturer's rated mixing speed after all ingredients including water are in the drum except as follows: After 30 to 75 revolutions of the drum the slump shall be tested and additional water shall be added if necessary to produce the required slump; if additional water is necessary, mixing shall be continued for at least 20 revolutions after the water is added. Mixing speed shall be not less than 4 rpm for revolving drum mixers, and not less than 4 rpm not more than 16 rpm for open top mixers. Any turning of the drum during transportation shall be at the speed designated by the manufacturer of the equipment as agitating speed. Each batch of concrete delivered at the job site shall be accompanied by a time slip issued at the batching plant, bearing the time of departure therefrom and the signature of the inspector. Discharge of concrete from the drum shall be completed within 1 hour or before the drum completes 250 revolutions after the introduction of water to the cement and aggregates.

b) Combination Central Plant and Truck Mixing (Shrink Mixing):

Concrete shall be partially mixed in a central plant mixer and the mixing completed in a truck mixer. The mixing time in a central-plant mixer shall be the minimum required to intermingle the ingredients and shall not exceed 30 seconds. The mixing shall be completed in a truck mixer as specified hereinbefore under truck mixing.

c) Central Plant Mixing:

Concrete shall be mixed completely in a stationary mixer at a plant and transported to the site of the work in a truck agitator or a truck mixer operating at a speed of rotation designated by the manufacturer as agitating speed. Mixing shall begin within 30 minutes after cement has been added to aggregates. When authorized in writing by the Owner, non-agitation equipment approved by him may be used for transporting concrete. The time lapse between the introduction of the mixing water to the cement and aggregates and the placing of concrete in final position in the forms, shall not exceed; (a) for agitating equipment-60 minutes, air temperature less than 85 degrees Fahrenheit, (b) for non-agitating equipment-30 minutes.

E. Consistency of Concrete: Except as specified otherwise, the slump shall be

from 3 to 5 inches and will be determined by the methods specified hereinafter.

PART THREE - EXECUTION

3.01 INSPECTION

A. Assure that excavations and formwork are complete and the excess water are removed.

B. Verify that the vapor barrier has been placed in the greatest widths and lengths practicable so as to eliminate joints wherever possible and where the joints were necessary verify that the materials has been lapped not less than 6 inches for the side and end laps and sealed with approved adhesive.

C. Check that reinforcement is secured in place as specified in Section 03200 Concrete Reinforcement.

D. Verify that expansion joint material, anchors, and other inserts are secured in position.

E. Notify other crafts involved with ample time to permit the installation of their work; cooperate with other trades in setting such work, as required. Thoroughly wet wood forms immediately before placing concrete, as required where form coatings are not used.

3.02 CONVEYING

A. Handle concrete from the point of delivery and transfer to the concrete conveying equipment and to the locations of final deposit as rapidly as practicable by methods which will prevent segregation and loss of concrete mix materials.

B. At any point in the conveying, the free vertical drop of the concrete shall not exceed 3 feet. Chuting will be permitted only where the concrete is deposit into a hopper before it is placed in the forms.

C. Conveying equipment shall be cleaned thoroughly before each run. All concrete shall be deposit as soon as practicable after the forms and the reinforcement have been inspected and approved. Concrete which has segregated in conveying shall be removed and disposed of as directed by the Owner.

3.03 CONCRETE PLACEMENT

A. General: Place concrete in compliance with the practices and recommendations of ACI 614, and as herein specified.

B. Deposit concrete continuously or in layers of such thickness that no concrete

will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic. Deposit concrete as nearly as practicable to its final location to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure which will cause segregation.

C. Screed concrete which is to receive other construction to the proper level to avoid excessive skimming or grouting.

D. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality control limits, or which has been contaminated. No concrete shall be placed after there is evidence of initial set. All concrete placing equipment and methods shall be subject to approval. Concrete placement will not be permitted when weather conditions prevent proper placement and consolidation. The placement of concrete in uncovered areas during periods of precipitation will not be allowed. Subgrades of earth or other suitable material to prevent the concrete from becoming contaminated. Before placing concrete on porous sub-grades, they shall be dampened as required to prevent water of hydration from being absorbed into the subgrade. Forms shall be clean of dirt, construction debris and water. Fresh concrete shall not be placed on vertical supporting members such as columns and walls without approval. Concrete shall be deposited in approximately horizontal layers 12 to 20 inches deep in a manner to preclude the formation of cold joints between successive layers. The method of depositing concrete shall be such as to avoid displacing the reinforcement and segregating the aggregate. Concrete shall be worked about the reinforcement and embedded fixtures and into corners and angles of the forms, care being taken to avoid over working which may result in segregation. On the bottom of beams, slabs, and girders where the congestion of steel near the forms makes placing difficult, a layer of mortar equal to the approved concrete mix, with the coarse aggregates removed and of 5 to 6 inch slump, shall be deposited to cover the surface to depth of approximately one inch before placing the concrete. Water which accumulates on the surface of the concrete during placing shall be removed by absorption with porous materials in a manner that prevents removal of cement. Pumping of concrete through aluminum pipe shall not be permitted.

Do not place concrete in supporting elements until the concrete previously placed in columns and walls is no longer plastic.

3.04 VIBRATION

A. Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.

B. All concrete, with the exception of concrete slabs four (4) inches or less in depth, shall be compacted with frequency, internal, mechanical vibrating equipment supplemented by hand spading and tamping. Concrete slabs four (4) inches or less in

depth shall be consolidated by wood tampers, spading and setting with a heavy leveling straight edge.

C. Vibrators shall be designed to operate with vibratory element submerged in the concrete, and shall have a frequency of not less than 6,000 impulses per minute when submerged. The vibrating equipment shall be adequate at all times in number of units and power of each unit to consolidate the concrete properly. Vibration of forms and reinforcement shall not be employed except when authorized specifically by the Owner.

D. Vibration shall not be used to transport the concrete in the forms. Vibration shall be discontinued when the concrete has been compacted thoroughly and ceases to decrease in volume.

3.05 CONSTRUCTION JOINTS

A. Joints shall be located near the middle of the spans of slabs, beams and girders unless a beam intersects a girder at the point in which case the point in which case the joints in the girders shall be offset a distance equal to twice the width of the beam.

B. Horizontal joints in wall and columns shall be at the underside of floors, slabs, beams, or girder and at the top of footings or grade slabs.

C. Beams, girders, brackets, column capitals, haunches, and drop panels shall be placed at the same time as slabs.

D. Joints shall be perpendicular to the main reinforcement.

E. All reinforcing steel and welded wire fabrics shall be continued across joints. Keys and inclined dowels shall be provided as directed by the Owner. Longitudinal keys at least 1-1/2 inches deep shall be provided in all joint in walls and between walls and slabs or footings.

F. The surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed.

G. Bonding

a) Roughen surfaces of set concrete at all joints, except where bonding is obtained by use of concrete bonding agent, and clean surfaces of laitance coating, loose particles, and foreign matter. Roughen surfaces in a manner to expose bonded aggregate uniformly and do not leave laitance, loose particles of aggregate, or damaged concrete at the surface.

b) Prepare for bonding of fresh concrete to new concrete that has set but is not fully cured, as follows:

1. At joints between footings and walls or columns, and beams of slabs they support, and elsewhere unless otherwise specified herein, dampen, but do not saturate, the roughened and cleaned surface of set concrete immediately before placing fresh concrete.

2. At joints in exposed work; at vertical joints in walls; at joints in girders beams, supported slabs and other structural members; and at joints designed to contain liquids, dampen, but do not saturate, the roughened and cleaned surface of set concrete and apply a liberal coating of neat cement grout.

3. Use neat cement grout consisting of equal parts portland cement and fine aggregate by weight and not more than 6 gals. of water per sack of cement. Apply with a stiff broom or brush to a minimum thickness of 1/16". Deposit fresh concrete before cement grout has attained its initial set.

4. In lieu of neat cement grout, bonding grout may be a commercial bonding agent. Apply to cleaned concrete surfaces in accordance with the printed instructions of the bonding material manufacturer.

c) Prepare for bonding of fresh concrete to fully-cured hardened concrete or existing concrete by using an epoxy-resin adhesive binder, as follows:

1. Handle and store epoxy-resin adhesive binder in compliance with the manufacturer's printed instructions, including safety precautions.

2. Mix the epoxy-resin adhesive binder in the proportions recommended by the manufacturer, carefully following directions for safety of personnel.

3. Before depositing fresh concrete, thoroughly roughen and clean hardened concrete surfaces and coat with epoxy-resin grout not less than 1/16".

Placing and Screeding Normal Concrete Slab or Base Slab

Concrete of Slump within the limits specified herein before shall be placed, consolidated and immediately struck off to bring the top surface of the slab to proper contour, grade and elevation. This operation may be followed immediately by a darbying or bull floating of the surface with wooden tools so as to correct any unevenness. Striking-off and darbying shall be completed before bleed water appears on the surface of the freshly-placed concrete. No further work shall then be performed until the concrete has attained a set sufficient for floating and sufficient to support the weight of the finisher and equipment. If the bleed water has not disappeared by the time floating of the surface using a rubber hose. At no time shall dry cement be used to absorb bleed water.

a) Floated finish shall be provided for monolithic slab surfaces that are to receive trowel finish and other finishes at hereinafter specified, and as shown on the drawings or in schedules. At the proper time, as specified hereinbefore for placing and screeding normal concrete slab or base slab, floating shall be performed by hand with a wood or magnesium float, or with a power-driven float of suitable type. Floating of any one area shall be the minimum necessary to produce the finish specified.

After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently to permit the operation of a power-driven float, or both. Consolidate the surface with power-driven floats, or by handfloating if area is small or inaccessible to power units. Check and level the surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straightedge placed on the surface at not less than 2 different angles. Cut down high spots and fill all low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat the surface to a uniform, smooth, granular texture.

b) Troweled Finish

The floor shall first be given a floated finish as specified herein before. Upon attaining proper set, the surface shall be flat-steel-troweled (followed by a raised steel troweling in order to obtain the desired finish). Burnished trowelling shall be obtained by using raised steel trowelling until practically no change in the sheen of the surface is effected by added trowelling.

Consolidate the concrete surface by the final hand troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge. Grind smooth surface defects which would telegraph through applied floor covering system.

c) Broomed Finish

The floor shall first be given a floated finish and then a steel troweled finish, as specified herein before, after which it shall be brushed or broomed as necessary. A flexible bristle broom or stiff brush shall be used. It shall have a frequency of fibers across its patch as necessary to produce the effect required to match the approved sample panel specified hereinafter. At time of brooming or brushing, the troweled surface shall have hardened sufficiently to retain the scoring or ridges. The brooming or brushing shall be in a direction transverse to that of traffic or at right angles to the slope of the slab or floor.

I. Normal Concrete Toppings; Placement: These requirements apply to the placement of toppings of normal concrete onto base slabs that are either freshly placed and still plastic, or on hardened base slabs. These methods shall also be used when normal concrete toppings are employed as a base for special treatments or surfacings.

Placing on a Fresh Base: The concrete base slab shall be given a floated finish. As soon as the water sheen has disappeared, the surface of the base slab shall be lightly raked with a stiff bristic broom to provide a bonding surface for the topping. The topping mixture shall immediately be spread evenly over the roughened base and before final set takes place. The topping shall be given the finish indicated on the drawings, or specified hereinafter as directed by the Owner.

Placing on a Hardened Base:

Where a floor or slab is placed in two lifts, or a tooping is to be applied after the base slab has hardened, the base slab shall be rough broomed to exposed the aggregate and provide a rough bonding surface for the topping. When the topping is to be placed on a floated or troweled hardened base, the base shall be roughened by a suitable procedure to lightly expose aggregate and provide a bonding surface. All dirt, laitance and loose aggregate shall be removed by means of a stiff wire broom. The clean base shall be kept wet for a period of 12 hours preceding the application of the topping. All excess water shall be removed and a 1:1 cement grout shall be applied and brushed into the surface of the base slab. The cement grout shall not be allowed to dry and shall be spread only short distances ahead of the topping placement. The temperature differential between the completed base and the topping mixture shall not exceed 10 degrees F at the time of placing. The topping shall then be placed and compacted and the surface finished.

Composition of Normal Topping:

Using 3/8-inch aggregate, sand and portland cement as specified hereinbefore, the topping mix shall conform to the strength requirements for 5,000 psi compressive strength, or it shall consist of 1 par cement 1 1/2 sand, and 1 1/2 of 3/8-inch aggregate, by weight, with no more than 5 gallons of water per sack of cement. Except when a monolithic shake is to be applied (up to 3-inch slump permitted in this case) normal concrete toppings shall have a slump not greater than 1-inch.

Special Aggregate Toppings:

For toppings required to meet strength requirements in excess of 5,000 psi, premixed metallic aggregate toppings or those with special natural or artificially produced aggregates are acceptable when these are employed in conformance with the requirements or recommendations of the manufacturer or processor of the aggregate, and for application on a fresh base or onto a gardened base. Included in this category are emery aggregate, traprock, and other aggregates crushed and factory graded to size

recommended by the processor. Emery aggregate as produced in the U.S. shall contain not less than 45 percent aluminum oxide and not less than 25 percent ferric oxide. These aggregate shall be cubical or polyhedral in form and shall not alter in form in physical or chemical nature in the presence of moisture.

J. Special integral or Monolithic Treatments: This includes non-slip dry shakes, colored shakes, and methallic shakes. Not included are static-disseminating or sparkresistant floors, sealer-hardeners, chemical hardeners, curing agents, or organic coatings.

a) Non-Slip Surfacing

When the surface of the floor has been floated and initially first troweled, particles of aluminum oxide, emery, or chemically bonded abrasive aggregate shall be spread uniformly over the surface. Unless otherwise specified, the size of the particles shall be 0.015 to 0.100-inch, and the quantity used shall be not less than one quarter pound per square foot. Particles for heavy duty slip resistant type.

Surfacing shall be between 0.33 and 0.25-inch in size and the quantity used shall be not less than one-quarter pound per square foot of area. The abrasive materials shall be thoroughly dampened before spreading, and shall be tamped flush with the surface using a steel trowel; care shall be taken not to completely bury the particles. The surface shall then be given its final trowelling. After curing, the floor surface sufficiently to bore slightly the abrassive aggregate thick. Place fresh concrete while the epoxy- resin material is still tacky, without removing the in-place grout coat, and as directed by the epoxy-resin manufacturer.

K. Expansion Joints and Cleavage Joints

Expansion joints and cleavage joints shall not be less than 1/2-inch wide except as indicated otherwise. Expansion joints not exposed to weather shall be filled completely with performed joint material conforming to ASTM D 1751 or ASTM D 1752. The 1-inch deep space above the performed material shall be cleaned after the concrete has been cured, and when dry, filled flush with joint sealing material. Reinforcement or other embedded metal items bonded to the concrete, except dowels in floors bonded on only one side of joint, shall not be permitted to extend continuously through any expansion joint. Premolded expansion joint filler shall conform to ASTM D 1751 or D 1752.

L. Placing Embedded Items

Expansion joint material, waterstops, and embedded items shall be positioned accurately and supported against displacement. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids. Aluminum shall not be embedded in concrete except where aluminum is protected from direct contact with the concrete.

3.06 PLACING CONCRETE SLABS

A. Deposit and consolidate concrete slabs in a continuous operation, within the limits of construction joints, until the placing of a panel or section is completed. Consolidate concrete during placing operations using mechanical vibrating equipment, so that concrete is thoroughly worked around reinforcement and other embedded items and into corners. Consolidate concrete placed in beams and girders of supported slabs, and against bulkheads of slabs on ground, as specified for formed concrete structures. Consolidate concrete in the remainder of slabs by vibrating bridge screeds, roller pipe screeds, or other acceptable methods. Limit the time of vibrating consolidation to prevent bringing and excess of fine aggregate to the surface.

Bring slab surface to the correct level with a straight edge and strike off. Use bull floats or darbies to smooth the surface, leaving it free of humps or hollows. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.

Maintain reinforcing steel in the proper position continuously during concrete placement operations.

B. Placing Concrete in Hot Weather: Placing ACI 305 except as modified herein. In hot weather, extra care shall be taken to reduce the temperature of the concrete being placed, and to prevent rapid drying of newly placed concrete. When the outdoor ambient temperature of the concrete as placed shall not exceed 90 degrees Fahrenheit; the fresh concrete shall be shaded as soon as possible after placing; and curing shall be started as soon as the surface of the fresh concrete is sufficiently hard to permit it without damage.

3.07 FINISH OF FORMED SURFACES

A. All formed surfaces shall be repaired by patching minor honeycombed or otherwise defective areas and tie holes with cement mortar. Cement mortar for patching shall be the same composition as that used in the concrete, except that for exposed surfaces part of the cement shall be white portland cement to provide a finish color matching the surrounding concrete. Patching shall be done as soon as the forms are removed; areas of surfaces which are to be cured with a curing compound shall be covered during the application of the compound. All areas to be patched shall be cleaned thoroughly. Minor honeycombed or otherwise defective areas shall be cut out to solid concrete but to a depth of not less than 1-inch. The edges of the cut shall be perpendicular to the surface of the concrete. The area to be patched and at least 6 inches adjacent thereto shall be saturated with water before placing the mortar. The mortar shall be mixed approximately one hour before placing and shall be remixed occasionally during this period with a trowel without the addition of water. A grout of cement and water mixed to the consistency of paint shall then be brushed onto the surfaces to which the mortar is to

be bonded. The mortar shall be compacted into place and screeded slightly higher than the surrounding surface. Patches on exposed surfaces shall be finished to match the adjoining surfaces, after they have set for an hour or one. Patches shall be cured as specified for the concrete. Holes extending through the concrete shall be filled by means of a plunger type gun or other suitable device from the unexposed face. The excess mortar shall be wiped off the exposed face with a cloth. Finished surfaces shall be protected from stains and abrasions. Standard finish against steel, plywood and wood forms, grout finish, and rubbed finish shall be equal in workmanship, texture, and general appearance to that of sample panels specified herein. Concrete with excessive honeycombing, which exposes the reinforcing steel or other defects which affect the structural strength of the member, will be rejected, or the defects corrected as directed by the Owner, and at the expense of the Contractor.

B. Standard finish shall be provided for all exposed concrete not indicated or specified otherwise. The surface of the concrete shall not vary more than 1/4 inch when measured from a five-foot template. Exposed surfaces shall be uniform in appearance.

a) Against Forms:

All fins and other projections shall be removed carefully, and all abrupt irregularities shall be leveled. Surface pits having a dimension greater than 1/8 inch shall be filled with cement mortar as specified hereinbefore for patching.

b) Not Against Forms:

1. Pavements: The surface of the concrete shall be screeded by means of a template advanced with a combined longitudinal and crosswise motion, a slight surplus of concrete being maintained ahead of the template. After screeding, the concrete shall be floated longitudinally with a plank float, after which the surface shall be checked with a straight edge and corrected and refloated as necessary. The final finish shall be obtained by belting. The belt shall be laid flat on the concrete surface and advanced with a sawing motion which shall be continued until a uniform but ritty non-slip surface is obtained. Edges and joints shall be rounded with an edger having a radius of one-eighth inch.

2. Surfaces not specified otherwise shall be finished with wood floats to even surfaces.

C. Special Finishes:

a) Rough Form Finish: Provide as-cast rough form finish to formed concrete surfaces that are to be concealed in the finish work or by other construction, unless otherwise indicated.

Standard rough form finish shall be the concrete surface having the texture imparted by the form facing material used, with tie holes and defective areas repaired and patched and all fins and other projections exceeding 1/4" in height rubbed down or chipped off.

b) Grout: Grout shall consist of one part cement to 1 1/2 parts fine sand by volume, mixed with sufficient water to produce a consistency of thick paint. White portland cement shall be used for all or part of the cement as directed by the Owner. The surface of the concrete shall be applied immediately to the wetted surfaces. Immediately after applying the grout, the surfaces shall be scoured vigorously with clean burlap or rubber sponge float to fill all pits completely. While the grout in the pits is still plastic, a dry mix of the proportions specified herein for grout shall be rubbed over the surface with clean dry burlap until no materials remain on the surface except that within the pits. The operation for any area shall be completed the day that it is started. After the complete work has been grouted, any remaining dark spots and streaks shall be wiped off lightly with a fine abrasive hone; the rubbing with the hone shall not be sufficient to change the texture of the concrete.

c) Rubbed Concrete Finish: Where practicable, the forms shall be removed before the concrete has attained a hard set, proper consideration being given to the safety of the structure. Produce smooth form finish by selecting form material to impart a smooth, hard, uniform texture and arranging them orderly and symmetrical with a minimum of seams. Repair and patch defective areas with all fins or other projections completely removed and smoothed. Immediately after the forms have been removed, the surface shall be wetted thoroughly and rubbed with carborundum or other abrasive to a smooth even finish or uniform appearance. Upon completion of the rubbing, the surface shall be washed thoroughly with clean water.

d) Exposed Concrete Finish: Exposed concrete finish shall be the ascast concrete surface as obtained with the form facing material. Formed concrete must conform with the exact shapes and dimensions shown on drawings and shall be free of imperfections affecting the intended appearance. Fins and other projections on the surface shall be completely removed and smoothed when smooth finish is indicated.

e) Related Uniformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent formed surfaces. Continue the final surface treatment of formed surfaces uniformly across the adjacent unformed surfaces, unless otherwise shown.

A. General: The finishes included herein include surface finishes, treatments and toppings, for floors and slabs. For floors in which drains occur, special care shall be exercised to slope the floors uniformly to the drains. In all areas where ceramic tile or quarry tile are to be laid, the concrete base slab shall be depressed as indicated to provide a finished floor at the same elevation as surrounding areas. All floor slabs where finish is not indicated or specified shall receive a single steel troweling. Dry cement shall not be placed directly upon the new concrete surface to absorb excess moisture.

Monolithic Surfacing: Natural Aggregate and Color: Integral or monolithic surfacing shakes shall be premixed and ready for use. Colored aggregates shall be alkali-resistant and light fast; certification of this shall be furnished. Shakes shall be installed in accordance with the recommendations of the manufacturer. Color(s) and type(s) of shakes shall be as selected from the manufacturer's standard materials. Except as specified otherwise herein, the amount of shake material per square foot of floor surface shall not be less than one-half pound. Curing of colored-shake surfacing shall be accomplished through the use of liquid or wax membrane coatings as recommended by the manufacturer's of the shake material and meeting the requirements for curing as specified hereinafter.

Monolithic Surfacing: Metallic Aggregate: These requirements cover the used of metallic shakes to improved abrasion resistance. Job-mixed materials permitted shall be mixed in accordance with the manufacturer's printed directions. Amounts of shake material required shall not be less than the following:

- 0.6 lb. per sq. ft. for light duty floors
- 0.9 lb. per sq. ft. for medium duty floors
- 1.5 lbs. per sq. ft. for heavy duty floors

All metallic shake materials shall be installed and the surfacing cured in full conformance with the manufacturer's recommendations. The surface and finish shall match those of the approved sample(s).

B. Curing: Finished floor surfaces shall be cured adequately as specified hereinafter, except that colored-shake and metallic-aggregate surfaces shall be cured with liquid or wax membrane forming compounds as recommended by the manufacturer of the surfacing material.

Curing with Water: Moist or wet-curing with water or by complete covering with waterproof membrane sheets shall be continuous for 7 days at temperatures of 60 degrees F and above, and for longer periods at lower temperatures, as necessary.

Liquid-and-Wax-Membrane-Forming and Chemical-Sealing Compounds: These compounds shall meet the water-retention and other requirements specified hereinbefore for liquid membrane- forming compounds or for liquid chemical compound

curing, at an application rate recommended by the manufacturer, they shall be applied to the concrete surface immediately after final finishing and as soon as the floor surface will not be marred by their application. These compounds shall not be used on surfaces to be treated subsequently with chemical floor hardeners. Surfaces on which resilient floor tile is to be later applied shall be cured only with water or a compound which the manufacturer attest is compatible with cements used for affixing resilient tile.

Chemical Floor Hardeners: They shall be applied to a dried concrete surface, only after the concrete has been first adequately moist or wet-cured, or to one that has been cured with non-staining vaporproof sheeting or paper. Treatment of new (and old) concrete surfaces shall be in accordance with the recommendations of the manufacturer, in the amount used and as to the number of applications.

C. Cleaning: Upon completion of the work, all concrete floors, except those having sealer-hardener finish, shall be cleaned as follows:

After sweeping with an ordinary broom to remove the loose-dirt, the finish shall be wetted with soapsuds and rubbed with a scrubbing machine fitted with a wire brush or fine steel wool. The suds shall be mopped up, and the surface shall be flushed with clean warm water, after which a final scrubbing by hand in lieu of machine scrubbing will be permitted when authorized specifically. Floors having sealer-hardener finish shall be cleaned of loose dirt and debris by sweeping with ordinary brooms or by other suitable method.

3.09 CURING AND PROTECTION (EXCEPT FLOORS)

A. General Requirements: Concrete shall be protected adequately from injurious by sun, rain, flowing water, and mechanical injury, and shall not be allowed to dry out from the time it is placed until the expiration of the minimum curing periods specified hereinafter. Curing shall be accomplished by impervious-sheeting curing or by application of liquid chemical or liquid membrane-forming compound, except as specified otherwise herein. Membrane-forming compound shall not be used on surfaces where its appearance would be objectionable, on formed surfaces for which special finish is specified, on any surface to be painted, waterproofed, tiled, roofed, or where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded. Completion of curing shall be initiated immediately following the removal of forms.

B. Impervious-Sheeting Curing: The entire exposed surface shall be wetted thoroughly with a fine spray of water and then covered with (a) waterproofed paper, (b) polyethylene-bonded waterproof paper sheeting, (c) polyethylene-coated burlap sheeting, or (d) polyethylene sheeting. Sheet is shall be laid directly on the concrete surface and overlapped 12 inches when a continuous sheet is not used. The curing medium shall be not less than 18 inches wider than the concrete surface to be cured, and shall be weighted down by placing a bank of moist earth on the edges just outside the forms and over the transverse laps to form closed joints. Sheets shall be satisfactorily repaired or replaced if

torn or otherwise damaged curing. The curing medium shall remain on the concrete surface to be cured for not less than 7 days.

C. Liquid Membrane-Forming Compound Curing: Liquid membrane-forming compound curing shall be accomplished by applying a white-pigmented liquid compound, free of paraffin or petroleum, over the concrete surface, to restrict evaporation of the mixing water. All joint openings except sawed joints shall be sealed at the top by inserting moistened paper or fiber rope, or covering with strips of waterproof material, prior to application of the curing compound, in a manner to prevent the curing compound from entering the joint. Seven days following the placing of the liquid membrane forming compound shall be considered as the end of the curing period and ten basis for determining when joint sealing material will be placed in joints.

a) Application of Curing Compound: The compound shall be applied immediately after the surface loses its water sheen and has a dull appearance and before joints are sawed. Curing compound shall be agitated thoroughly by mechanical means during use and shall be applied uniformly in a 2-coat continuous operation by suitable power-spraying equipment. The total coverage for the two gallon of undiluted compound. The compound shall form a uniform, continuous, coherent film that will not check, crack, or peel and shall be free from pinholes or other imperfections. An additional coat of the compound shall be applied immediately to areas where the film is defective. Suitable covering other than liquid curing compound, shall be kept readily available for use to protect the freshly placed concrete in the event conditions occur which prevent correct application of the compound at the proper time. Concrete surfaces that are subject to heavy rainfall within 3 hours after the curing compound has been applied shall be resprayed with two coats of curing compound by the method and at the foregoing coverage rate specified, at no additional cost to the Owner.

b) Protection of Treated Surfaces: Concrete surfaces to which liquid membrane forming compounds have been applied shall be kept free from all foot and vehicular traffic and all other sources of abrasion for not less than 72 hours. Protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect all finished concrete surfaces from damage by subsequent construction operations. Continuity of the coating shall be maintained for the entire curing period and any damage to the coating during this period shall be repaired immediately.

c) Liquid chemical compound curing may be provided in lieu of liquid membrane-forming compound curing, and shall be provided for surfaces for which a sealer-hardener finish is specified. The application of the compound shall conform to the requirements for liquid membrane-forming compound

curing except as specified otherwise herein. Sealing or covering of joints and openings in which joint sealer is to be applied will not be required. The coverage and number of applications shall be in accordance with the recommendations of the manufacturer of the compound.

D. Curing Periods: When the 7 day compression test cylinders, representative of parts of a structure already placed, indicate that the 28 day strengths may be less than 90 percent of the design strengths, those parts of the structure shall be given additional curing, as directed by the Owner. Cast-in-place parts of a structure which will be permanently submerged in water may be cured for not less than 5 days, provided they are submerged immediately thereafter. Curing, except steam curing, shall be as follows:

<u>Time Minimum</u>	<u>Concrete Element</u>
7 days	All concrete not specified otherwise.

E. Removal of Forms and Protection: Forms shall be removed in a manner which will prevent damage to the concrete. Forms shall not be removed without approval, or before the expiration of the minimum periods specified herein:

	<u>Days After Placing</u>
Side forms on beams, girders, columns, and walls (lifts 15 feet and under)	1
Forms for columns and walls lifts over 15 feet	2
Supporting forms for arches, beams, girders, and slabs	7

Sufficient shoring members to support dead load plus construction loads on beams, girders, slabs, and arches shall be provided for a period of 8 days in addition to the 6 days specified herein. If curing temperatures are below 50 degrees Fahrenheit, the minimum time for removal of forms and shores shall be 50 percent greater than specified. The time for removal of forms for structures not included herein shall be as directed by the Owner. Concrete work shall be protected from damage during the construction.

Special Requirements for High-Early-Strength Portland Cement Concrete:

The curing periods, minimum periods during which supporting forms and shores shall be left in place, and minimum periods for maintaining curing temperatures shall be not less than one-quarter of those specified herein for portland-cement concrete,

but in no case less than 48 hours.

3.10 MISCELLANEOUS CONSTRUCTION

A. Pits and trenches: Pits and trenches shall have the bottom slabs and walls keyed and bonded together properly. Where practicable, the bottom slabs and walls shall be placed integrally, slabs forming covers for pits and trenches shall have openings formed to suit the installation of equipment and apparatus.

DIVISION 4 MASONRY

SECTION 04100

MORTAR

PART ONE - GENERAL

1.01 SCOPE

The work under this section includes furnishing all the materials, machinery, equipment, and labor necessary to do all the mortar work.

1.02 QUALITY ASSURANCE

A. Applicable Publication: The following publications of the issues listed below, but referred to thereafter by basic designation only form a part of this specifications to the extent indicated by references thereto:

a. American Society for Testing and Materials

C- 5-68 (1974)	Quickline for Structural Purposes
C- 91-71	Masonry Cement
C- 144-70	Aggregate for Masonry Mortar
C- 150-74	Portland Cement
C- 207-74	Hydrated Lime for Masonry Purposes
C- 270-73	Mortar for Unit Masonry
C- 387-69	Packaged, Dry, Combined Materials for Mortar and Concrete
C- 476-71	Mortar and Grout for Reinforced Masonry
C- 595-74	Blended Hydraulic Cements

b. Uniform Building Code:

UBC 24-23 Field Tests for Grout and Mortar

B. Acceptable Manufacturers

1. Puerto Rico Cement
2. San Juan Cement

C. Mortar to meet requirements of the P.R. Planning Board Building Code.

1.03 SUBMITTALS

Certificates

Submit notarized certificates from the manufacturer attesting that the

prepackaged mortar mix conform to all requirements of this specification and of reference documents.

1.04 DELIVERY AND STORAGE

Cement, lime and other cementitious material shall be delivered to the site and store in unbroken fogs, barrels, or other approved containers, plainly marked and labeled with the manufacturer's names and brands. Store and handle the mortar materials in dry watertight sheds or enclosures in a manner which will prevent the inclusion of foreign materials or damage by water or dampness. Store admixtures to prevent contamination or damage from excessive temperature changes. Keep water free of harmful materials.

1.05 INSPECTION

- A. Assure that mortar ingredients are accurately measured.
- B. Verify that mortar is mixed in clean batcher for required time.
- C. Check that specified environmental requirements for mortar are complied with.

PART TWO - PRODUCTS

2.01 MORTAR

A. Materials

- a. Portland Cement shall conform ASTM-C-150 and shall be Type 1.
- b. Hydrated lime shall conform to ASTM-C-207, Type N.
- c. Aggregates shall conform to ASTM-C-144.
- d. Water shall be clean and free of deleterious amount of acids, alkalies or organic materials.
- e. Admixtures

Accelerator shall be calcium chloride maximum 2% by weight of portland cement grout.

Products offered by manufacturers to comply with the requirements include the following:

Embeco: Master Builders
Ferrolith: Sonneborn

Iron tox: Toch Brothers
Kemox C: Sitka Chemical
Vibra-Foil: W.R. Grace

B. Mixes

a. Mortar for unit masonry shall consist of one part portland cement, 1/4 part hydrated lime and 3-1/2 part of damp, loose sand, plus the minimum amount of water necessary to insure mortar workability.

b. Type S- Not more than 1/2 part lime per part of Portland cement.

c. Type N- Not more than (1) part lime per part of portland cement. In lieu of above, Type II masonry cement may be used.

PART THREE - EXECUTION

A. Apply mortar in accordance with sector 04200- Concrete unit masonry.

SECTION 04220

CONCRETE UNIT MASONRY

PART ONE - GENERAL

1.01 SCOPE

Under this item, the Contractor shall furnish and place all concrete blocks shown on drawings and/or ordered by the Owner.

1.02 QUALITY ASSURANCE

Approvals, except those required for field installations, field applications and field tests, shall be obtained before delivery of materials or equipment to the project site.

A. Test and Samples

a. Efflorescent Tests

Efflorescence tests shall be made on concrete masonry units, and mortar materials which will be exposed to weathering. Test shall be scheduled far enough in advance of starting masonry work to permit retesting, if necessary.

1. Concrete Masonry Units: Ten unbroken specimens of each type of masonry unit shall be selected in 5 pairs, each pair of similar appearance. One unit of each pair shall be tested by placing it on end in a glass or glazed receptacle in which one inch depth of distilled water is maintained. After being indoors at normal temperatures for 7 days, the masonry unit shall be removed from the water and air dried for 24 hours. Each pair of units shall be removed from the water and if the difference due to efflorescence is noticeable on any of the five samples, when viewed at a distance of 10 feet, the units represented by the samples will be rejected.

2. Mortar: A 3 ounce mortar specimen shall be prepared of each proposed mix, using as little water as possible. While still in a plastic condition and prior to its initial set, each mortar specimen shall be placed in a glass or glazed receptacle, and four ounces of distilled water shall be mixed with the mortar and stirred thoroughly for 5 minutes. The receptacle shall be of such a size that when the mortar specimen and water are combined in solution, and a masonry unit is placed in it, the solution will have a depth of 1/2 to one inch. A masonry unit, which has been tested and found free of efflorescence, shall be placed on end in the solution and the water level maintained at 1/2 to one inch with distilled water. After being indoors at normal temperature for 7 days, the masonry unit shall be removed from the

solution and air dried for 24 hours. The masonry unit shall be compared with an untreated unit, and if the difference due to efflorescence is noticeable, when viewed at a distance of 10 feet, the mortar components shall be tested in separate receptacles, each containing a masonry unit which has been tested and found free of efflorescence. Each mortar component shall be thoroughly mixed 4 ounces of distilled water, using one ounce of each cementitious material and 3 ounces of each aggregate, and the water level shall be maintained at a depth of 1/2 to one inch with distilled water. After 7 days indoors at normal temperatures, the masonry units shall be removed from the solution and observed for efflorescence, as specified hereinbefore, and the component causing efflorescence will be rejected.

B. Sample Panels: Before masonry work is started, sample panels, approved by the Owner, approximately 6 feet long, 4 feet high, and of the proper thickness shall be provided. One faced shall show the workmanship, coursing, bond, thickness, tooling of joints, range of color, texture of the masonry, and the color of the mortar, all as specified or selected. The finished work shall match the approved sample panel.

C. Applicable Publications: The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by references thereto:

a. American Society for Testing and Material (ASTM) Publications:

C- 90-75	Hollow Load-Bearing Concrete Masonry Units
C- 91-71	Masonry Cement
C- 129-75	Hollow Non-Load Bearing Concrete Masonry Units
C- 144-70(1975)	Aggregate for Masonry Mortar
C- 145-75	Solid Load-Bearing Concrete Masonry Units
C- 150-74	Portland Cement
C- 207-74	Hydrated Lime for Masonry Purposes
C- 270-73	Mortar for Unit Masonry

1.03 SUBMITTALS

A. Certificates: Furnish manufacturer's certification that masonry units furnished meet or exceed the requirements of this specification.

B. Samples: Submit two full size concrete masonry units of each type, including special shapes required to show range of colors, texture, finishes and dimensions.

C. Selection of Mortar Color: Where colored mortar is indicated, the mortar shall closely approximate the color indicated. Where colored mortar is indicated without a specific color, the Contractor shall submit the manufacturer's standard colors to the Owner for selection.

1.04 DELIVERY AND STORAGE:

Cement, lime and other cementitious materials shall be delivered to the site and stored in unbroken bags, barrels, or other approved containers, plainly marked and labeled with the manufacturer's names and brands. Mortar materials shall be stored in dry, weathertight sheds or enclosures, and shall be store and handle in a manner which will prevent the inclusion of foreign materials and damage by water or dampness. Masonry units shall be handle with care to avoid chipping and breakage. Materials stored on newly constructed floors shall be stacked in such manner that the uniformly distributed loading does not exceed 50 psf. Masonry materials shall be protected from contact with earth and exposure to the weather, and shall be kept dry until used. Protect partially completed masonry against weather, when work is not in progress, by covering top of walls with strong, waterproof nonstaining membrane. Extend membrane at least 2, down both sides of walls and anchor securely in place.

PART TWO - PRODUCTS

2.01 CONCRETE MASONRY UNITS

Of modular dimensions, and shall be either air, water, or steam cured. Type II units shall be stored at the site before use, a minimum of 28 days for air cured units; 10 days for steam or water cured units; and 3 days for units cured with steam at a pressure of 120 to 150 psi and at a temperature of 350 to 365 degrees F for at least 5 hours. (Surfaces of units which are to be plastered or stuccoed shall be sufficiently rough to provide a suitable bond).

A. Hollow Load-Bearing Units

ASTM C-90; grades N-I or N-II

B. Hollow Non-Load-Bearing Units

Types I or II conforming to ASTM C-129, shall be provided for interior non-load-bearing walls and partitions except that load-bearing units may be provided in lieu of non-load-bearing units.

C. Solid Load-Bearing Units: ASTM C-145, grades S-I or S-II, except that units exposed to weather shall be grades N-I or N-II. Solid units shall be provided as indicated.

D. Special Shapes: Special shapes, such as closures, header units, and jab units shall be provided as necessary to complete the work, and shall conform to the applicable portions of the specifications for the units with which they are used.

2.02 MORTAR AND CONCRETE MASONRY UNIT WORK

ASTM C-270 except that the air content shall not exceed 16 percent when

tested in accordance with ASTM C-91. Mortar for foundation walls, basement walls, and isolated piers shall be type M. Mortar for other work shall be type S. (Where colored mortar is indicated, pigment shall be added to the mortar to obtain the color indicated). All the materials required for the mortar, except aggregate and water, may be combined in a prepackaged mortar mix. Containers of prepackaged mortar mix shall be provided with printed instructions on proportions of water and aggregate to be used and mixing requirements necessary to obtain the type mortar required.

- a. Portland Cement: Type I, conforming to ASTM C-150.
- b. Hydrated Lime: Type S, conforming to ASTM C-207.
- c. Sand: Sand shall conform to ASTM C-144.
- d. Water: Water for mixing shall be portable.

A. Mortar for Concrete Masonry Unit Work: Mortar shall be mixed at the site using materials conforming to ASTM C-270 necessary to obtain type mortar required. Measurement and mixing shall conform to ASTM C-270. (Where colored mortars are required, pigments may be added at the site or be provided as part of prepackaged mortar mix). When prepackaged mortar mixes are used, the mixing shall conform to the printed instructions of the prepackaged mortar mix manufacturer.

B. Mortar for Parging Masonry: Mortar for parging masonry walls below grade shall be mixed in the proportions of one part portland cement, 1/4 part hydrated lime, and 3 parts sand.

C. Grout: ASTM C-476. Fine grout shall be provided in grout spaces less than 2 inches in any horizontal dimension or in which clearance between reinforcing and masonry is less than 3/4 inch. Coarse grout shall be provided in grout spaces 2 inches or greater in all horizontal dimensions and clearance between reinforcing and masonry is not less than 3/4 inch.

D. Mortar Joints: Mortar Joints shall be uniform in thickness, and the average thickness of any three consecutive joints shall be 3/8 to 1/2 inch, unless otherwise specified. "Story poles" or "gage rods" shall be made by the Contractor prior to starting the work. They shall be used prior to starting the work, and shall be used throughout the work. Changes in coursing or bonding after the work is started will not be permitted. Exposed joints shall be tooled slightly concave with a round or other suitable jointer when the mortar is thumbprint hard. The jointer shall be slightly larger than the width of the joint, so that complete contact is made along the edges of the units, compressing and sealing the surface of the joint. Joints in masonry that will not be exposed shall be struck flush. Horizontal joints shall be tooled first. Joints shall be brushed to remove all loose and excess mortar. All horizontal joints shall be level; vertical joints shall be plumb and in alignment from top to bottom of wall within a tolerance of plus or minus 1/2 inch.

E. Horizontal Joint Reinforcement: Fabricated from cold drawn steel wire, conforming to ASTM A82. The wire shall be zinc-coated after fabrication by the hot-dip process in accordance with ASTM A153 (either bright steel, copperclad steel, or zinc-coated after fabrication). Reinforcement shall consist of two or more parallel longitudinal wires, not less than (0.1620) to (0.1875) inch in diameter, weld connected with cross wires, not less than (0.1055) to (0.1350) inch in diameter. (Cross wires shall be crimped to provide and effective moisture drip in wall cavity). The out-to-out spacing of the longitudinal wires shall be 1 1/2 to 1 3/4 inches less than the actual width of the masonry. The distance between welded contact of cross wires with each longitudinal wire shall not exceed 16 inches. Joint reinforcement shall be provided in flat sections, not less than 10 feet in length, except that corner reinforcements and other special shapes may be less in length.

2.04 ANCHORS AND TIES:

Of approved designs, and shall be of copper-clad steel, or non-corrosive metal having the equivalent total strength of steel types. Zinc-coated items shall be coated by the hot-dip process after fabrication. Zinc-coated items shall have a minimum of 1.25 ounces of zinc per square foot of surface when tested in accordance with ASTM A90.

A. Wire Mesh Ties: Wire mesh ties shall consists of wire, not less than 0.0625 inch in diameter, in 1/2 inch mesh, and of suitable width and length.

B. Corrugated Metal Ties: Not less than 7/8 inch wide by approximately 7 inches long, and not lighter than 18 gage.

C. Rigid Steel Anchors: Not less than one inch wide, 1/4 inch thick, and 24 inches long between bent ends. Each end shall be bent down not less than 3 inches into the mortar-filled cells.

D. Anchors Used with Embedded Slots or Inserts: Dovetail type of sheet steel, not lighter than 16 gage and one inch wide, and shall be crimped corrugated, or bent at the end to provide adequate anchorage; anchors for wire inserts shall be of 9 gage wire, looped and closed. Anchors shall be of the proper length for the use intended. Dovetail slots and inserts are specified under another section.

2.05 FASTENING:

Suitable bolts, metal wall plugs, or other approved metal fastenings shall be provided for securing furring to masonry, and elsewhere as necessary.

2.06 REINFORCING STEEL RODS:

ASTM A615

2.07 THROUGH WALL FLASHING:

One of the following types as specified hereinafter (except that flashing indicated to terminate in reglets shall be metal or coated-metal flashing).

A. Coated Copper Flashing: 5 ounce electrolytic copper sheet, uniformly coated with an acid-proof, alkaliproof, elastic bituminous compound. Coating shall be factory applied to a weight of not less than 6 ounces per square foot on each side of sheet.

B. Six-Ounce Copper or Corrosion Resistant Steel Flashing: Flashing shall be provided with factory fabricated deformations that mechanically bond flashing against horizontal movement in all directions. Such deformations shall consists of dimples, diagonal corrugations, or a combination of dimples and transverse corrugations. Copper flashing shall be six ounce weight conforming to QQ-C-576. Corrosion resistant steel shall be 0.006 inch thick conforming to ASTM A 167, sheet or strip, type 301, 302, or 316, with a No. 2D or No. 2 finish sheet and strip respectively.

C. Plastic Flashing: Homogeneous waterproof, impermeable elastomeric sheeting not less than 0.030 inch thick. Sheeting shall have not less than 1,000 pounds per square inch tensile strength nor more than 7 percent tension set a 50 percent elongation when tested in accordance with ASTM D412. Sheeting shall be suitably stabilized to resist exposure without visible deterioration when tested not less than 400 hours in accordance with ASTM D822. The material which has been exposed for not less than 1/2 hour to a temperature of minus 20 degrees F shall show no cracking or flaking when it is bent 180 degrees over a 1/32 inch diameter mandrel and the bent at the same point over the same size mandrel in the opposite direction 360 degrees.

PART THREE - EXECUTION

3.01 GENERAL:

A. Inspection: Examine all parts of the supporting structure and conditions under which the masonry work is to be installed. Do not proceed with the installation of masonry work until unsatisfactory conditions have been corrected. Coordinate work of other sections with the masonry work. Coordinate placement of inserts and flashing reglets which are to be used by the mason for anchoring and flashing of masonry work.

B. Workmanship: Masonry walls shall be carried up level and plumb all around. One section of the walls shall not be carried up in advance of the other, unless specifically approved. Space around metal door frames shall be filled solidly spaces around metal door frames shall be filled solidly with mortar. Masonry units shall be handle with care to avoid chipping, cracking, and spalling of faces and edges. Drilling, cutting, fitting, and patching, to accommodate the work of others, shall be performed by masonry mechanics. Masonry shall be cut with masonry saws in exposed work. Structural steelwork, bolts, anchors, inserts, plugs, ties, lintels, and miscellaneous metal work specified elsewhere shall be placed in position as the work progresses. Chases of approved dimensions for pipes and other purposes shall be provided where indicated or necessary. Tops of

exposed walls and partitions, not being worked on, shall be covered with a waterproof membrane, well secured in place. Unless indicated otherwise, partitions shall extend from the floor to the bottom of the floor or roof construction above. Walls and partitions shall be structurally bonded or anchored to each other and to concrete walls, beams, and columns. Non load bearing partitions and interior walls shall be securely anchored to the construction above, in a manner that provides lateral stability while permitting unrestricted deflection of construction above. Scaffolding shall be insected regularly, and shall be amply strong, well braced, and securely tied in position. Overloading of scarfolding will not be permitted. Concrete Masonry Unit Lintels and Bond Beams shall be formed of units having the cells filled solidly with grout or concrete, and provided with not less than two No. 5 reinforcing bars, unless indicated otherwise. Reinforcing shall overlap a minimum of 24 bar diameters at splices; bond and control joints. Concrete masonry units used for lintels and bond beams shall be of special shapes, and exposed work shall be of the same material and texture as the adjoining masonry units. Lintels shall be built on the ground and allow to set at least 6 days before moved, and they shall be straight and true and shall have at least 6 inches of bearing at each end.

C. Protection of Work: Protect cells, ledges and offset from mortar drippings or other damage during construction. Remove misplaced mortar or grout immediately. Cover top of walls with non-staining water proof coverings when work is not in progress. Provide minimum 2 feet (610 mm) overhang of protective covering each side of wall and securely anchor. Protect face materials against staining.

3.02 MORTAR BEDS:

A. Concrete Masonry Unit Work: The first course of concrete masonry units shall be laid in a full bed of mortar for the full width of the unit; the succeeding courses shall be laid with broken joints. The bed-joints of concrete masonry unit shall be formed by applying the mortar to the entire top surfaces of the inner and outer face shells, and the head joints shall be formed by applying the mortar for a width of about one inch to the ends of the adjoining units laid previously. The mortar for joints shall be smooth, not furrowed, and shall be of such thickness that it will be forced out of the joints as the units are being placed in position. Where anchors, bolts, and ties occur within the cells of the units, such cells shall be filled with mortar or grout as the work progresses. Adjust masonry unit to final position while mortar is soft and plastic. If units are displaced after mortar is soft and plastic. If units are displaced after mortar has stiffened, remove, clean joints and units of mortar and relay with fresh mortar. Adjust shelf angles to keep masonry level an at proper elevation. Provide pressure relieving joints by placing a continuous 1/3 in (8mm) foam neoprene pad under the shelf angle and seal joint with sealant. Where anchors, bolts and ties occur within the cells of the units, such cells shall be filled with mortar or grout over paper stuffing as the work progresses. When joining fresh masonry to set or partially set masonry construction, clean exposed surface of set masonry and remove loose mortar prior to laying fresh masonry.

If necessary to stop off a horizontal run of masonry, rack back one-half block length in each course.

a. Special Concrete Masonry Unit Work: Where exposed concrete masonry unit walls and partitions are indicated in drawings, special concrete masonry unit work shall be provided. Concrete masonry units for this special work shall be selected for uniformity of size, for texture, for true plane, and for undamaged edges and ends of the exposed surfaces. Units shall be placed plumb, parallel, and with properly tooled joints of maximum 3/8 inch thickness. Exposed surfaces shall be kept clean and free from blemishes or defects. The units shall be laid as indicated in pattern bond.

b. Reinforced Concrete Masonry Unit Walls: Reinforced concrete masonry unit walls shall be laid in such a manner as to preserve the unobstructed vertical continuity of cores to be filled. Cross webs adjacent to vertical cores that are to be filled with grout shall be fully embedded in mortar, to prevent leakage of grout. Mortar fins protruding from joints shall be removed before grout is placed; the minimum clear dimensions of vertical cores shall be 2 inches by 3 inches. Reinforcing shall be positioned accurately as indicated. As masonry work progresses, vertical reinforcing shall be rigidly secured in place at vertical intervals not to exceed 160 bar diameters. Horizontal reinforcing shall be embedded in grout as grouting proceeds. The minimum clear distance between masonry and vertical reinforcement shall be not less than 1/2 inch. Unless indicated or specified otherwise, splices shall be formed by lapping bars not less than 20 bar diameters and wire tying them together.

3.03 JOINTS:

A. Horizontal Joint Reinforcement

a. Welded wire ties reinforcement shall be provided in every course of hollow tile or concrete masonry unit walls of elevator shafts.

b. Reinforcement shall be continuous, except that it shall terminate on each side of control joints. Reinforcement above and below opening shall extend not less than 24 inches beyond each side of opening. Reinforcement shall be provided in the longest available lengths, utilizing the minimum number of splices. Spliced shall overlap not less than 12 inches. Welded "L"-shape assemblies, not less than 12 inches, and "T"-shaped assemblies, not less than 32 by 32 inches, both of the same size members and the same construction as the straight reinforcement, shall be provided at corners and intersections of walls and partitions. Reinforcement shall be embedded in the mortar joints in such manner that all parts will be protected by mortar.

B. Control Joints: Provide control joints where indicated in concrete masonry unit walls, of the sowed type or the built in type, as the case requires. Joints shall occur directly opposite each other on both faces of the wall, and shall be filled an approved

nonstaining elastic calking compound.

3.04 GROUT PLACEMENT:

Grouting shall be performed from the interior side of walls, except as approved otherwise. Sills, ledges, offsets and other surfaces to be left exposed shall be protected from grout droppings; grout falling on such surfaces shall be removed immediately. Grout shall be well stirred before placing to avoid segregation of the aggregate and shall be sufficiently fluid to flow into joints and around reinforcing without leaving voids. Pours shall be kept at 1-1/2 inches below the top of masonry units in top course, except at the finish course. Grout shall be puddled or agitated thoroughly to eliminate voids without displacing masonry from its original position; masonry displaced by grouting operation shall be removed and laid in realignment with fresh mortar.

3.06 BONDING:

Anchor and bond securely masonry walls at points where they intersect and where they abut or adjoin the concrete frame of a building. All anchors shall be completely embedded in mortar.

A. Bond corners and intersections of Load bearing masonry walls in each course with a true masonry bond, except where indicated or specified otherwise.

B. Anchor the intersecting bearing walls which are erected separately with rigid steel anchors spaced not more than 2 feet apart vertically.

C. Tie the intersections of non-load bearing partitions with other walls of partitions with corrugated metal anchors at vertical intervals of not more than 2 feet, or with masonry bonding in alternate courses.

D. Anchor the masonry walls facing or abutting concrete members to the concrete with dovetail or wire type anchors inserted built into the concrete. Anchors shall be spaced not more than 18 inches on centers vertically and not more than 24 inches on centers horizontally.

3.07 BUILT-IN WORK

A. Avoid cutting and patching

B. Install bolts, anchors, nailing blocks, inserts, frames, vents flashing, conduct and other built-in items as masonry work progresses. Solidly grout spaces around built-in items.

C. Provide outside joint around exterior door and window frames and other framed wall openings.

a. width: 1/4 in. (6mm) to 3/3 in (9mm).

b. Rake and tool smooth to a uniform depth.

3.08 CLEANING

At the completion of the masonry work, holes in exposed masonry shall be pointed, and defective joints shall be cut out and tuck pointed solidly with mortar. Exposed surfaces of exterior and interior brickwork shall be thoroughly wetted with clear water and scrubbed with a solution of not more than 1 part of muriatic acid to 9 parts of water, applied to an area not over 15 to 20 square feet at a time, with a stiff fiber brush. Immediately after cleaning, each area shall be rinsed thoroughly with clear water. Other exposed masonry surfaces shall be cleaned to remove all excess mortar and as necessary to receive finishes specified in other sections. Work which may be damaged, stained, or discolored, shall be protected during the cleaning process; work that is damaged, stained, or discolored shall be restored to its original condition or replaced.

DIVISION 5 METALS

SECTION 05520

RAILING AND HANDRAILS

PART ONE - GENERAL

1.01 SCOPE

The work under this section includes all materials, equipment, and labor necessary for the construction, delivery, and installation of outdoor and indoor railing of various metals for use on ramps, or as otherwise indicated on drawings.

1.02 QUALITY ASSURANCE

A. Applicable Publications

a. American Society for Testing and Material (ASTM)

A 36-70	"Structural Steel"
A 47-68	"Malleable Iron Casting"
A 48-64	"Gray Iron Casting"
A 53-69	"Welded and Seamless Steel Pipe"
A 120-69	"Black and Hot Dipped Zinc Coated (Galvanized), Welded and Seamless Steel Pipe"
A 123-69	"Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips"
A 167-70	"Corrosion - Resisting Chromium-Nickel Steel Plate, Sheet and Strip"
A 296-68	"Corrosion - Resistant Iron - Chromium and Iron- Chromium Nickel and Nickel Base alloy Castings for General Application"
A 312-70	"Seamless and Welded Austenitic Steel Pipe"
A 385-62(68)	"Providing High Quality Zinc Coating (Hot Dip) On Assembled Products, Recommended Practice For"
A 500-68	"Cold-Formed Welded and Seamless Carbon Steel"

Structural Tubing in Rounds and Shapes"

A 525-67	"General Requirement for Delivery of Zinc Coated (Galvanized) Iron or Steel Sheets"
B 36-74	"Brass Plate, Sheet, Strip, and Rolled Bar"
B 43-75	"Seamless Red Brass Pipe"
B 221-69	"Aluminum-Alloy Extruded Bars, Rods, Shapes and Tubes"
B 241-69	"Aluminum Alloy Seamless Pipe and Seamless Extruded Tube"
B 429-69	"Aluminum Alloy Extruded Pipe & Tube"
B 584-74	"Copper Alloy Sand Castings For General Application"
D 1730-67	"Recommended Practices for Preparation of Aluminum and Aluminum Alloy Surfaces for Painting"

b. American Welding Society (AWS)

D1.1-19751 (with 1976 Revision) Structural Welding Code

c. American Institute of Steel Construction (AISC)

Manual of Steel Construction (7th Edition)

B. Quality Control: Approvals, except those required for field installations, field applications and field tests, shall be obtained before delivery of materials to the project site.

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings for the fabrication and erection of handrails and railings. Show anchorage and accessories items. Identify location and type indicated. Indicate railings in related and dimensional position with elevations at scale 1:48 and details at scale of 1:4 or larger. Control details and dimension not governed by drawings are approved in writing.

B. Material Tests and Tests Reports: The testings requirements for material incorporated in referenced documents will be waived provided the manufacturer submits certificates stating that previously manufactured materials have been tested by recognized laboratories that such materials meet testing requirements quality, manufacture and make as the tested. Copies of the test reports need not be submitted, except as

specifically requested by the Owner.

C. Samples: Submit duplicate samples, six in. (150mm) long of typical pipe showing finish. Submit sample of each fitting.

D. Maintenance Instructions: Procure from manufacturer of pipe, recommendation describing procedures for maintaining including clearing materials, application methods and precautions as to use of material which may be detrimental to finish when improperly applied.

E. Submit for Owner's review, manufacturer's assembly and installation instruction.

1.04 PRODUCT DELIVER, STORAGE AND PROTECTION

Materials shall be delivered to the site in an undamaged condition. Materials shall be carefully stored off the ground to provide proper ventilation, drainage and protection against dampness. Defective and/or damaged material shall be replaced by the Contractor at no expense to the Owner.

PART TWO - PRODUCT

2.01 GENERAL

Fabrications shall be well constructed products conforming to the types, materials and details indicated or specified herein. Basic forms of metal components from which assemblies are fabricated shall be of cast metal as shown or specified and physical properties, including tempers, of the metals shall be suitable for their intended use. All metals shall be free of defects which will affect their strength or durability and where exposed to view in the finished work, edges, and surfaces shall be without burrs, gouges, scratches, or other blemishes which mar their appearance. Exposed welds and brazed or soldered joints shall be ground smooth; polished or other surfaces with applied finishes shall be protected against damage or defacement of any kind. Assemblies shall be of the manufacturer's standard construction except where indicated or specified otherwise. Permanent connections for components subject to impact or other live loads shall be effected by welding, riveting or other approved methods. Welding shall conform to AWS D1.1 and shall be accomplished so as to prevent permanent distortion of the connected parts. Bolts, screws and similar suitable fastenings shall be used for anchoring or securing miscellaneous metal work to supporting construction unless indicated otherwise. The Contractor shall verify all measurements and shall take field measurements before fabrication. Materials and parts to complete each item shall be included, even though such work is not definitely shown or specified. Miscellaneous bolts and anchors, supports, braces, and connections for completion of the miscellaneous metalwork shall be provided.

2.02 Material

A. Pipe: Pipe railing(s) shall be of the configurations indicated with flush welded joints. Railings shall be complete with standards, brackets, caps, plugs and all other accessories and fastenings for a complete installation. Pipe railing shall be steel, standard weight, galvanized, ASTM A-120.

B. Ornamental Railing: Ornamental railings shall conform to the details shown and shall be complete with all accessories and fastenings for a complete installation.

a. Ferrous metal components shall be of malleable iron or carbon steel as standard with the manufacturer. Finish of ferrous metal parts shall be smooth unless indicated otherwise and shall be prime coated for enamel finish.

2.03 FITTINGS: Fittings shall be welded type for brackets, elbows, flanges, sleeves and such. Cope intersection of rails and posts except where otherwise shown on drawings, weld joints and grind smooth.

A. Provide galvanized cast metal brackets, flanges and anchors for handrails supports. Furnish inserts are required for anchorage to concrete.

2.04 FINISHES, PAINTS, FILLER METAL

A. Steel: Provide a galvanized finish where it has been pretreated with conversion coating according with FS TT-C-490, Type III. Filler metal for carbon steel rails shall be as AWS A5. 1-64T.

PART THREE - EXECUTION

3.01 INSTALLATION

A. Perform cutting, drilling and fitting required for installation. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

Use welding connectors to join sections of railings. Grind joints smooth. Adjust railing prior to securing in place to ensure proper matching at butting joints and correct alignment throughout their length. Plumb posts in each direction. Secure handrails to walls with wall brackets. Locate brackets at not more than 8'-0" o.c., unless otherwise shown on drawings. Use anchorage to secure wall brackets to building construction as follows:

For concrete anchorage, use bolt anchor expansion shields and lag bolts. For hollow masonry anchorage use toggle bolts having square heads.

3.02 CLEANING

- A. Wash thoroughly using clean water and soap; rinse with clean water.
- B. Do not use acid solution, steel wool or other harsh abrasive.
- C. If stain remains after washing remove finish and restore in accordance with recommendation of fabricator.

3.03 REPAIR OF DEFECTIVE WORK

Remove stained or otherwise defective work and replace with material that meets specification requirements.

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes structural steel **and grout**.
- B. Related Sections:
 - 1. Division 05 Section "Architecturally Exposed Structural Steel Framing" for additional requirements for architecturally exposed structural steel.

1.2 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using **schematic details indicated and AISC 360**
 - 2. Use **LRFD; data are given at factored-load level**.
- B. Moment Connections: Type **FR**, fully restrained.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittal:
 - 1. Product Data for Credit MR 4.1 and Credit MR 4.2: Not required .
- C. Shop Drawings: Show fabrication of structural-steel components.
- D. Qualification Data: For qualified **Installer, fabricator and testing agency**.
- E. Welding certificates.
- F. Mill test reports for structural steel, including chemical and physical properties.

- G. Source quality-control reports.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC 303.
 - 2. AISC 360.
 - 3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Preinstallation Conference: Conduct conference at **Project site**.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than **50** percent.
- B. W-Shapes: **ASTM A 992/A 992M** or **ASTM A 572/A 572M**, Grade **50 (345)**.
- C. Channels, Angles, **M**, S-Shapes: **ASTM A 36/A 36M**.
- D. Plate and Bar: **ASTM A 36/A 36M** Bars and **ASTM A 572/A 572M**, Grade **50 (345)** Plates.
- E. Cold-Formed Hollow Structural Sections: **ASTM A 500**, Grade **B**, structural tubing.
- F. Steel Pipe: **ASTM A 53/A 53M**, Type E or S, Grade B.
- G. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: **ASTM A 325 (ASTM A 325M)**, Type 1, heavy-hex steel structural bolts; **ASTM A 563, Grade C, (ASTM A 563M, Class 8S)** heavy-hex carbon-steel nuts; and **ASTM F 436 (ASTM F 436M)**, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: **ASTM F 959, Type 325** (ASTM F 959M, Type 8.8), compressible-washer type with plain finish.
- B. High-Strength Bolts, Nuts, and Washers: **ASTM A 490** (ASTM A 490M), Type 1, heavy-hex steel structural bolts or **tension-control, bolt-nut-washer assemblies with splined ends**; **ASTM A 563, Grade DH**, (ASTM A 563M, Class 10S) heavy-hex carbon-steel nuts; and **ASTM F 436** (ASTM F 436M), Type 1, hardened carbon-steel washers with plain finish.
 1. Direct-Tension Indicators: **ASTM F 959, Type 490** (ASTM F 959M, Type 10.9), compressible-washer type with plain finish.
- C. Zinc-Coated High-Strength Bolts, Nuts, and Washers: **ASTM A 325** (ASTM A 325M), Type 1, heavy-hex steel structural bolts; **ASTM A 563, Grade DH** (ASTM A 563M, Class 10S) heavy-hex carbon-steel nuts; and **ASTM F 436** (ASTM F 436M), Type 1, hardened carbon-steel washers.
 1. Finish: **Hot-dip or mechanically deposited zinc coating**.
 2. Direct-Tension Indicators: **ASTM F 959, Type 325** (ASTM F 959M, Type 8.8), compressible-washer type with **mechanically deposited zinc coating, baked epoxy-coated finish**.
- D. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, **heavy-hex head assemblies** consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
 1. Finish: **Mechanically deposited zinc coating**.
- E. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.
- F. Un-headed Anchor Rods: ASTM F 1554, Grade 55, weldable.
 1. Configuration: **Straight**.
 2. Finish: **Plain**.
- G. Headed Anchor Rods: ASTM F 1554, Grade 55, weldable, straight.
 1. Finish: **Plain**
- H. Threaded Rods: ASTM A 36/A 36M or ASTM A 193/A 193M, Grade B7.
 1. Finish: **Plain**.
- I. **Clevises and Turnbuckles**: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1035.

2.3 PRIMER

- A. Primer: Comply with **Division 09 painting Sections and Division 09 Section "High-Performance Coatings."**
- B. Primer: SSPC-Paint 25, **Type II**, zinc oxide, alkyd, linseed oil primer.
- C. Primer: Fabricator's standard lead- and chromate-free, non-asphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.4 GROUT

- A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
- B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: **Snug tightened**.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, welds quality, and methods used in correcting welding work.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of **2 inches (50 mm)**.

2. Surfaces to be field welded.
 3. Surfaces to be high-strength bolted with slip-critical connections.
 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
1. SSPC-SP 2, "Hand Tool Cleaning."
 2. SSPC-SP 3, "Power Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of **1.5 mils (0.038 mm)**. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.8 SOURCE QUALITY CONTROL

- A. Testing Agency: Engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be **tested and** inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
1. Liquid Penetrant Inspection: ASTM E 165.
 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 3. Ultrasonic Inspection: ASTM E 164.
 4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedment's for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. **Base Bearing and Leveling Plates:** Clean concrete- and masonry-bearing surfaces of bond-reducing materials and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. **Snug-tighten** anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. **Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.**
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

- A. **High-Strength Bolts:** Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. **Joint Type: Snug tightened.**
- B. **Weld Connections:** Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect **field welds and high-strength bolted connections**.
- B. Bolted Connections: Bolted connections will be **tested and** inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
 - 1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION 051200

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Roof deck.
2. Composite floor deck.
3. Non-composite form deck.

1.2 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. LEED Submittal:

1. Product Data for Credit MR 4.1 and **Credit MR 4.2**: Not required. .
 - a. Include statement indicating costs for each product having recycled content.

C. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

D. Product certificates.

E. Welding certificates.

F. Field quality-control test and inspection reports.

G. Research/Evaluation Reports: For steel deck.

1.3 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

B. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations of applicable testing and inspecting agency.
2. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.

- C. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- D. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Acesco Caribe (Tel. 787-740-500)
 2. Nu-Vue, Inc (Tel. 787-720-0442)
 3. Nucor Corp.; Vulcraft Division.
 4. ASC Profiles, Inc.
 5. Canam Steel Corp.; The Canam Manac Group.
 6. Consolidated Systems, Inc.
 7. DACS, Inc.
 8. D-Mac Industries Inc.
 9. Epic Metals Corporation.
 10. Marlyn Steel Decks, Inc.
 11. New Millennium Building Systems, LLC.
 12. Roof Deck, Inc.
 13. United Steel Deck, Inc.
 14. Valley Joist; Division of EBSCO Industries, Inc.

2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:

1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade **33 (230)** minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: **Manufacturer's standard.**
2. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade **33 (230)**, **G60 (Z180)** zinc coating.
3. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade **33 (230)**, **G60 (Z180)** zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Selected from **Manufacturer's standard.**
4. Deck Profile: **As indicated.**
5. Profile Depth: **As indicated** or **1-1/2 inches (38 mm) min.**
6. Design Uncoated-Steel Thickness: **As indicated** or **0.0295 inch (0.75 mm) min.**

2.3 COMPOSITE FLOOR DECK

- A. Composite Steel Floor Deck: Not used.

2.4 NONCOMPOSITE FORM DECK

- A. Non-composite Steel Form Deck: Fabricate ribbed-steel sheet non-composite form-deck panels to comply with "SDI Specifications and Commentary for Non-composite Steel Form Deck," in SDI Publication No. 30, with the minimum section properties indicated, and with the following:
 1. Uncoated Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade **33 (230)** minimum.
 2. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade **33 (230)** minimum, with **top and** underside surface shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: **Manufacturer's standard.**
 3. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade **33 (230)**, **G60 (Z180)** zinc coating.
 4. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade **33 (230)** or **80 (550)**, **G60 (Z180)** zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: **Manufacturer's standard.**
 5. Profile Depth: **As indicated.**
 6. Design Uncoated-Steel Thickness: **As indicated.**
 7. Span Condition: **Triple span or more.**

2.5 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, **No. 10 (4.8-mm)** minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of **33,000 psi (230 MPa)**, not less than **0.0359-inch (0.91-mm)** design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, requirements in this Section, and as indicated.
- B. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- C. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- F. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- G. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.
- H. End Bearing: Install deck ends over supporting frame with a minimum end bearing of **1-1/2 inches (38 mm)**.

- I. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and **mechanically fasten** flanges to top of deck. Space **mechanical fasteners** not more than **12 inches (305 mm)** apart with at least one **fastener** at each corner.
 - 1. Install reinforcing channels or zees in ribs to span between supports and **mechanically fasten**.
- J. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. **mechanically fasten** to substrate to provide a complete deck installation.
 - 1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.
- K. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.
- L. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: **Engage** a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.3 REPAIRS

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on **both surfaces** of prime-painted deck immediately after installation and apply repair paint.

END OF SECTION 053100

DIVISION 7 THERMAL AND MOISTURE PROTECTION

SECTION 07511

BUILT-UP BITUMINOUS ROOFING "DANOSA"

PART ONE - GENERAL

1.01 RELATED DOCUMENTS

The general provisions for the Contract, including General and Special Conditions, apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

Provide built-up roofing, whether shown on drawings or not, on all roofs.

1.03 SUBMITTALS

A. Manufacturer's Data: Submit 2 copies of specifications and installation instructions from the manufacturer for each major roofing product or system required. Include certification or other data substantiating compliance with the requirements, and the N.R.C.A. (National Roofing Contractors Association) Handbook of Accepted Roofing Knowledge.

B. Bond: Furnish manufacturer's standard 10 year roofing bond, covering roofing as well as flashing executed by an authorized representative of the manufacturer.

C. Guarantee: Furnish, in duplicate, a 10 year guarantee on roofing and associated work specified in this section, agreeing to repair or replace work which leaks water, or deteriorates or otherwise fails to perform as roofing due to failures of materials or workmanship. Guarantee shall be signed by Contractor and Roofer or a Surety Company acceptable to the Owner Use Contract Form No. 8 and 8a to fulfill this requirement.

D. Shop Drawings: Submit shop drawings showing the manner of forming, jointing and securing the roofing, and the pattern of seams. Show expansion joint details and waterproof connections to adjoining work and at obstructions and penetrations. Submit shop drawings for all metal work.

1.04 JOB CONDITIONS

Proceed with roofing work only after deck construction and penetrating work have been completed.

The installer must examine the deck and the conditions under which roofing work is to be performed, and notify the Contractor in writing of unsatisfactory conditions.

Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer, and the owner representative.

Proceed with roofing work only when weather conditions are in compliance with manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with requirements and the manufacturer's recommendations.

1.05 MATERIALS

A. General: Manufactured products shall be delivered to the site in their original packages and containers, wrapped and labeled with the manufacturers name and label.

B. Roofing Membranes: Roofing membranes shall be as manufactured by Danosa Caribbean, Inc., as per description.

Esterdan R-36 is a bituminous roofing membrane 5/32" inch thick, reinforces with polyester inlay, finished on both exterior surfaces with polyethylene plastic films.

Glasdan AL-80 consists of a bituminous roofing membrane 1/8" inch thick, with a heavy embossed aluminum metal surface, 80 microns, acting as reflecting-top protection surface area, and a polyethylene plastic film in the other surface, and reinforced with a Glass Fiber inlay.

C. Flashing: Flashing shall be .025 thick aluminum sheet. Comply with details and profiles shown on drawings or if not shown as approved by PBA, also of Accepted Roofing Knowledge.

All intersection of roof surfaces with vertical surfaces of any nature shall be flashed and every precaution taken to provide a weather-tight construction at all points.

Reglets shall be provide by the general contractor in all concrete parapets and vertical concrete surfaces into which the flashing shall be installed, wedged and caulked with an oil based caulking or lead wood fillers.

D. Miscellaneous Materials: Cant strips shall be provide at all angles formed by the intersection of concrete roof surfaces and vertical surfaces, such as parapet wall. Cants shall be of nailable concrete and of the sizes and shapes as indicated on drawings or as approved by M.J.D.

Nails, Screws, and other miscellaneous materials for use on built-up roofing shall be the most appropriate types consistent with the best practices of the industry, as recommended by the manufacturer, and the N.R.C.A. recommendations.

1.06 PREPARATION OF DECK SURFACE

Clean the deck of projections and substances detrimental to the work.

Install cant stripe and similar accessories as shown, and as recommended by the roofing materials manufacturer even though not shown.

Prime the substrate complying with the roofing materials manufacturer and the deck structural design as stated by the N.R.C.A.

Coordinate roofing with flashing and other adjoining work to ensure proper sequencing of the entire work.

1.07 INSTALLATION

A. General: Comply with the instructions and recommendations of the roofing materials manufacturer, except to the extent more stringent requirements are indicated.

All roofing work shall be performed by qualified authorized roofing materials manufacturer, except to the extent more stringent requirements are indicated.

All roofing work shall be performed by qualified authorized roofing contractors, so considered by the roofing material manufacturer.

B. Confinement of Materials: Do not allow primer to spill or migrate beyond surfaces of intended application, or to flow into drains or conductors.

C. Performance: It is required that roofing work be watertight for normal weather exposures, and not deteriorate in excess of manufacturer's published limitations.

D. Nailers: Where roofing is shown on drawings to be installed over insulation on nonnailable substrate, and manufacturer's instructions require nailing due to sample, provide concrete nailers complying with manufacturer's instructions, and the N.R.C.A. Handbook of Accepted Roofing Knowledge.

E. Installation of Built-Up Roofing: Determine the direction of roof drainage and the corresponding low points of the roof. In the installation of bituminous membranes the direction of both ends and side laps shall be such that the direction of drainage will be over the laps.

Starting at low points proceed with the installation of Esterdan R-36 and with the use of a high heat propane torch heat-fuse about 30 to 40 cm (12" to 16") of the width of the membrane to the underside, so as to provide a continuous void space that will permit a ventilation channel or passage to special ventilation-pressure chimneys.

The sides and ends lapping between plies shall be approximately 10 cm (4") wide, interply fused so as to obtain a waterproof seal between the two overlapping membrane sections.

Finally, with the use of a heated roundnosed trowel the upper surface of the lapping points shall be revised.

Lapping the lower membrane, proceed with the installation of the second (top) membrane, Glasdan AL-80, heat fusing the entire surface to the lower membrane lapping 10 cm (4")- sides and ends between plies. Revise the upper surface of the lapping points with a heated roundnosed trowel.

Ventilation-pressure chimneys shall be installed at the highest roof points, in relation of about one (1) unit per 300 square feet of roof area.

Both membrane shall be worked with a heated trowel around chimneys so as to obtain a waterproof seal.

Finally, all roof area shall be revised, retouching joints surfaces with asphalt base aluminum paint.

SECTION 07951

SEALANTS AND CAULKING

PART ONE - GENERAL

1.01 RELATED DOCUMENTS

The general provisions of the contract, including General and Special Conditions, apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

The extent of each type of sealant and calking work is shown on the drawings.

The required applications of sealant and calking include, but are not necessarily limited to, the following general locations:

- Flashing reglets and retainers.
- Exterior wall joints.
- Masonry control joints, exterior and interior.
- Flooring joints.
- Isolation joints, between structure and other elements.
- Joints at penetrations of walls, decks and floor by piping and other services and equipment.
- Joints between items of equipment and other construction.

1.03 GENERAL

Obtain elastomeric materials from only manufacturers who will, if required, send a qualified technical representative to project movements for the temperature and condition of the project at the time of installation.

A. Compressibility: Specified hardnesses and compressibilities are intended to establish requirements for normal or average conditions of installation and use. Wherever a range of hardness or compressibility is available for a product, comply with the manufacturer's recommendations for the specific condition of use, except as otherwise directed.

B. Color: Provide each concealed material in manufacturer's standard color which has the best overall performance characteristics for the application shown. Provide exposed materials in Light Grey except where another color is indicated.

C. Compatibility: Before purchase of the specified sealant, investigate its compatibility with the joint surfaces, joint fillers and other material behind or below the joint

in the construction. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully, compatible with the actual installation condition, as shown by manufacturer's published data or certification.

Provide size and shape of performed sealant units as shown or, if not shown, as recommended by the manufacturer, either in his published data or upon consultation with his technical representative.

1.04 ONE-COMPONENT ELASTOMERIC SEALANT

One-Component Polysulfide Sealant: Polysulfide based, one-part elastomeric sealant, complying with FS TT-S-00230 Class A, Type 2 (non-sag) unless Type 1 is recommended by manufacturer for the application shown.

Provide compound bearing the Thiokol Chemical Corp. seal of approval. Products offered by manufacturers to comply with the requirements include the following:

Ultratite 102; Cost Pro Seal
Flexiseal 900 Series; DAP, Inc.
Hornflex One-Component; W.R. Grace
Novacalk - 600; Novagard Corp.
Uniparseal; Parr Paint & Sealants
Rubber Calk 5000; Products Research & Chemical
Sonolastic 1-Part; Sonneborn
Thiotok Sealant R.M.; Toch Brothers

Acid-Type Products offered by manufacturers to comply with the requirements include the following:

781 Building Sealant; Dow Corning:

A partially-vulcanized, self-adhesive, non-staining, elastomeric butyl rubber tape recommended by the manufacturer for waterproof construction when compressed 35% in dynamically-moving joints; not less than 98% solids; no deterioration after 3000 hour test in Atlas Weatherometer.

Products offered by manufacturers to comply with the requirements include the following:

Betaseal 650 Tape; Essex Chemical
Duraribbon 1072; PPG Industries
176 Strucsureglaze; Presstite Interchem
PTI 606; Protective treatments

1.06 MISCELLANEOUS MATERIALS

A. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or calking compound manufacturer for the joint surfaces to be cleaned.

B. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.

C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer to be applied to sealant contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

D. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer; to control the joint depth for sealant placement, to break bond of sealant at bottom of joint, to form optimum shape of sealant bead on back side, and to provide a highly compressible backer which will minimize the possibility of sealant extrusion when joint is compressed.

1.07 JOINT SURFACE PREPARATION

Clean joint surfaces immediately before installation of sealant or calking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or calking compound. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (bond-cohesion), in compliance with paragraph 4, 3, 9 of FS TT-S-00227 has successfully demonstrated that sealant bond is not impaired by the coating or treatment. If laboratory test has not been performed, or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.

Each concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Each with 5% solution of muriatic acid; neutralize with diluted ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

Roughen joint surfaces on vitreous coated and similar non-porous materials, wherever sealant manufacturer's data indicated lower bond strength than for porous surfaces. Rub with fine abrasive cloth or wool to produce a dull sheen.

The installer must examine the joint surfaces, backing, and anchorage of units forming sealant rabbet, and the conditions under which the sealant work is to be performed, and notify the Contractor in writing of any conditions detrimental to the proper

and timely completion of the work. Do not proceed with the sealant work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

1.08 SAMPLE INSTALLATION

Prepare a mock-up installation of every major type and use of sealant shown and specified. Install sealant between materials matching those used on the project, complying with conditions similar in every way to anticipated project conditions. Prepare mock-up well in advance of scheduled installation, so that nominal cure-time is allowed and final color adjustments can be made, if necessary.

1.09 PRE-INSTALLATION MEETING:

At Contractor's direction, the sealant installer, Architect, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work shall meet with the Contractor at the project site to review the procedures and time scheduled proposed for installation of sealants in coordination with other work. Review every major sealant application required on the project.

1.10 WEATHER CONDITIONS:

Do not proceed with installation of liquid sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at extremely low temperatures. Coordinate time schedule with Contractor to avoid delay of project.

1.11 INSTALLATION:

Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.

Install bond breaker tape wherever shown and wherever required by

manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cave, so that joint will not trap moisture and dirt.

Install sealants to depths as shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations:

1. For joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep.
2. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but not more than 1/2" deep or less than 1/4" deep.
3. For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75% to 125% of joint width.

A. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces including rough textures such as exposed aggregate panels. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer of the sealant/calcing compound.

Remove excess and spillage of compounds promptly as the work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage. Do not damage the adjoining surfaces or finishes.

B. Polysulfide Sealant Installation: Comply with standards issued by Thiokol Chemical Corp., except where more stringent requirements have been shown or specified,, or issued as recommendations by the sealant manufacturer.

1.12 CURE AND PROTECTION

Cure sealants and calking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

The installer shall advise the Contractor of procedures required for the protection of sealants and calking compounds during the construction period, so that they

will be without, deterioration or damage (other than normal weathering) at the time or Owner's acceptance.

1.13 TESTS FOR PERFORMANCE

After nominal cure of exterior joint sealants which are exposed to the weather test for water leaks. Flood the joint exposure with water directed from a 3/4" garden hose held perpendicular to wall face, 2'-0" from joint, connected to a water system with 30 psi minimum normal water pressure. Move stream of water along joint at an approximate rate of 20 ft. per min.

Test approximately 5% of total joint system, in locations which are typical of every joint condition, and which can be inspected easily for leakage on opposite face. Conduct test in the presence of the Architect, who will determine the actual percentage of joints to be tested and the actual period of exposure to water from the hose, based upon the extend of observed leakage, or lack thereof. Repair sealant installation at leaks or, if leakage is excessive, replace sealant installation as directed.

Wherever nature of observed leakage indicates the possibility of inadequate joint bond strength, owner may direct that additional testing be performed at a time when joints have been fully cured, followed by natural exposure through both extreme temperatures and returned to the lowest range of temperature in which it is feasible to conduct testing. Repair or replace work as required.

1.14 SUBMITTALS

A. Manufacturer's Data, Sealants and Calking: Submit 2 copies of manufacturer's specifications, recommendations and installation instructions for each type or sealant, calking compound and associate miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown. Show by transmittal that one copy of each recommendation and installation has been distributed to the Installer.

B. Samples, Sealants and Calking: Submit 3, 12" long samples of each color required (except black) for each type of sealant or calking compound exposed to view. Install sample between 2 strips of material similar to or representative of typical surfaces where sealant or compound will be used, held apart to represent typical joint widths.

C. Guarantee, Sealants: Submit 2 copies of written guarantee agreeing to repair or replace sealants which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in any other manner not clearly specified as an inherent quality of the material by submitted manufacturer's data. Provide guarantee for a period of 1 year, signed by the Installer and Contractor.

DIVISION 8 METAL DOORS AND FRAMES

SECTION 08100

METAL DOORS AND FRAMES

PART ONE - RELATED DOCUMENTS

The general provisions of the contract, including General and Special Conditions, apply to the work specified in this section.

PART TWO - DESCRIPTION OF WORK

The extent of stock hollow metal doors and frames is shown on the drawings.

PART THREE - GENERAL

Provide stock hollow metal doors and frames manufactured by a single firm specializing in the production of this type of work.

Provide doors and frames complying with the Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" (SDI 100), and as herein specified.

Manufacturers offering products to comply with the requirements for stock hollow metal doors and frames include the following:

Trujillo Alto Metal Corp.
American Welding and Mfg. Co.
Ceco Corp.
Dusing & Hunt, Inc.
Fenestra
Mesker Brothers Industries, Inc.
Republic Steel Corp.
Steelcraft Mfg. Co.
Virginia Metal Prods.

PART FOUR - FABRICATION

A. General: Fabricate hollow metal units to be rigid, neat in appearance and free from defects, accurately formed to the required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work, that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site. Dress all welded joints on exposed surfaces flush and smooth, to be invisible when prime painted. Use of metallic filler to conceal manufacturing defects is not acceptable.

B. Finish Hardware Preparation: Prepare hollow metal units at the manufacturer's plant to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping. Comply with applicable requirements of ANS a 115 "Specifications for Door and Frame Preparation" for other mortised and concealed finish hardware to the templates of the manufacturer of each finish hardware item required in the work.

For concealed overhead door closers, provide the required space, cutouts, reinforcing and provisions for fastening in the top rail of doors or the head of frames, as applicable.

Reinforce hollow metal units at the manufacturer's plant to receive surface-applied hardware. Drill and tap for surface-applied finish hardware at the project site during installation.

B. Molding Locations: Provide moldings around solid, glazed or louvered panels in hollow metal units for a rigid and secure installation.

Provide non-removable moldings on the outside of exterior hollow metal units and the corridor side of interior hollow metal units.

Provide removable moldings at all other locations, unless otherwise show.

C. Shop Paintings: Clean, treat and pain all surfaces of fabricated hollow metal units, including galvanized surfaces, whether concealed or exposed in the finished work.

Remove mill scale, rust, oil, grease, dirt and other foreign materials before the application of the shop coat of paint.

Apply shop coat of baked-on prime paint of even consistency to provide a uniform finished surface ready to receive field-applied paint.

D. Stock Hollow Metal Doors: Provide stock hollow metal doors extra heavy duty 1 3/4", complying with S.D.I. 100. Doors shall be fabricated from 16 gauge cold rolled electro-galvanized steel.

Provide weatherproof stationary louners for exterior doors, where shown on the drawings, constructed of z-shaped blades formed of 16 gauge electrogalvanized steel sheets. Space blades not more than 1-1/2" o.c.

Provide sightproof stationary louvers for interior doors where shown on the drawings, constructed of inverted V-shaped or Y-shaped blades formed of 18 gauge cold-rolled steel. Space blades to provide not less than 55% free air opening, unless otherwise shown.

PART FIVE - STOCK HOLLOW METAL FRAMES

A. General: Provide stock hollow metal frames for doors, transoms, side-lights, borrowed lights, and other openings, as shown on the drawings.

Conceal all fastenings unless otherwise shown. Countersink exposed screws using Phillips flat-head screws.

Provide frames of knocked down construction, made from 14 gauge cold rolled electro-galvanized steel.

B. Rubber Door Silencers: Drill stops to receive 2 silencers on strike jambs of single-swing frames and 4 silencers on heads of double-swing frames. Install plastic plugs to keep hole clear during construction.

C. Plaster Guards: Provide 22 gauge steel plaster guards or mortar boxes, welded to the frame at the back of all finish hardware cutout where mortar or other materials might obstruct hardware operation.

PART SEVEN - INSTALLATION

A. General: Install hollow metal units and accessories in accordance with the final shop drawings and manufacturer's data, and as herein specified.

B. Placing Frames: Except for frames located at in-place concrete or masonry, place frames prior to the construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

In masonry construction, locate 3 wall anchore per jamb at hinge and strike levels. Building-in of anchore and grouting of frames is specified in Section 04220.

At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.

C. Door Installation: Fit hollow metal doors accurately in their respective frames, within clearances specified in S.D.I. 100.

Finish hardware and door installation is specified in Drawings and Section 08710.

D. Final Adjustments: Check and readjust all operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise damaged.

PART EIGHT - SUBMITTALS

A. Manufacturer's Data: Submit 2 copies of manufacturer's specifications for fabrication and shop painting, and installation instructions. Indicate by transmittal form that one copy of instructions has been distributed to the Installer.

B. Shop Drawings: Submit shop drawings for the fabrication and erection of stock hollow metal doors and frames, as required to supplement manufacturer's data and to show location in building. Include details of each frame type, elevations of door design types, conditions at opening, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Provide details at 3" to 1'-0" scale and dimensioned elevations at not less than 1" to 1'-0" scale. Show anchorages and accessory items. Do not start fabrication until shop drawings are approved in writing.

Section 08110

METAL DOORS AND FRAMES - GENERAL

PART ONE - GENERAL

1.01 SCOPE

A. The contractor shall provide all materials, labor and equipment necessary to furnish, deliver and install all work for this section as required by the drawings and/or herein specified.

B. All materials used in the fabrication of metal doors and frames shall be free from defects impairing their strength, durability or appearance.

C. The contractor shall provide all materials, labor and equipment necessary to furnish, deliver and install all work for this section as required by the drawings and/or herein specified, but not necessarily limited to the following:

1. Hollow Metal Doors.
2. Formed Sheet Steel Frames for doors and fixed view windows.
3. Formed Sheet Steel Louvers in Hollow Metal.
4. Reinforcing, Supporting and Attachment devices for work of this section.
5. Underwriters Laboratories, Inc., Labeled Doors and Frames.
6. Reinforcing for Hardware as required.
7. Prime Painting for all doors and frames.

D. Referenced Standards

1. American National Standards Institute (ANSI).
2. National Builders Hardware Association (NBHA).
3. Builders Hardware Manufacturers Association (BHMA).
4. National Fire Protection Association (NFPA).
5. Building Code "Reglamento de Edificación" - P.R.

6. Código para la Prevención de Incendios del Cuerpo de Bomberos de P. R. - 1989.
7. ASTM A 526/A 526M-90 - Standard Specification for Steel, Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality; 1990.
8. ASTM A 591 - Standard Specification for Electrolytically Galvanized Sheet Steel.
9. ASTM A 569/A 569M-91a - Standard Specification for Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip Commercial Quality; 1991.
10. ASTM B 749-85(91) - Standard Specification for Lead and Lead Alloy Sheet, Strip, and Plate Products; 1985 (Reapproved 1991).
11. SDI 100-1991 - Recommended Specifications; Standard Steel Doors and Frames; Steel Door Institute; 1991.
12. SDI 105-92 - Recommended Erection Instructions for Steel Frames; Steel Door Institute; 1992.

E. Shop Drawings: Submit six (6) copies of shop drawings of all items herein specified to architect for approval. Obtain approval of drawings prior to proceeding with manufacturing. Drawings shall include sizes, details of construction, anchorage, methods of assembly, hardware details and complete information regarding materials, gauges and finish. Approval indicates general conformance with design, but does not relieve contractor of full responsibility for the correctness of the documents furnished or for conformance with the detailed provisions of this specifications.

F. Samples: Submit for approval corner sections of metal frames and hollow metal doors, indicating all construction details, prime coat for frames and doors, submit all required accessories and anchors.

G. Painting: All steel doors are to be thoroughly cleaned and primed to present a smooth surface, and given sufficient coats of baked-on rust inhibiting primer as required to receive finish painting. Frames shall be prime painted at the factory with a dust, zinc oxide primer.

H. Storage: Doors and frames shall be stored in upright position under cover at the building site on wood sills or on floors in a manner that will prevent damage.

I. Manufacturer: The Law requires that local manufactured products be specified. Specifications are based on the published standards of Trujillo Alto Metal Corp.

Other manufacturers must comply with these specific requirements.

J. Labeled Work-Fire Protection: Doors and frames requiring labels as indicated on drawings shall meet the requirements for the ratings noted in accordance with the established procedures of the Underwriter Laboratories, Inc. Doors and frames shall bear the necessary labels separately.

PART TWO - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Products of the following manufacturers, provided they comply with the specific requirements of the contract documents, will be considered acceptable:

1. AMWELD Building Products.
2. Basic Industries.
3. Pioneer Industries, Inc.
4. Trujillo Alto Metal Corporation.

2.02 MATERIALS

A. Steel Sheets, Galvanized: ASTM A 526 commercial quality, A60 zinc-iron or G60 zinc coating mill phosphatized or electrogalvanized bonderized with zinc coating as per ASTM-A591.

B. Lead Sheet: Rolled sheet lead, complying with FS QQ-L-201, Grade C or ASTM B 749, type L51120 (chemical lead), in sizes and thicknesses indicated.

2.03 FABRICATION

A. General: Shop-fabricate assemblies to greatest extent possible assuring that installed units will be without warp, twist, bow or other defects in appearance or function.

B. Exposed Panel Faces: Fabricate from cold-rolled electrogalvanized bonderized steel.

C. Exposed Door Faces: Fabricate from cold-rolled electrogalvanized bonderized steel.

D. Frames: Fabricate from cold or hot rolled electro or hot dipped galvanized steel.

E. Top and Bottom Channels, Stiffeners and Reinforcements: Fabricate from cold rolled electrogalvanized steel. For reinforcements heavier than 11 gauge fabricate from cold-rolled steel.

F. Louvers and Glass Mouldings: Fabricate Louvers and Mouldings from cold-rolled electrogalvanized steel.

G. Seal top and bottom edges with an added 16 gauge electrogalvanized steel channel to form a flush closure.

H. Exposed Screws and bolts: Where required, provide only countersunk, flat Phillips-head fasteners.

2.04 STEEL DOORS:

A. General: Fabricate doors for scheduled openings in styles and sizes as shown on drawing and in accordance with the best known industrial practice for custom hollow metal doors. Doors to be no less than 1 3/4" thick.

B. Doors shall be fabricated from electrogalvanized Steel sheets of gauges herein after specified. Doors shall be of 14 gauge or of gauges shown on contract drawings.

C. Core Material: All interior doors shall be free of blemishes and spot welding marks with a honeycomb core of not more than 3/4" cell. All exterior doors shall have a polystyrene core. Provide polystyrene core at all exposed exterior doors.

D. Door Louvers; Where called for on contract drawings, provide non removable 16 gauge electrogalvanized louver blades of the inverted AV@ type for interior doors and 14 gauge electrogalvanized storm proof louver blades at exterior doors. Louver blades shall be rigid, leveled, equally spaced to present a neat appearance. Louver shall provide 5/8" clearance between louver blades. Louver blades shall be set into 16 gauge electrogalvanized steel frame. Pre-assembled louver blades with frame is to be inserted within the core of the door and welded to both faces of door.

E. Closure Channels: Provide a non removable (welded) Top and bottom closure channels of 16 gauge electrogalvanized steel running the full width of the door to provide a flush cover top and bottom. Closure channel to be welded to both faces of door.

F. Meeting Style: Provide a double integral astragal interlocked between active and inactive door and/or as shown on contract drawings. Astragal shall provide latch protection from both sides of door. Astragal shall be flush to door surface on both sides.

G. Door Panels: Where metal panels are required provide such panels of same gauge and thickness as metal door and fabricated from electrogalvanized steel.

H. Door Glass Moldings: Glass moldings shall consist of a four sided fixed moulding on the exterior side of door and a loose molding on the interior side. The glass molding on the exterior side shall be nonremovable fabricated from 16 gauge electrogalvanized steel. Exterior fixed molding shall be welded to the interior of the door prior to assembly of door. Molding shall be no less than 5/8" deep and factory pre-fitted for a neat appearance. The removable glass molding shall be 5/8" deep made of 16 gauge electrogalvanized steel. Loose moldings shall be factory pre-fitted and pre drilled and countersunk for 1/4" round flat head machine screw.

I. Beveled Edges: In order to maintain the minimum possible clearance at jambs provide doors with beveled edges. Rate of bevel shall be one eighth (1/8") of an inch in two (2") inches.

J. All doors shall be mortised reinforced, drilled, and tapped for all specified mortise hardware and reinforced only for surface applied hardware. Drilling and tapping for surface applied hardware to be done at time of installation.

2.05 STEEL FRAMES AND BORROWED LIGHT FRAMES

A. General: Fabricate steel frames for scheduled openings, in sizes, styles, and profiles as shown.

B. Frames shall be fabricated from 14 gauge electrogalvanized steel. Frames to be knothched, mitered and mechanically interlocked to a hairline joint at forty five (45) degrees. Frames shall be factory assembled and fully welded. Where indicated on drawings frames shall be provided with invisible corner joints.

C. Frames are to be mortised reinforced drilled and tapped for all mortise hardware. They shall be factory reinforced only for surface applied hardware.

D. Guards: Weld protective covers to back of hardware openings at locations where grout plaster or other materials might interfere with hardware operations.

E. Corner Clips: Provide corner clip reinforcements at head and jamb joints. Corner clips to be of no less than 16 gauge electrogalvanized steel. Corner clips are to be factory welded to both head and jambs.

F. Steel Spreaders: Provide steel spreaders at bottom of jambs temporarily attached to serve as brace during transportation and handling of frames prior to installation. Remove brace only after frame has been properly set and braced.

G. Vision Panels and Transom Panels frames where adjacent to door frames shall be fabricated integral with and of same gauge and type of steel as the door frame.

H. Conceal all fastenings unless shown otherwise. Use 1/4" round flat head machine screws where exposed at applied stops.

I. Provide additional 12 gauge electrogalvanized steel reinforcement channel at head of frames on openings over 54" wide with a masonry load above.

2.06 DOOR AND FRAME REINFORCEMENTS

A. Prepare hollow metal units at the manufacturers plant to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling, and tapping. Comply with the applicable requirements of these specifications, and with the specific requirements of the hardware template drawings of the manufacturer of each finish hardware specified. In addition all door and frame reinforcements with the exception of hinge reinforcements shall be fabricated from electrogalvanized bonderized steel of U.S. Standards gauges specified herein.

B. Hinge Reinforcements: Provide 8 gauge steel reinforcement specially stiffened for added bending resistance at every hinge cutout. Plain hinge reinforcement of 6 U.S. gauge will be acceptable in lieu of the above.

C. Door and frame parts fabricated from 14 gauge electrogalvanized steel shall be provided for all specified hardware. Use 12 gauge for strikes, flush, bolts, exit devices, pull plates, closers and holders. Other reinforcements as recommended by Hardware Manufacturer. Use AHAT@ type reinforcement on all Apull@ hardware. AHAT@ type reinforcement to be welded on the interior of push side hardware.

2.07 FIRE PROTECTION U.L. LABELED

A. Doors and frames requiring labels as indicated on drawings shall meet the requirements for the ratings noted in accordance with the established procedures of the Underwriter Laboratories, Inc.. Doors and frames shall bear the necessary labels separately. Manufacturer must submit a certificate of compliance and good standing with the Underwriters Laboratories, In., methods and follow-up procedures.

B. In the case of local manufacturers representative submitting doors and frames with labels, evidence of actual purchase of merchandise must be submitted so that the architect may establish that the doors and frames being incorporated to the project, were specifically fabricated for this project and that records of compliance will be available if needed.

C. The contractor must obtain from the manufacturer and provide an itemized list of serial numbers of labels being used on the project with door identification and location, together with label classification, name and address of manufacturer issuing the label, manufacturer order number, and Underwriters Laboratories file number under which label is issued.

2.08 ANCHORS

Shall be fabricated from 16 gauge electrogalvanized steel. Provide no less than three anchors per jamb or no less than one anchor for every applied hinge. Submit manufacturers anchoring standard method for the various wall conditions shown on drawings. Provide anchors at no more than 30 inches on centers.

2.09 FINISH HARDWARE

A. A contractor shall obtain all required templates from hardware supplier and furnish same to hollow metal manufacturer to be used in the fabrication as directed. See builders hardware section 08710 for detailed information.

PART THREE - EXECUTION

3.01 INSTALLATION

A. Installation of Frames: Install frames at designated (tagged) location in accordance to contract requirements. Installation shall be plumb straight and true, rigidly secured in place and properly braced. Frames shall be anchored securely to concrete floors.

1. Set frames in their correct locations, plumb, true and adequately braced to prevent displacement during erection of walls and partitions.
2. Except for frames located at in-place concrete or masonry, place frames prior to the construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set.
3. Install one wall anchor for every hinge provided on frame. Provide no less than three wall anchors per jamb. Submit details of frame anchorage for in-place concrete or masonry walls, for the approval of owner engineers.

B. Installation of Doors: Install the pre-designated (tagged) door at the indicated location shown on contract drawings. Verify compliance with door type required and hardware preparation. Revise and correct all scratches and dents prior to installation.

C. Final Installation: Do not finally install hardware until all plastering and painting is completed and the building is totally dry.

D. Silencers: Door silencers shall be installed after installation is completed. Three silencers for single doors and two for head of pair of swing doors. Door manufacturer shall submit silencers for approval.

E. Maximum Clearances at all Openings. In order to maintain clearances to a minimum provide beveled edge doors at a rate of one eighth of an inch in two inches.

1.	At top rail	1/8"
2.	At hinge and lock	1/8"
3.	At floor or saddle	3/8"

F. All doors and frames shall be properly marked and or tagged at factory for proper identification at job site.

SECTION 08710

BUILDERS HARDWARE

PART ONE - GENERAL

1.01 SECTION INCLUDES:

- A. Builders hardware for doors.

1.02 RELATED SECTIONS:

- A. Hollow metal doors and frames - Section 08110.

1.03 REFERENCES:

- A. American National Standards Institute (ANSI):

1. ANSI 156.1 - 1988 - Butts and hinges.
2. ANSI 156.2 - 1983 - Bored & preassembled locks.
3. ANSI 156.3 - 1984 - Exit devices.
4. ANSI 156.4 - 1986 - Door control (Closers).
5. ANSI 156.5 - 1984 - Auxiliary locks.
6. ANSI 156.13 - 1987 Mortise locks & latches.
7. ANSI 156.16 - 1989 - Auxiliary hardware.
8. ANSI 156.18 - 1987 - Materials & finishes.
9. ANSI 117.1 - 1986 - Providing accessibility and usability for physical handicapped people.

- B. National Builders Hardware Association (NBHA):

1. Recommended Locations for Builders Hardware - 1975.
2. Basic Builders Hardware - October 1969.

- C. Builders Hardware Manufacturers Association:

1. Directory of Certified Locks & Latches - June 1989.
2. Directory of Certified Door Closers - July 1989.

- D. National Fire Protection Association (NFPA):

1. NFPA 80 - Fire Doors and Windows.
2. NFPA 101 - Life Safety Code 1988.

- E. Building Code (Reglamento de Edificación) - P. R.:

1. Reglamento de Planificación Núm. 7".
2. Enmiendas al Reglamento de Edificación.

1.04 QUALITY ASSURANCE:

A. Hardware shall conform to the following standards:

1. All butts shall comply with ANSI A2112 and A2133.
 - a. Butts on outswinging exterior doors shall have non-removable pins (NRP).
2. Locksets and latches shall meet the following minimum ANSI standards:
 - a. Heavy duty cylindrical locks - ANSI Series 4000, Grade 1.
 - b. Mortise Locks-ANSI Series 1000, Grade 1 test requirements.
 - c. Use UL approved locks on labeled fire doors.
3. Door closers shall comply with ANSI Series CO2021, Grade 1 with cast iron case and adjustable backneck. Closers for reverse bevel doors and all doors opening towards a hallway shall comply with ANSI Series CO2021, Grade 1 and be sized according to the manufacturer=s recommendation.
4. Exit devices shall be of the modern push bar type, ANSI Grade 1. All pair openings with a combination mortise and vertical rod device shall be equipped with an openback strike. Pair openings with a combination Rim and vertical rod device and door closers on each door, shall be equipped with a type 21 door coordinator.

1.05 SUBMITTALS:

A. The hardware supplier shall submit seven (7) copies of a complete hardware schedule for approval. See Division 1 of the Specification.

1. Preface sheet listing category only and manufacturer name of items being furnished, as follows:

<u>Category</u>	<u>Specified</u>	<u>Scheduled</u>
Hinges	Mfg. AA@	Mfg. AB@
Locksets	Mfg. AC@	Mfg. AD@
Kickplates	Open	Mfg. AX@

2. For hardware locations, see Article 3.3 - Locations.

3. Open description: Single or pair, number, room locations, hand, active leaf, degree of opening, size, material, frame material, and fire rating.
4. Hardware description: Quantity, category, product number, fasteners, and finish.
5. Headings that refer to the specified Hardware Set Numbers.
6. Scheduling sequence shown in Hardware Sets.
7. Product data of each hardware item and shop drawings, where required, for special conditions and specialty hardware.
8. Vertical scheduling format only. Horizontal schedules are not acceptable.
9. Typed copy.
10. Double spacing.
11. Eight and one-half by eleven inch (8 1/2" x 11") sheets.
12. U.S. Standards finish symbols.

B. Samples: Submit sample of each type of builders hardware item proposed for project. If approved, samples may be used in project.

1.06 DELIVERY, STORAGE AND HANDLING:

A. Package and deliver hardware items separately and mark each to correspond with heading numbers on hardware schedule.

B. Include necessary instructions, templates, drawings and fasteners for proper installation.

1.07 JOB CONDITIONS:

A. Furnish templates to the hollow metal and frame manufacturer as required for installing the hardware to avoid any delay in fabrication.

B. See Article 3.3 - Locations, and coordinate with templates.

C. Sub-contract the furnishing of builders hardware to a recognized local builders hardware representative for the lockset being furnished. The local hardware supplier must have been furnishing builders hardware for a period of not less than 5 years

and must have in his employment an experienced hardware consultant who is available at all reasonable times during the course of the work for project hardware consultation to the owner or architect. The hardware supplier must carry a substantial inventory of the type and make of the lockset, closer, exit device, etc. being furnished. This inventory must be made available to the owner during the duration of this contract and for maintenance purposes.

PART TWO - PRODUCTS:

2.01 MANUFACTURERS:

A. General:

1. Products are listed in a brand name only to establish a standard of quality.
2. Equivalent products, as described in section 2.2 of these specifications, are acceptable substitutions.

B. Lock and latches:

1. Corbin Russwin
2. Sargent

C. Door Closers:

1. Corbin Russwin
2. Dorma
3. LCN

D. Manufacturers of other items:

1. Butts: Soss, Stanley or McKinney.
2. Exit Devices: Corbin Russwin, Sargent, Von Duprin.
3. Floor Closers & Pivots: Dorma or McKinney.
4. Overhead Door Holders: Corbin Russwin.
5. Door Pulls: Rockwood, Trimco.
6. Protective Plates: Rockwood, Trimco.
7. Bolts: Rockwood, Trimco.
8. Stops: Rockwood, Trimco.

2.02 LABEL REQUIREMENTS:

- #### A.
- Furnish Underwriters Laboratories, Inc. approved hardware items, meeting requirements of NFPA 80, at doors scheduled to be label doors.

2.03 FINISHES:

- A. Butts and Pivots: 626.
- B. Locksets, Deadlock and Latches: 626 (Except MS1850-628).
- C. Exit Devices: 626.
- D. Closers: Sprayed aluminum to match; 626 on Floor Type.
- E. Pulls & Plates: 630.
- F. Stops/Holders: 626.
- G. Thresholds: 628.
- H. Flush Bolts: 626.

2.04 KEYING:

A. Key and masterkey in accordance with owner=s requirements and approved keying schedule. Furnish 2 change keys for each lock and 2 ea. master keys.

B. Furnish a complete key control system that provides tags for each individual change key and a key cabinet that will hold 150% of the key capacity of the building.

PART THREE - EXECUTION:

3.01 EXAMINATION:

A. Examine door frames and related items for conditions that would prevent proper application of builders hardware.

B. Do not proceed until defects are corrected, with approval obtained from owner or his designated representative.

3.02 INSTALLATION:

A. Install hardware according to manufacturer=s printed instructions and to template dimensions. See Article 1.6.

B. All hardware shall be installed in a neat workmanlike manner by experienced workmen and left in perfect working condition. Any hardware lost or damaged shall be replaced at no additional cost to the owner.

3.03 LOCATIONS:

- A. Dimensions are from finish floor to center line of items.
- B. This list to be included in Hardware Schedule:

Category

Dimension

Hinges	Door manufacturer stdr.
Flush Bolt Levers	72" and 12"
Knobs	Door manufacturer stdr.
Exit Device Crossbars	Manufacturer=s Template
Push Plates	52"
Pull Plates	42"
Wall Stops	At Head

3.04 FINAL ADJUSTMENT:

A. Provide the services of a representative to inspect material furnished and its installation and adjustment, to make final hardware adjustment, and to instruct the Tenant=s personnel in adjustment, care and maintenance of the hardware.

3.05 HARDWARE SETS:

SECTION 08800

GLASS AND GLAZING

PART ONE - GENERAL

1.01 SCOPE: Provide all glass and glazing, complete, in place, as shown on the Drawings, specified herein, or needed for a complete and proper installation.

A. Related Work Described Elsewhere:

1. Glass and glazing are required under various Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Qualifications of installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.03 SUBMITTALS

A. General: Comply with the provisions of Section 01300.

B. Product Data: Within 45 calendar days after award of the Contract, submit:

1. Complete materials list showing all items proposed to be furnished and installed under this Section.

2. Sufficient data to demonstrate that all such materials meet or exceed the specified requirements.

1.04 PRODUCT HANDLING

A. Protection: Use all means necessary to protect the materials of this Section before, during and after installation and to protect the work and materials of all other trades.

B. Replacements: In the event of damage. Immediately make all repairs and replacements necessary to the approval of the Owner at no additional cost.

PART TWO - PRODUCTS

2.01 GLASS

A. Tempering: Provide heat-strengthened (tempered) glass where called for on the Drawings or in these Specifications, and where such heat-strengthening or tempering would be required under provisions of the Puerto Rico Planning Board Code, 1973 edition.

B. Glass Types:

- a. Glass for storefront and doors shall be 1/4" clear or solar bronze plate glass, complying with Fed. Spec. and with a visible transmittance of 52% in the 1/4" thickness.
- b. Glass for fixed interior partition shall be clear safety glass complying with Fed. Spec. DD-G-451, Type 1, class 1, quality 93, 1/4" thickness, and with a visible transmittance of 86%.

C. Plastic Types

- a. Lexan for storefront and doors shall be 1/4" clear or solar bronze where called for on the drawings.
- b. Acrylic for storefront and doors shall be 1/4" clear or solar bronze where called for on the drawings.

2.02 Expansion strips, asphalt emulsion, waterproofing agent and any other required material or accessory shall be as produce and/or recommended by the glass manufacturer.

2.03 Use of metal sash putty will not be permitted, but compound conforming to Fed. Spec. TT-G-410 will be permitted. The use of nonskinning compounds, non-resilient type preformed sealers, and preformed impregnated type gaskets will not be permitted.

2.04 GLAZING ACCESSORIES

Provide all glazing accessories required to supplement those accessories which accompany the items to be glazed, and as needed to provide a complete installation, including glazing points, clips, shims, angles, beads, setting blocks, and spacer strips. Use ferrous metal, which will be exposed in the finished work, which has a finish that will not corrode or stain while in service.

PART THREE - EXECUTION

3.01 INSPECTION

Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until satisfactory conditions have been corrected.

3.02 INSTALLATION

A. Selection of glass: Where plate glass is indicated or specified, float glass may be used.

B. Distortion: Cut and install glass with the visible lines or waves running with the horizontal direction.

C. Fix movable items securely, or in a closed and locked position, until glazing compounds has thoroughly set.

D. Glass Setting:

1. Items to be glazed shall be shop-glazed or field-glazed with glass of the quality and thickness specified.

2. Prepare surrounds and glass, unless otherwise directed, in conformance with one of the glazing methods described in the standards under which they are produced.

3. Aluminum windows and wood doors may be glazed in conformance with one of the glazing methods described in the standards under which they are produced.

4. Use beads or stops furnished with the items to be glazed to secure the glass in place.

5. Use insulating units which do not have corners or edges ground, nipped, cut, or fitted after leaving the factory. Do not subject units to spring, forcing or twisting during setting. Handle so as not to strike the setting frames or other objects.

3.03 CLEANING

In addition to the requirements of Section 01710 of these Specifications, and prior to acceptance of the work, thoroughly clean all glass and remove all labels, paint spots, putty, and other defacements.

SECTION 08210

WOOD DOORS

PART ONE - GENERAL

1.01 RELATED DOCUMENTS

The general provisions of the Contract, including General and Special Condition apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

The extent and location of flush wood doors is shown on the drawings.

Louvers for wood doors, including furnishing and installation, are specified under this section.

1.03 QUALITY ASSURANCE

A. Standards: Comply with the requirements of the NWMA Industries Standard I.S., 1 "Wood Flush Doors" of the National Woodwork Manufacturer's Association.

1.04 SUBMITTALS

A. Manufacturer's Data: Submit for approval of owner, 2 copies of door manufacturer's specifications and installation instructions including other data as may be required to show compliance with the specified requirements.

Submit, for the approval of owner shop drawings of all millwork before any work is begun.

Include details of core and edge construction, trim for openings and louvers (if any) and similar components.

Include certifications to show compliance with the specifications.

B. Guarantee: Submit 2 copies of written agreement signed by the Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show photographing of construction below in face veneers, as defined in NWMA Standard Door Guarantee.

The guarantee shall also include refinishing and reinstallation which may be required due to repair or replacement of defective doors. Guarantee shall be in effect during one year after the date of acceptance.

1.05 DELIVERY, STORAGE AND HANDLING

Protect Wood doors during transit, storage and handling to prevent damage, soiling and deterioration.

1.06 MATERIALS

A. Wood: Unless otherwise noted on drawings all wood shall be Douglas Fir treated as per Section 06400.

B. Adhesives: Type II for interior doors.

1.07 GENERAL FABRICATION REQUIREMENTS

A. Openings: Cut and trim openings through doors and panels when shown on drawings. Comply with the applicable requirements of the referenced standards for the kinds of doors required.

B. Wood Louvers: Factory install louvers of the size, type and profile shown in prepared openings.

1.08 HOLLOW CORE FLUSH DOORS

A. Core Type: Provide wood ladder core, cellular core or implanted core.

B. Face Panels: 2 or 3-ply wood panels

1.09 INSTALLATION

Condition doors to average prevailing humidity in installation area prior to hanging. For installation of hardware see Section 08710 of these specifications. Install wood doors in accordance with manufacturer's instructions and as shown.

A. Clearances: For non-fire doors provide clearances of: 1/8" at jambs and heads; 1/8" at meeting stiles for pairs of doors; and 1/2" from bottom of door to top of decorative floor finish or covering, except where threshold is shown or scheduled provide 1/4" clearance from bottom of door to top of threshold.

B. Finishing: See Section 09900 of these specifications for requirements for finishing wood doors.

1.10 ADJUST AND CLEAN

a. Rehang or replace doors which do not swing or operate freely, as directed by owner.

- b. Refinish or replace doors damage during installation, as directed by the owner.
- c. Protect installed wood doors from damage or deterioration until acceptance of the work.

SECTION 08710

FINISH HARDWARE

PART ONE - GENERAL

1.01 DESCRIPTION

A. Work Included: Furnish finish hardware required to complete the work as shown on the drawings and as specified herein.

Furnish trim attachments and fastenings, specified or otherwise required, for proper and complete installation.

Deliver to the job site those items of finish hardware scheduled to be installed at the job site; and deliver to other points of installation those items of finish hardware scheduled to be factory installed.

B. Related Work: Documents affecting work of this section include, but are not limited to, General Conditions, Supplementary Conditions and Special Conditions of these Specifications.

Installation of finish hardware as described in these specifications.

C. Definitions: Hardware groups described in the Hardware Scheduled in Part 4 of this Section are as shown on the door scheduled.

D. Material Origin: All products to be furnished and installed under, this section of the specifications must be the product of the industry of the United States of America. No foreign made item shall be considered for approval. Manufactured items carrying the name and or brand of a continental USA manufacturer but fabricated in a foreign country shall not be considered for approval. Contractor must finish hardware.

1.02 SUBMITTALS

A. Hardware list and Catalog Cuts: Submit for approval a listing of each item of finish hardware and a manufacturers catalog cut for each different item of hardware, submit hardware list in the following form.

Hardware item	Reference Publication Type No.	Mfg. Name and Catalog No.	U.L. Mark (If Fire Rated Listed)	BHMD Finish Designation
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B. Hardware Scheduled: Submit for approval. Include for each item the quantity, manufacturers catalog number, corresponding reference publication type number,

size, finish, key control symbols, and UL Mark (if fire rated and listed).

C. Certified Test Reports: Indicate that each item listed under hardware meets the standard for the specified item. A copy of the listing of proposed hardware items in the current applicable BHMA directories of certified products may be submitted in lieu of test reports.

D. Samples: Deliver samples of each finish hardware item if so requested. All samples will be returned to the contractor; provided that those samples which are approved are positively identified and are installed in the work at locations agreed to.

E. Templates: In a timely manner to assure orderly progress of the work, deliver templates or physical samples of the approved finish hardware items to pertinent manufacturers of interfacing items such as doors and frames.

F. Delivery and Marking: Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual containers, with manufacturer's name, catalog number, as shown in hardware scheduled. Deliver construction master keys with the locks.

PART TWO - PRODUCTS

A. Hardware Manufacturers and Modifications. Provide as for practicable, locks, hinges, and closers of one lock, hinge, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

B. Hardware Designation: Hardware items are specified by name of manufacturer with a list of approved equals. Designated items are covered by ANSI/BHMA Standards. Latest publication apply.

C. Hardware for Fire Doors and Exit Doors. NFPA-101 for Fire Doors and NFPA-101 for Exit Doors, as well as other requirements specified, such hardware shall bear the UL Label and be listed in UL Building Materials Directory for class of door required.

D. Where butts are required to swing 180 degrees, furnish butts of sufficient throw to clear the trim.

E. Furnish silencers for door frames at the rate of three for each single door, and two for each door of pair of doors; except wheatherstrip doors and doors with light seals or sound seals.

F. Hardware items: Conform to the respective standards listed and to requirements specified herein. Hinges, locks, latches, exit devices, bolts, and closers shall bear the manufacturer's name or trademark where it will be visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover. Provide hardware items as specified below and as listed under Hardware sets.

1. Hinges: Maximum spacing between hinges shall not exceed 30". Exterior doors and all doors over 36" wide shall be provided with 4.5" x 4.5" heavy duty "ball bearing" hinges. All interior openings for doors of 36" wide or less shall have 4.5" x 4.5" standard duty plain bearing hinges, except openings with a door closer which shall have 4.5" x 4.5" standard weight ball bearing hinges. All exterior hinges shall be provided with non-removable pin. Vandal resistant doors with exposed hinges, shall also be provided with non-removable pins. All hinge pins shall be of bronze. All steel hinges shall have a zinc-rich base, bonderized with the specified finish. Stanley "K" base, Soss "R" and McKinney "S" zinc base are acceptable.

2. Locks and latches: All locks and latches shall be of the heavy duty type with 2 3/4" backset and 1/2" minimum latch throw. All locks and latches to have a 26 finish.

3. Auxiliary Locks: Mortise deadlocks are to be provided where called for. Deadlocks latches shall have a 1" throw. Finish to be 260. Acceptable manufacturers mortised deadlocks are listed herein.

4. Exit Devices: Provide Exit Devices where called for. Device shall bear the seal of the Underwriters Laboratories, Inc. for fire exit hardware. It shall be of the push bar design, non-handed and with a 3/4" minimum latch bolt throw. It shall have a deadlocking latch bolt and concealed mounting screws. In the case of double exit doors, both exit devices shall bear the seal of the Underwriters Laboratories separately.

5. Padlocks: Provide padlocks where indicated on hardware schedule and in addition provide one padlock for every steel gate on the job. Padlocks to have interchangeable cores and to be master keyed with the balance of the job, as required by the Owner.

6. Keying: Provide factory key, master key, and grand master key locks and cylinders as directed by the owner. Furnish three keys for every lock, twelve master keys for each set and three grand master keys. Provide a construction master key system with 15 keys for locks and cylinders. Only the construction keys are to be used during the duration of the project. Upon substantial completion of the work, and as directed by the owner void the construction key system and, in the presence of the owner's representative, demonstrate that the specified keying system is operating properly. The factory shall stamp permanent keys "Do not Duplicate". Each permanent key shall be identified with tags and sent directly to the owner by registered mail or personal delivery.

7. Lock Cylinders: Provide cylinders for all locks including locks provided under other sections of this specifications. Cylinders shall have six pin

tumblers and shall be products of the same manufacturer. Cylinders shall have interchangeable cores which are removable a special control key. Provide temporary cores for use during construction.

8. Closers: Provide closers complete with brackets, arms mounting devices, fasteners, pivots and other features necessary for the particular application. Size closers in accordance with manufacturer recommendations and list sizes in the hardware scheduled. All closers shall be mounted on door side opposite public corridors. All exterior doors shall have parallel arm application. All bathroom/locker and building entrance doors shall have closers with delayed action. Clearly and permanently mark on the arm of the closer, the manufacturers name. In addition, the manufacturers size designation shall be clearly marked in the body of the closer. Provide special tools for adjustment of door closing devices as required for proper installation. Also provide a full parts list for each series door closer. Acceptable list of closers is include indicating manufacturers and type.

9. Width of Push/Pull plates to be 1 1/2" less than door style; kick and Armor plate width shall be 2" less than door width. Height of Push/Pulls to be 14"; kick plates 10" and Armor 40". All to be supplied in 18ga.-32D finish.

10. Door Pulls, closers, holders and other pulling devices shall be provided with machine screws. Metal doors shall be reinforced with 12 gauge hat type reinforcements to receive the pulling device. Provide information indicating type of screws being provided on the hardware schedule.

11. Key Cabinet and Control System: ANSI/BHMA A1665. Locate the key cabinet where directed by the owner. Tag one set of file keys and one set of duplicate keys. Place other keys in appropriate marked envelopes, or tag each key. Furnish complete instructions for set-up and use of key control system. The cabinet shall be of adequate capacity to contain all keys, plus 10% additional capacity with two tags.

PART THREE - ACCEPTABLE PRODUCTS

A. Single Source for Items: To the extent practicable, furnish similar items as the product of a single manufacturer.

PART FOUR - EXECUTION

A. Deliveries: Stock pile items sufficiently in advance to assure their availability, and make necessary deliveries in a timely manner to assure orderly progress of the total work.

B. Coordination: Coordinate as necessary with work of other trades to assure proper and adequate provision in the work of those trades for interface with the work of this

section.

C. Installation: Install hardware in accordance with manufacturers printed instructions. Fasten hardware to metal surfaces eight sheet metal screws. Use machine screws set in expansion shields for fastening hardware to concrete and masonry surfaces. Use wood screws for fastening of hardware to wood surfaces.

D. Acceptance of Work: After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled so that testing can be witnessed. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Demonstrate that permanent keys operate respective locks and hand the keys to the owner. Correct, repair, and finish as directed, errors in cutting and fitting and damage to adjoining work.

FIRE DOORS AND EXIT DOORS

Install hardware in accordance with NFPA 80 for fire doors and FPA 101 for exit doors.

PART FIVE - HARDWARE SCHEDULE

See Plans.

SECTION 08520 - ALUMINUM WINDOWS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes fixed and operable aluminum-framed windows for exterior locations.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions for each type of aluminum window indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, installation details, and the following:
- C. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.
- C. Product Options: Information on Drawings and in Specifications establishes requirements for aluminum windows' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

1.6 PROTECT CONDITIONS

- A. Field Measurements: Verify aluminum window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

PART 2- PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. EFCO Corporation.
 - 2. Kawneer; an Alcoa Company.
 - 3. YKK AP America Inc.
 - 4. Valcor Samcor
 - 5. Approved equal.

2.2 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish.
- B. Fasteners: Aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- D. Sliding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701/702.
- E. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

2.3 WINDOW

- A. Window Type: As indicated on Drawings.

2.4 GLAZING

- A. Glass: Clear, insulating-glass units complying with Division 8 Section "Glazing."
- B. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- C. Dual-Action Windows: Provide pivoting unit for double glazing, constructed of one sheet of glass in a removable sash for access to interior of unit, installed with airtight gaskets.

2.5 HARDWARE

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows, and sized to accommodate sash or ventilator weight and dimensions. Do not use aluminum in frictional contact with other metals. Where exposed, provide extruded, cast, or wrought aluminum.

2.6 INSECT SCREENS

- A. General: Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches. Fabricate insect screens to fully integrate with window frame. Locate screens on inside of window and provide for each operable exterior sash or ventilator.

2.7 FINISHES, GENERAL

- A. Comply with NAAIvfm's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3- EXECUTION

3.1 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.
- B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.

3.2 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust operating sashes and ventilators, screens, hardware, operators, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.
- B. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- C. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact

window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

DIVISION 9 FINISHES

SECTION 09180

CEMENT PLASTER

PART ONE - GENERAL

1.01 SCOPE

The extent of the portland cement plaster work is shown on the drawings.

1.02 WARM WEATHER REQUIREMENTS

Protect plaster against uneven and excessive evaporation and from strong blasts of dry air, both natural or artificial. Apply and cure plaster as required by climatic and job conditions to prevent rapid dryout. Provide suitable coverings, moist curing, barriers to deflect sunlight and wind, or combinations of these, as required.

1.03 VENTILATION REQUIREMENTS

Provide natural or mechanical means of ventilation to properly dry interior plaster during and after application.

1.04 SAMPLE INSTALLATION

Prior to installation of plaster work, plaster, sample section of each type of plaster required for approval of the Owner. Demonstrate the proposed range of texture, workmanship, and color if required, to be expected in the complete work.

1.05 DELIVERY AND STORAGE OF MATERIALS

Except for sand and water, deliver materials to the site in sealed containers or bags fully identified with manufacturer's name, brand, type and grade. Store materials in a dry, well-ventilated space, under cover, off the ground and away from surfaces subject to dampness or condensation.

PART TWO - PRODUCT

2.01 MATERIALS

- A. Bonding Compound: ASTM C 631 or FS MMM - B 350 or MIL Spec. - 19235.

For exterior use, provide bonding compound which is not affected by moisture on surface or present in plaster base and suitable for temperature conditions at application time.

- B. Aggregate: Natural or manufactured sand, complying with ASTM C 144,

except graded within the following limits (expressed as the minimum and maximum percentage retained by weight on U.S. Standard Sieves, plus or minus 2%); No. 4 Sieve 0%, No. 8 Sieve - 0 to 16%, No. 16 Sieve - 10 to 40%, No. 30 Sieve - 30 to 65%, No. 50 Sieve -95 to 100%.

C. Portland Cement: ASTM C 150, Type 1 color gray unless otherwise called for by the finish schedule.

PART THREE - EXECUTION

3.01 INSTALLATION

A. General Requirements:

- a. Contractor must examine all surface which are to receive plaster and all grounds and other which act as grounds or screeds, and shall notify the Owner in writing, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the plaster work until unsatisfactory conditions have been corrected in a manner acceptable to the Owner.
- b. Protect continuous work from rusting or soiling as a result of plastering operations.
- c. Mix materials for a minimum of 2 minutes or until all ingredients present a uniform color in the mixer. Use the minimum amount of water required to produce plaster of a workable consistency. Use only clean water, free from impurities which might impair the plaster work.
- d. Hand apply plaster to the specified thickness. Machine application of plaster will not be allowed, except where sprayed-on-plaster is specified.
- e. Apply plaster to an entire wall or ceiling panel with interruptions occurring only at junctions of plaster planes or at openings or expansion and control joints (if any). Where the distance between such natural interruptions exceeds 20' in either direction, plaster application may be interrupted when the practical application limits is exceed.
- f. Where plaster abuts frames or other items of metal or wood which act as plaster ground, and plaster is not terminated by a casing bead, tool edge of plaster to produce a small uniform "v" joint.
- g. Plaster work shall be finished level, plumb, square, and true, within a tolerance of 1/8-inch in 10 feet, without waves, cracks, blisters, pits, crazing, discoloration, projections, or other imperfections. Plaster work shall be formed carefully around angles and contours, and well up to screeds.

Special care shall be taken to prevent sagging. There shall be no visible junction marks in finish coat where one day's work adjoins another. Finished work shall be covered and protected in an approved manner to prevent damage.

Plaster Proportions: (By Volume)

Sand	5 3/4	parts
Lime	1	part
Cement	1 1/3	parts

- h. Hair of fiber may be used in the mix for the first (scratch) basecoat applied to metal lath. Do not use more than one pound of hair or fiber per bag of cementations material. Use goat, cattle or deer hair or pure manila fiber, 1/2" to 2" long, free from grease, oil dirt and other impurities.
 - i. Accurately measure ingredients, including water, using measuring devices of known volume. Do not use shovel or water buckets as measuring devices. Proportion successive batches alike.
 - j. Place coat within a maximum of 2 1/2 hours after mixing, except during hot, dry weather, reduce maximum placing time as required to prevent premature stiffening of plaster.
- B. Plaster Over Metal Lath:
- a. Apply 3 - coat plaster over all metal lath, with or without solid backing. Apply first (scratch) coat not less than 1/2" thick and second (brown) basecoat not less than 1/2" thick and second (brown) basecoat not less than 1/4" thick.
 - b. Measure thickness of plaster from back plane of metal lath (exclusive of ribs of dimples), except if metal lath is applied over solid base, measure from face of solid backing.
 - c. Apply first basecoat with sufficient material and pressure to form full keys through metal lath and to embed lath with sufficient plaster coverage. After first coat is firm, scratch (score) in one direction only, to provide mechanical bond for second coat. On vertical surfaces, scratch in horizontal direction.
 - d. Apply second basecoat with sufficient material and pressure to ensure tight contact with first basecoat. Bring surface to a true, even plane rod ding and float to a uniformly rough surface. Fill defects and scratches with plaster.
 - e. After the second coat has been allowed to dry slowly for 24 hours, the finish coat shall be applied to a thickness of not less than 1/8" thick, with a sand float finish.

C. Plaster over Concrete or Masonry

- a. Surface shall be free of loose or deteriorated areas, clean and free of dust, loose particles, and foreign matter.
- b. Apply bonding agent to concrete surface prior to application of plaster, in accordance with manufacturer's instructions, or as indicated drawings.
- c. Apply plaster in a single coat not less than 3/8" thick, rod to a true, smooth surface and float to an even sand finish.

D. Moisture Retention Requirements

- a. Dampen bases, if required, for proper suction. Do not saturate bases and do not apply plaster until visible surface water disappears.
- b. Dampen previous plaster coats which have dried out prior to time for applications of next coat. Dampen with water as required for uniform suction.
- c. The Contractor is responsible for determining the most effective procedure for curing and time lapse between effective procedure for curing and time lapse between application of coats based on climatic and job conditions. Plaster which is cracked or crazed due to improper timing and curing will not be accepted. Remove and replace unacceptable plaster including plaster base materials, if damaged during removal of defective plaster.

3.02 CUTTING AND PATCHING

- a. Cut, patch, repair, and point up plaster as required and as directed by the Owner. Repair cracks and indented surfaces by moistening plaster and filling with new material troweled or tamped flush with adjoining surfaces. Point up finish plaster surfaces around items which are built into or penetrate plaster surfaces.

3.03 CLEANING AND PROTECTION

- a. Make provisions to minimize spattering of plaster on other work. Promptly remove plaster from door frames, windows and other surfaces which are not to be plastered. Repair floors, walls and other surfaces which have been stained, marred or otherwise damaged during the plastering work. When plastering work is completed, remove unused materials, containers and equipment and clean floors of all plaster debris.
- b. Contractor shall be aware of requirements for protection of plaster from deterioration and damage until time of acceptance of the work.

SECTION 09311

GLAZED WALL TILE & CERAMIC MOSAIC TILE

PART ONE - GENERAL

1.01 RELATED DOCUMENTS

The general provisions of the contract, including General and Special Conditions apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

The extent of glazed wall tile and ceramic mosaic tile work is shown on the drawings and in schedules.

1.03 QUALITY ASSURANCE

A. Manufacturing Standards: Provide tile equal to or exceeding the Standard Grade Requirements of ANSI A 137.1.

When using setting and grouting materials manufactured under TCA license, provide identification and formula number on each container.

Provide materials obtained from only one source for each type of tile and color to minimize variations in appearance and quality.

1.04 SUBMITTALS

A. Manufacturer's Data: Submit 2 copies of manufacturer's specifications and installation instructions for all materials required, except all materials. Include certifications and other data as may be required to show compliance with these specifications.

B. Samples: Submit, for approval of owner 3 samples of each type and color of tile required; not less than 12" square on plywood or hardboard backing, and grouted as required.

C. Certificates: Provide Manufacturer's Master Grade Certificate stating type and location of each different material.

1.05 PROTECTION

Take all precautions necessary to protect work of other sections from damage. If plaster and mortar mixing is done in the building, provide waterproof protection under mixer, mixing boxes and water barrels. Should soiling or spattering occur, remove with a dry brush before plaster sets.

Deliver, store and handle all materials to prevent inclusion of foreign matter and water and to prevent damage. Until time of use, packaged materials shall be kept in original, unopened containers with seals unbroken and labels intact.

Close off work spaces to traffic and other work for 48 hours after completion of tile work.

Do not allow newly tiled floors to be walked upon or worked on without using knee boards larger than 4 square feet.

Protect tile work with Kraft paper from damage until acceptance of the project or portion of the project in which tile work is located.

1.06 JOB CONDITIONS

Installer must examine the substrate and the conditions under which tile is to be installed. Notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Surfaces to be tiled shall be plumb, dry, clean, free of oily and waxy films.

Install hangers, bucks, electrical and mechanical work, which are to be in or behind tile, and complete plastered ceilings before tile installation.

1.07 MATERIALS

A. Glazed Wall Tile: Use "Standard Grade" units complying with ANSI A 137.1. Size, color and pattern shall be as shown on the drawings or as selected by the Owner provide cushion edge units. Tile shall have a glazed finish.

B. Trim and Special Shapes: Provide out and in angles, bullnoses, covers and trim shapes at head, jamb and sills of opening, of same material and finish as glazed wall tile.

C. Ceramic Mosaic Tile: Use "Standard Grade" units, complying with ANSI A 137.1. Size, color and pattern shall be as shown on the drawings or as selected by the owner finish shall be unglazed. Provide cushion edge units and factory mount tile onto sheets with mesh, dot, net, or other backing method.

D. Cement:

Portland Cement, ASTM C 150, Type I. Use white cement for grouting.

Lime for Scratch Coat:

Hydrated, ASTM C 206, Type S.

Lime for Tile Work:

Hydrated, ASTM C 207, Type S.

Sand for Scratch Coat:

ASTM C 33, natural or manufactured sand, well graded from coarse to fine.

Sand for Tile:

ASTM C 144, washed clean and graded. For grout, use white sand passign a #16 sieve.

Water:

Potable non-saline.

1.08 MORTAR AND GROUT

A. The Contractor has the option of using any of the following materials as long as he complies with the requirements set forth here.

B. Portland Cement Mortar for Setting Ceramic Floor Tile: Comply with ANSI A 108.1 and A 108.2 1 part portland cement and 6 parts dry sand (by volume). Use enough water so that when mortar surface is stroke with a trowel, surfaces assumes a smooth, slackened appearance.

C. Portland Cement Mortar for Setting Wall Tile: One (1) part of cement, one half (1/2) of one part of lime, and five (5) parts of sand (by volume). Use the necessary amount of water.

D. Portland Cement Mortar for Scratch Coat: One (1) part of cement, one fifth (1/5) of one part of lime, and five (5) parts of sand (by volume). Use the necessary amount of water.

E. Dry-Set Mortar: Presanded portland cement and additives complying with ANSI A 118.1. Provide TCA Formula 763 for glazed wall tile and TCA Formula 759 for ceramic mosaic tile installations, as required.

F. Latex-Portland Cement Mortar: Latex modified portland cement thin-set mortar complying with ANSI A 118.4.

G. Portland Cement Grout: One (1) part white portland cement to 1 part fine

graded sand.

H. Commercial Cement Grout: Proprietary compound of portland cement and additives, factory-blended to decrease shrinkage and increase moisture resistance.

Products offered by manufacturers to comply with the requirements for modified portland cement grout include the following:

Hydroment Ceramic Tile Grout: The Upco Co.

L & M Acid - R, Grout; L & M - Surco Co.

I. Dry Set Grout: Proprietary compound composed of portland cement and additives formulated for the type of tile installed.

Products offered by manufacturers to comply with the requirements for dry-set grout include the following:

Tile-Mate Grout; The Upco Co.

Dry Cure; L & M-Surco Co.

J. Latex Portland Cement Grout: Proprietary composed of portland cement with latex additive for a more flexible and less permeable grout. Manufacturers offering products to comply with the requirement for latex grout include the following:

Flexible Grout Additive; L & M-Surco Company.

1.09 INSTALLATION

A. General: Comply with the ANSI standard installation specifications A 108.1 through A 108.7 and the Tile Council of America "Handbook for Ceramic Tile Installation", except as otherwise specified.

Mortar Set Glazed Wall Tile: ANSI A 108.1.

Portland Cement Mortar Set Ceramic Mosaic Tile: ANSI A 108.2.

Dry-Set Portland Cement Mortar Wall and Floor Tile: ANSI A 108.5.

Organic Adhesive Set Wall Tile: ANSI A 108.4.

Handle, store, mix and apply proprietary setting and grouting materials in compliance with the manufacturer's instructions.

Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disruption of pattern of joint alignment.

Cut and drill tile and trim shapes accurately without damage. Rub all exposed cut edges smooth with abrasive stone.

Grind and fit tile carefully at intersection, against trim finish and at built in fixtures and accessories. Fit tile accurately around outlets, pipes, fixtures and fittings so that plates, escutcheons and collars will overlap cuts.

Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are the same size. Layout tile work and center tile fields both directions in each space or on each wall area so that no tile is less than one-half size. Adjust to minimize tile cutting. Provide uniform joint widths.

Cleaning: Clean grout and setting materials from face of tile while materials are workable. Leave tile face clean and free of all foreign matter.

Unglazed tile may be cleaned with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than 10 days after installation.

Leave finished installation clean and free of cracked, chipped, broken, unbounded, or otherwise defective tile work.

SECTION 09660

RESILIENT TILE FLOORING

PART ONE - GENERAL

A. Related Documents: The general provisions of the Contract, including General and Special Conditions apply to the work specified in this section.

B. Description of work: The extend of resilient flooring and accessories is shown on the drawings and in schedules.

C. Quality Assurance: Wherever possible, provide resilient flooring and accessories produced by a single manufacturer.

D. Submittals: Manufacturer's Data: Submit 2 copies of manufacturer's specifications and installation instructions for each type of resilient flooring and accessory required.

Samples: Submit 3 sets of samples of each type, color and finish of resilient flooring and accessory required. Provide 9" square samples of flooring and 6" long sample of accessory. Include full range of flooring color and pattern variation.

Maintenance Instructions: Submit 2 copies of manufacturer's written instructions for recommended maintenance practices for each type of resilient flooring and accessories.

E. Colors and Patterns: Provide colors and patterns as shown or scheduled, or as selected by Architect from manufacturer's standards.

F. Materials: Provide tile, base & edge strips of the types shown on drawings.

Asphalt Tile: 9" x 9", 1/8" gage, FS SS-T-312, Type I

Rubber Tile: 9" x 9", FS SS-T-312, Type II

Vinyl Tile: 12" x 12", 1/8" gage, FS SS-T-312, Type III

Vinyl Asbestos Tile: 12" x 12", 1/8" gage, FS SS-T-312, Type IV

Resilient Base: Provide 4" high, 1/8" gage, top-set cove base complying with FS SS-W-40, Type I for vinyl base and Type II for rubber base, with matching end stops and preformed or molded corner units. Base shall be either vinyl or rubber as shown on drawings.

Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard

colors available; not less than 1" wide.

Metal Edge Strips: Provide butt type edge strips of extruded aluminum with mill finish for concealed anchorage. Strips shall be of width shown and of required thickness to protect exposed edge of resilient flooring. Provide units of maximum available length, to minimize number of joints.

Adhesives: Waterproof, stabilized type as recommended by flooring manufacturer. Asphalt emulsions and other nonwaterproof types not acceptable.

Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.

G. **Inspection:** Installer must examine the areas and conditions under which resilient flooring is to be installed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

H. **Preparation:** Prior to laying flooring, broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation will indicate acceptance of subfloor conditions and full responsibility for completed work.

Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

I. **General:** Install flooring after finishing operations, including painting, have been completed. Moisture content of concrete slabs, building air temperature and relative humidity must be within limits recommended by flooring manufacturer.

Where movable partitions are shown, install resilient flooring before partitions are erected.

Place flooring with adhesive cement in strict compliance with manufacturer's recommendations. Butt tightly to vertical surfaces, thresholds, nosing and edgings. Scribe as necessary around obstructions and to produce neat joints, laid tight, even, and straight. Extend flooring into toe spaces, door reveals, and into closets and similar openings. Install flooring on covers for such items as occur within finished floor areas.

Maintain overall continuity of color and pattern with pieces of flooring installed in these covers. Tightly cement edges to perimeter of floor around covers and to covers.

Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections.

Tile Floors: Lay tile from center marks established with principal walls,

discounting minor offsets, so that tile at opposite edges of the room are of equal width. Adjust as necessary to avoid use of cut widths less than 3" at room perimeters. Lay tile square to room axis, unless otherwise shown.

Match tiles for color and pattern by using tile form cartons in same sequence as manufactured and packaged. Cut tile neatly to and around all fixtures. Broken, cracked, chipped or deformed tile are not acceptable.

Unless otherwise shown on drawings, lay tile with grain in tile running in the same direction.

Accessories: Apply resilient base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in as long lengths as practicable, with performed units, or fabricated from base material with mitered or coped intersections. Tightly bond base to backing throughout the length of each piece, with continuous contact at horizontal and vertical surfaces.

Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at all unprotected edges of flooring unless otherwise shown.

Apply butt type metal edge strips where shown on drawings, and prior to resilient flooring. Secure units to substrate with countersunk stainless steel anchors, complying with manufacturer's recommendations.

Cleaning and Protection: Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring from damage by covering.

Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories. Apply wax and buff, with type of wax, number of coats and buffing procedures in compliance with flooring manufacturer's instructions.

SECTION 09900

PAINTING

PART ONE - RELATED DOCUMENTS

A. The general provisions of the contract, including General and Special Conditions apply to the work specified in this section.

PART TWO - DESCRIPTION OF WORK

B. The extent of painting work is shown on the drawings and schedules, and as herein specified.

This work includes the painting and finishing of all interior and exterior exposed items and surfaces throughout the project, except as herein specified. Surface preparation, priming and coats of paint specified are in addition to shop priming and surface treatment specified under other sections, except as otherwise specified.

The work includes the field painting of all bare and covered pipes (including color coding), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work, except as otherwise specified.

The "paint" as used herein means all coating systems materials which includes primers, emulsions, enamels, sealers, and fillers, and other applied materials whether used as prime, intermediate or finish coats.

Paint all exposed surfaces whether or not colors are designated in any scheduled, except where the natural finish of the material is obviously intended and specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available.

PART THREE - PAINTING NOT INCLUDED

The following categories of work are not included as part of the painter-applied finish work, or are included in other sections of these specifications, unless otherwise shown or specified.

A. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal items, hollow metal work, and similar items. Also, for such fabricated components as architectural woodwork, wood casework, and shop fabricated or factory built mechanical and electrical equipment.

B. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory finishing is specified for such items as (but not limited to) metal toilet enclosures, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, doors and equipment.

C. Concealed Surfaces: Unless otherwise indicated, painting is not required on wall or ceiling surfaces in concealed areas and inaccessible areas such as foundation spaces, furred areas, pipe spaces, duct shafts, as applicable to this project.

Do not paint copper pipe, zinc-coated pipe and zinc-coated ducts under insulation. Do not paint zinc-coated and copper pipe in concealed spaces.

D. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, except as otherwise specified.

E. Operating Parts and Labels: Do not paint any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts, unless otherwise indicated.

Do not paint over any code-required labels, such as Underwriters Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

PART FOUR - GENERAL

A. Site Conditions: Starting of painting work will be construed as the Applicator's acceptance of the surfaces within any particular area.

Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

B. Atmospheric Conditions: Exterior paint shall not be applied when the temperature of the surface is below 45 degrees Fahrenheit or above 95 degrees Fahrenheit unless otherwise directed. Interior paint may be applied at any time, provided the surfaces to be painted are dry and the temperature can be kept above 45 degrees Fahrenheit during the application of ordinary paints, and between 65 degrees Fahrenheit and 95 degrees Fahrenheit during the application of enamels and varnishes. Paint shall not be applied during foggy or rainy weather or when, in the opinion the surfaces are not in proper condition for painting.

C. Delivery and Storage: Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and application instructions thereon.

D. Protection: Protect work of other trades, whether to be painted or not, against damage by the painting and finishing work. Leave all such work undamaged. Correct any damages by cleaning, repairing or replacing, and repainting, as directed.

E. Clean Up: During the progress of the work, remove from the project all discarded paint materials, rubbish, cans and rags.

Upon completion of painting work, clean all paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

F. Colors: Prior to beginning work.

PART FIVE - MATERIALS

In the following scheduled, the products of the Glidden Company are included as a reference to indicate the type and quality of the finishes required, first line paints of Pittsburgh Place Glass, Mobile Paint Co., Dupont Sharwin-Williams or other approved equal may be used.

Exterior Concrete and Masonry paint-Spread House Paint

Water repellent-Silicone Driwal

Interior concrete and masonry paint-Spread Satin

Interior semi-gloss enamel-Spread Lustra

Wood stain-Glid-Tone Wood Stain

Wood filler-Glid-Tone Wood Filler No. 700

Semi-gloss varnish-Glid Tone Stain-Sheen

Primer for galvanized metal surfaces-Rustmaster galvanized Iron primer No. 5229

Primer for aluminum and ferrous metal surfaces-Speedenamel Metal Primer No. 4570

Gloss enamel for metal surfaces-Speedenamel

Polyurethane paint-Polyurethane Florenamel

Linseed oil, turpentine, putty, etc.-best quality obtainable

PART SIX - MATERIAL TESTING

The right is reserved to owner to engage the services of a testing laboratory to perform all the necessary tests to verify that the paint submitted for approval by the Contractor complies with the requirements of this specifications.

PART SEVEN - SURFACE PREPARATION

A. General: Perform all preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified.

Remove all hardware, hardware accessories, machined surfaces, plated, lighting fixtures, and similar items in place and not to be finish painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space of area, reinstall the remove items by workmen skilled in the trades involved.

Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease with clean cloths and cleaning solvents prior to mechanical cleaning. Provide cleaning solvents of low toxicity and a flash point in excess of 100°F. Program the cleaning and painting so that dust and other contaminants from the cleaning process will not fall in wet, newly painted surfaces.

B. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, cement plaster and cement-asbestos board to be painted by removing all efflorescence, chalk, dust, dirt, grease, oils, and by roughhening as required to remove glaze.

Determine the alkalinity and moisture content of the surfaces to be painted by performing appropriate tests. If the surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, correct this condition by sponging the affected surfaces with a zinc sulphate solution of 2 lbs. zinc sulphate per gal. of water, or other acceptable where the moisture content exceeds 8%, unless otherwise permitted in the manufacturer's printed directions.

C. Wood: Clean wood surfaces to be painted of all dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off.

Prime, stain, or seal wood required to be job painted immediately upon delivery to job. Prime edges, ends, face, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc. Seal tops and bottoms of wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

Scrape and clean small, dry, seasoned knots and apply a thin coat of white

shellac or other approved sealer, before application of the priming coat.

After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand paper smooth when dried.

D. Ferrous Metals: Clean non-galvanized, ferrous surfaces that have not been shop-coated of all oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning, complying with SSPC recommendations.

Touch-Up all shop-applied prime coats which have damaged, or bare areas, where required by other sections of these specifications. Wirebrush, solvent clean, and touch up with the same primer as the shop coat.

PART EIGHT - MATERIALS PREPARATION

A. Mix and prepare painting materials in strict accordance with the manufacturer's directions.

Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free of foreign materials and residue.

Stir all materials before application to produce a mixture of uniform density, and as required during the application of the materials. Do not stir any film which may form on the surfaces of materials into the material. Remove the film and, if necessary, strain the material before using.

PART NINE - APPLICATION

A. Apply paint by brush, roller or spray in accordance with the manufacturer's directions. Spray paint uniformly with suitable equipment.

The number of coats and paint film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has completely dried.

Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance.

"Exposed surfaces" shall mean areas visible when permanent of built in fixtures, grilles, etc. in place in areas scheduled to be painted.

Paint the back sides of access panels, removable or hinged covers to match the exposed surfaces.

Finish exterior doors on tops, bottoms, and side edges the same as the

exterior faces, unless otherwise indicated.

Send lightly between each succeeding enamel or varnish coat.

B. Prime Coats: Before application of finish coats, apply a prime coat to material which is required to be painted or finished, and which has not been prime coated by others.

Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn through or other defects due to insufficient sealing.

C. Mechanical Applications: Apply each roller coat to provide the equivalent hiding as brush-applied coats.

Use spray application (generally) on wire mesh and similar surfaces where hand brush work would be inferior.

Wherever spray application is used, apply each coat to provide the equivalent hiding of brush-applied coats. Do not double back with spray equipment for the purpose of building up film thickness of 2 coats in one pass.

D. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

E. Dry Mill Thickness: Contractor shall comply with the recommended dry mill thickness for each coat of each type of paint according to manufacturer's recommendations. All coats shall be dry before applying the second coat.

Applications shall be double check by Architect or Supervisor and Manufacturer Representative.

PART TEN - SUBMITTALS

A. Manufacturer's Data: Submit 2 copies of manufacturer's specifications, including paint label analysis and application instructions for each material specified.

List each material and cross reference to the specific paint and finish system and application. Identify by manufacturer's catalog number and general classification. No printing work shall be done until this schedule has been finally approved.

B. Samples: On 12" x 12" hardboard, provide 2 samples of each color and material, with texture to simulate actual conditions. Resubmit each sample as requested until required shenn, color, and texture is achieved.

On actual wood surfaces, provide 2,4" x 8" samples of each finish as required. Label and identify each as to location and application.

PART ELEVEN - SURFACES TO BE PAINTED

The exact locations and limits of the surfaces requiring the various type of finishes shall be as established in the color scheduled. The paint required for the various types of surfaces shall be as follows:

- a. Exterior concrete, masonry or plastered surfaces, except as otherwise noted.

Two (2) coats exterior concrete and masonry paint.

- b. Exterior exposed concrete surfaces, except as otherwise noted.

Two (2) coats of water repellent finish.

- c. Interior concrete, masonry or plastered surfaces, except where indicated to receive an enamel finish.

Two (2) coats interior concrete and masonry paint.

- d. Interior concrete, masonry or plastered surfaces, indicated to received enamel finish.

First coat - enamel undercoater as recommended by manufacturer.

Second and third coats - Semi-gloss enamel.

- e. Interior woodwork (enamel finish).

First coat - enamel undercoater as recommended by the manufacturer.

Second and third coats - Semi-gloss enamel.

- f. Interior woodwork (natural finish).

First coat - Stain if required.

Second coat - Filler tinted to match stain if required by species of wood.

Third and fourth coats - Semi-gloss varnish.

Miscellaneous metal items which are specified under other sections to receive finishes as specified under this section or for which finishes are not specified under other sections.

DIVISION 10 SPECIALTIES

SECTION 10800

TOILET AND BATH ACCESSORIES

PART ONE - GENERAL

1.01 DESCRIPTION OF WORK

A. The extent and type of toilet accessory is shown and specified on the drawings.

1.02 QUALITY ASSURANCE

A. Provide products of the same manufacturer for each type of unit and for units exposed in the same areas.

B. Stamped names or labels on exposed surfaces will not be permitted, except as otherwise specified.

1.03 SUBMITTALS

A. Submit two copies of manufacturer's specifications and installation instructions for each toilet accessory.

PART TWO - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Provide units manufacturer one of the following:

- a. Bobbrick
- b. Bradley
- c. Mc Kinney

2.02 MATERIALS

A. Brass: Cast forged alloy FSWW -P-541.

B. Chromium plating: Nickel and chromium electrodeposited on metal ASTM-B 456 Type SC 2.

C. Galvanized steel: Hot-dip galvanized after fabrication ASTM-A 386.

2.03 EQUIPMENT

A. Use concealed fastenings wherever possible.

- B. Provide locks where specified same key.
- C. Use mounting devices and fasteners of the same material as the accessories or of galvanized steel.
- D. Where exposed mounting devices and fasteners are specified they shall be of same finish as the accessories.

PART THREE - EXECUTION

3.01 INSTALLATION

A. Install units where illustrated on the drawings following manufacturer's recommended practices for each item and each type of substrate construction.

- B. Provide theft-resistant fasteners and accessory mountings.

3.02 PROTECTION

- A. Protect units from damage and refrain from use.

B. Replace damaged units which cannot be field repaired to the satisfaction of the Architect.

DIVISION 15 MECHANICAL

SECTION 15400

PLUMBING SPECIFICATIONS

PART ONE - GENERAL CONDITIONS

1.01 The Contractor shall carefully read the General Conditions, which, with the following Specifications for "Plumbing" are a part of the contract.

1.02 INTENT

A. It is the intention of the Specifications and Drawings to all for finished work, tested, and ready for operation.

B. Any apparatus, appliance, material or work not shown, indicated or called for in the Drawings but mentioned in the Specifications, or vice versa, or any incidental accessories necessary to make the work complete, perfect and safe in all respects, and ready for operation, even if not particularly specified or called of in the drawings, shall be furnished, delivered, and installed by the Contractor without additional expense to the Owner, unless explicitly labeled "not in contract" or "NIC" in the drawings and/or the Specifications.

C. Minor details not usually shown in the drawings or specified, but necessary for the proper operation and installation, shall be included in the work and in the Contractor's estimate, the same as if herein specified or shown in the drawings.

D. With submission of the bid, the Contractor shall give written notice to the Architect of any materials or apparatus believed inadequate or unsuitable in violation of laws, ordinances, rules or regulations of authorities having jurisdiction, and of any necessary items of work omitted. In the absence of written notice it is mutually agreed that the Contractor has included the cost of all required items in the proposal, and that he will be responsible for the approved satisfactory functioning of the entire system without extra compensation.

E. All equipment and accessories shall be located and installed in such a way as to permit easy access for proper service and maintenance routings.

F. Any changes in location, size, or quantity of materials and equipment to be furnished and installed under this Section, that may be found necessary or convenient in order to adjust to field conditions shall be brought to the attention of the Architect for his approval prior to the proceeding with any such changes.

G. The Contractor shall pay royalties and license fees required by law for equipment and work to be furnished and/or installed under this section and shall defend all suits or claims for infringement of all patent rights saving the Owner harmless from any loss on account therefore.

1.03 WORK INCLUDED

A. The work included under this Section of the Specifications shall cover the furnishing of all labor, equipment, scaffolding, tools, fixtures and materials; and performing all operations in connection with installing and placing in operation the plumbing system as shown in the drawings and/or hereinafter specified. Without restricting the generality of the foregoing, the work shall include:

1. All plumbing work inside and outside the building, as shown, including all plumbing fixtures scheduled, roughing-in and connecting-up of all items of equipment specified under other Section; and roughing-in for all equipment shown on the drawings and listed as "Not in Contract", or "N.I.C."
2. Potable water supply system, including pumping system connection to istern.
3. Complete soil waste, drain and vent system as shown on drawings.
4. Fire standpipe system, including fire hose cabinets, siamese connections, and fire line specialities and appurtenances.
5. Complete storm drainage system, as shown.
6. All excavating, tamping, backfilling, shoring and pumping inside and outside of the building, required for the construction and finishing of the trenches necessary to install the pipes and conduits shown on the drawings and/or specified herein.

1.04 DRAWINGS AND SPECIFICATIONS

A. Diagrammatic, not necessarily showing in detail or to scale the minor items.

B. Drawings:

1. The drawing are generally diagrammatic and are intended to convoy the scope of the work and indicate general arrangement of equipment, ducts, conduits, piping, fixtures and accesories.
2. The location of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions, are approximate only. The exact locations necessary to secure the best conditions are results must be determined at the project and shall have the approval of the Architect before being installed.
3. If directed by the Architect, the Contractor shall, without extra charge,

make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

4. All work must be laid out in the field prior to installation or shop fabrication. Scale measurements from drawings shall not be allowed.

5. No work under this Section shall be performed prior to a thorough study of all electrical, architectural and structural drawings, to determine any possible conflict prior to proceeding with laying out of work in the field. Contractor is to be fully familiarized with all building drawings and accompanying specifications and his complete understanding of the said drawing and specifications shall be taken for granted unless clarifications are requested in writing prior to undertaking any shop fabrication or construction work.

C. Discrepancies: In the events of errors in, or omissions from the drawings and specifications and or discrepancies between plans and specifications or between either of these and any state, municipal or other ordinance, the bidder shall notify the Architect in ample time to permit revisions before the bids are submitted. In case of discrepancies between Drawings and Specifications that may have gone unnoticed after work is in progress, specifications shall govern.

D. Laws and Ordinances: All state and municipal ordinances, laws, regulation and codes, and National Fire Protection Association recommendations relating to any and all parts of work, equipment and materials to be furnished under this Section are hereby incorporated and made an indivisible part of these specifications. The Contractor shall notify to the Architect of any work, equipments or materials herein specified which in his opinion may violate any of the above mentioned dispositions. Any work done under this section which causes any such violations shall be corrected under this Section without additional cost to the Owner.

Compliance with above-mentioned laws, ordinances, codes and regulations does not relieve the Contractor from compliance with the requirements of these Specifications and any Contract Documents which may exceed requirements of such regulations without contrary to them.

1.07 EXECUTION OF WORK

A. General: All work performed under this Contract shall be accomplished by experienced personnel in accordance with the recommended practices of the USASI Code for pressure piping, and those of the manufacturers of the equipment and materials installed under this Section. There shall be strict adherence to the code requirements of the National Fire Protection Association. The Commonwealth of Puerto Rico Government, and other governing bodies having jurisdiction. The Contractor shall arrange for orderly progress of the work performed by his sub-contractors. All work shall be done in a neat and workmanlike manner and the premises shall be left clean and free of debris.

B. Equipment and Materials: All equipment and materials used in this installation shall be new, of the best quality, and shall be standard catalog products of the various manufacturers.

C. Specified Equipment: Should the Contractor fail to make sub-missions as hereinafter required, then the Contractor shall furnish equipment and materials as directed by the Architect.

D. Shop Drawings, Submission Data and Erection Drawings:

1. Shop drawings and data on the equipment, as herein listed or as requested by the Architect, shall be submitted for approval, and shall consist of manufacturer's scale drawings, diagrams, catalogs, cuts, descriptive literature, test data, component parts, performance data and all other information related thereto and necessary for a complete evaluation of the equipment.

2. Shop drawing and equipment data shall be submitted in the number of copies requested by the Architect in an orderly, well organized form that will permit easy and accurate checking. In the case of items consisting of several components assembled together under the responsibility of one manufacturer, a brochure containing data on all components shall be submitted. Sales literature is not to be considered as shop drawings.

3. No equipment shall be put into manufacture until shop drawings and/or brochure have been approved by the Architect.

4. Manufacturer's data and shop drawings are required to be submitted for the following:

- a. Plumbing fixtures and trim
- b. Pipe guides, anchors, supports and hangers
- c. All valves
- d. Roof and floor drains
- e. Firehose Cabinets and related equipment
- f. Plumbing system and related equipment
- g. Manufacturer's certificate of compliance with Specifications for pipes and/or tubing for all systems.

5. Manufacturer's that, after repetitive request, fail to submit shop drawings in a manner acceptable to the Architect shall have their equipment rejected and the Contractor advised to obtain another source of supply.

6. Erection Drawings: Wherever there is to be departure from the contract drawings, the Contractor shall furnish scale drawings of equipment and

piping, in plan and elevation, showing clearances and relation of equipment and piping to the space assigned. Drawings showing details of hoop of piping system shall be furnished by the Contractor.

1.07 EXECUTION OF WORK

 E. Work to be performed under this Section, and pay all fees therefor. Arrange for inspection and test of any equipment and/or work under this Section if no required by local or state authorities, or local service companies having jurisdiction, and pay all charges and fees for same. Pay all costs for, and furnish to the Architect all certificates necessary to ascertain that all work conforms with all applicable regulations.

1.08 GUARANTEE

 A. The Contractor guarantees by his acceptance of Contract, that all his work shall be free from any and all defects and that all apparatus shall develop capacities and exhibit characteristics as specified.

 B. Whenever within one (1) year of final acceptance of Contract, that all his work shall be free from any and all defects and that all apparatus shall develop capacities and exhibit characteristics as specified.

 C. The Contractor shall replace or repair to the satisfaction of the Architect any and all damage done to the buildings or their contents in consequence of work performed in fulfilling guarantee.

 D. This article is general in nature and will not operate to waive stipulations of other claims which specify guarantee in excess of one (1) year.

1.09 PROTECTION OF WORK AND PROPERTY

 A. The Contractor shall be responsible for the maintenance and protection of all equipment, materials, and tools, supplied by him stored or installed on the job site, from loss or damage of all causes, until final acceptance by the Architect.

 B. The Contractor shall be responsible for the protection of any finished work from damage or defacement by his operation and must remedy any such injury at his own expenses.

2.00 TEMPORARY OPENINGS

 A. The Contractor shall ascertain, from his examination of the architectural drawings, whether any special temporary openings in the buildings will be required for the admission of apparatus furnished under his Contract, and shall notify the Architect accordingly. In the event of failure of the Contractor to give sufficient notice to the Architect in time to arrange for these openings during construction, the Contractor shall assume all

coats of providing such openings thereafter.

2.01 ACCESSIBILITY

A. All work shall be installed so that all parts required are readily accessible for inspection, operation, maintenance and repair. Minor deviations from the drawings may be made to accomplish this, but changes of magnitude shall not be made without prior written approval from the Architect.

2.02 TAGS AND CHARTS

A. Attach to each valve a 1-4" diameter brass tag with 1/2" indented numerals filled with durable black compound.

B. Attach tags securely to stems of valves with cooper wire and S hooks.

C. Provide three (3) sets of charts; showing outline plan of the building and the essential features of the systems herein specified, including all piping, equipment, valves and control. Label all valves and pieces of equipment in said chart. Valve label in is to coincide with numbers shown in the valve tags.

D. Fixture flush valves are excluded from either lagging or labeling.

E. Mount one set of the valve charts under glass in a metal frame.

F. Turn all three sets in to the Architect.

2.03 SLEEVES

A. All pipes and conduits passing through floors, walls beams or partitions shall be provided with sleeves having an internal diameter 1" larger than the outside diameter of the pipe and its insulation, or conduit.

B. Sleeves through outside walls shall be PVC. Sleeves shall be set with ends flush with each face of wall. The space between sleeve and pipe shall be packed with oakum to within 2" each face of the wall. The remaining space shall be packed and made watertight with a waterproof compound.

C. Sleeves through concrete slabs, beams or interior masonry walls when indicated on drawings shall be PVC pipe, set flush with finished wall, beam or ceiling surface, but extending 2" above concrete roof slab.

D. Sleeves through interior partitions shall be 22 gauge galvanized sheet metal, set flush with finished surface or partitions.

E. Sleeves for vent line penetrations through roof shall be as specifically called

for in the drawings.

2.04 INTERRUPTION OF EXISTING SERVICES

A. Whenever the work to be performed under this section makes mandatory the interruption of existing services, work shall be performed at such at time as to cause the least conflict with construction and installation work going on at that job site at the time. Need for interrupting said services shall be notify to the General Construction Supervisor for adequate arrangement of construction Supervisor so that services will be interrupted only during the time actually required to make connections to existing services. No interruptions of services shall be permitted without advance, written approval of the Architect.

2.05 CLEANING PIPING AND EQUIPMENT

A. Piping and equipment shall be thoroughly cleaned of all foreign substances inside and out before being placed in operation. If any part of a system should be stopped by any foreign matter after being placed in the system shall be disconnected, cleaned and reconnected wherever necessary to locate and remove obstructions. Any work damaged in the course of removing obstructions shall be repaired or replace when the system is reconnected at no additional cost to the Owner.

2.06 CLEANING UP

A. Keep the job free from accumulations of waste material or rubbish, caused by operations. At the completion of the work, remove all rubbish, tools, construction equipment and surplus materials from the job site and leave the premises in a clean condition.

2.07 UNDERGROUND PIPING

A. Excavation and Backfilling: Do all necessary excavation and backfilling required by work included under this Section. Protect excavations at all times. Maintain trench banks as nearly vertical as possible. Remove excess earth and do all necessary sheet piling, shoring, bailing, and pumping, as directed by the Architect. Keep excavations dry.

Width of vertically walled trenches must not exceed 8 inches on either side of conduit or pipe at bottom, and be no wider than necessary above for sheeting and bracing and for proper performance of work.

Run conduit and piping at necessary distance from building footings to provide slope not steeper than 1:2 (vertical:horizontal) between base of excavation and bottom of footing. Avoid any interference with electric and other pipe lines in a manner satisfactory to the Architect.

After underground lines have been inspected and tested, surround the pipe or conduit with 6 inches of sand and backfill, the remaining excavation in layers not more than 6 inches thick with suitable earth backfill for unpaved areas and with pit run gravel in paved areas. Machine tamp each layer of backfill thoroughly to compaction of 95% standard proctor up to sub-grade in paved areas and up to finished grade in elsewhere. Wherever unstable soil is encountered in the bottom of the trench, remove such soil to depth required and replace with clean bank run sand and gravel. Fill must be clean and free of slag, cinders, ash, wood, or debris. Wherever cinders are encountered, remove and replace with fill of limestone screenings.

All excavation, backfilling and underground conduit and pipe installation must be thoroughly coordinated with similar work performed under other Section of the Specifications to avoid interferences and delays in the work.

B. Pipe and Conduit laying and Bedding: Thoroughly inspect and fit pipes and conduits before lowering into trench. Lay lines to uniform grade between elevations shown or at pitch specified or shown using an appropriate method to establish and check grades and slopes.

Secure authorization from the Architect before installing any work on ground providing questionable support. Provide bed satisfactory to the Architect for barrel of pipe. Pipe must not rest on blocking when brought to grade. Set each length to grade and line before making joint.

Keep water out of all pipes until joints have been made. Close all open ends of conduit and piping during construction. Clean interior of all joints before joints are made.

Where pipes pass under and within 8 inches of footings or grade beams, provide steel pipe sleeves for pipe, with at least 2 inches clearance around pipe, and embed sleeve in concrete extending at least 6 inches on all sides of sleeves and up to footing or grade beams.

2.08 PIPING SYSTEM

A. General: Furnish and install all piping systems indicated on drawing as hereinafter specified. All pipe, fittings and valves shall be U.S. manufacture.

1. Arrangement: Install and arrange piping approximately as indicated, straight, level, plumb, and as direct as possible; for right angles and parallel lines with structure, however, pipes shall be slope as necessary for proper functioning of the system.

2. Location: Keep pipes close to walls, slabs, partitions and ceilings where possible.

3. Parallel Pipes: Where sever pipes are run together they shall run parallel

and shall be spaced at distances, which will permit access for servicing, unless provisions for pitching the pipes dictate different elevations.

4. Grading: Interior horizontal pipes shall be installed to allow a maximum headroom. Maintain minimum 1/4" fall per foot in all soil, waste and rain leader lines, except where noted otherwise.

5. Accessibility: Pipes will be installed so as to leave them readily accessible for repairs and maintenance.

6. Installation Practices: Shall be in accordance with the best standards of the trade. All piping shall be reamed after cutting to remove burrs and rough edges. All piping shall be cleaned free of cuttings and oil prior to installation. All pipe lines shall be capped during construction to avoid the entry of foreign materials into the piping.

7. Installation of the piping system shall be such as to allow thermal expansion and contraction while preventing undue stress and strains on the system and connected equipment. Contractor shall take proper care that lines will be installed so as to allow proper drainage, avoid trapping of air, and allow for normal expansion movements. Contractor shall be held responsible and liable to correct any defects in installation or proper performance of the piping system under Contract.

8. Manual Air Vents shall be furnished and installed in high points as well as other locations where venting of trapped air may be necessary, as required.

9. Connection to plumbing fixtures, shall in general be carried concealed to point above floor near fixtures where they shall breakout and rise to fixtures all as required or approved. All roughing in installed underground or concealed in floor or wall construction shall be tested, and approved as tested by the Owner's Representative before any of the work is covered. Should any work be covered before being tested and approved, it shall be uncovered, tested and re-covered at the expense of the Contractor.

10. Cleanouts shall be installed where shown on drawings: where required by the local Building Codes; no more than 50 feet centers in horizontal drainage piping 4 inches and smaller and no more than 100 feet centers for pipe larger than 4 inches; at each change of direction greater than 45 degree for all drainage piping; at or near the foot of each vertical waste or soil stack or storm leader. Cleanout on concealed piping shall be extended through and terminated installed in underground piping shall be extended to or above finish grade level directly above the location of the cleanout or extended to the outside of the building when found necessary.

11. All vent pipes shall be graded so as to free themselves of any water or condensation.

12. Where space permits, all cold and hot water piping shall be installed with a minimum clearance between them of 6 inches.

13. Dissimilar metals:

- a. Wherever possible, connections between equipment, piping and hangers of dissimilar metals shall be avoided.
- b. Wherever such a connection or contact between dissimilar metals is to occur, insulate the two different materials using a best quality dielectric insulating material.
- c. Flanged connections shall be provided with all necessary gaskets, sleeves and washers of insulating material to assure complete isolation of any two different metal.
- d. Where copper or brass pipe or fittings are to connect to steel or iron piping, provide insulating flanges, bushings, couplings or unions to preclude contact between the different metals.

B. Fittings:

1. Unions: Shall be installed where indicated on the drawings and as necessary to permit convenient disassembly of piping for alteration and repairs; in connections to all equipment between shutoff valves and the proper equipment.

2. Pipe Reducers: Reductions in pipe size shall be made with eccentric or concentric pipe reducers as may be necessary depending upon the function of the pipe.

C. Valves

1. Locations: Valves shall be located and installed as follows:

- a. Valves shall be located for easy access and operation.
- b. Stemmed valves shall not be installed with valve stems below the horizontal.

D. Domestic Potable Water and Sanitary Piping Construction Details:

1. Drainage Systems

- a. Branch connections in horizontal plane shall be made with long "Tee-Wye" fittings are to be used in vertical pipe only. All fitting shall conform to Code requirements.
- b. Connections to roof drains shall be installed in conjunction with the roofing called for under another Section of the Specifications and at such times as designated by the Owner's Representative, so that the building is adequately protected during construction from damage by storm water. All piping shall be adequately and properly supported in the manner herein specified, and all joints in piping shall be made up as called for under that heading.
- c. All traps shall be set as close to the fixtures as possible and in no event shall this distance exceed 2'0". All fixture traps shall have full size tapered extra-heavy screwed cleanout plug below their water line. All traps shall be set level with regard to their water line.

2. Drainage-Vents

- a. Furnish and install complete system of ventilating pipes from the various plumbing fixtures and other equipment to which drainage connections are made. Ventilating pipes shall be connected at a suitable point after the discharged to each trap in such a fashion so as not to crown vent the trap or convert it into as "S" trap, and shall be carried individually to a point above the ultimate overflow level of the fixture before connecting with any other vent pipe; in general, this will be approximately 3'6" above the finished floor. Branches shall be arranged to pitch back to fixture is not individually vented, every waste pipe and trap shall be two pipes larger than the size required in Part 1100.2 of the revised National Plumbing Code.
- b. The top of all vent stacks shall run straight up, undiminished in size, thru the roof slab, extending to heights as indicated on drawings.

3. Domestic Potable Water Piping System

- a. Pipes shall be adequately supported as called for under "hangers".
- b. All cold water risers shall be supported with floor clamps at floor level.
- c. All piping, fittings, escutcheons, valves, supports, hangers, etc. exposed to view shall be chrome plated.
- d. Friction pipe wrenches and vises shall be used on all copper tubing and brass piping. Any piping showing tool marks will be ordered to

be removed and replaced with new material, without additional cost to the Owner.

- e. All piping shall run to pitch to low points. All low points and pockets or changes in elevation required by structural or other interferences shall be provided with drain valves.
- f. Branches to individual fixtures shall be of sizes as shown on the fixture schedule in drawings.
- g. Water hammer arrestors shall be furnished and installed where on drawings.

E. Fire Protection System

- 1. All piping shall conform to NPPA No. 14 "Standard for the Installation of Standpipe and Hose System" and NPPA No. 23 "Standard for Fire Department Connections for Sprinkler and Standpipe System", and all parts in this Specifications for "Fire Protection System".

F. Sterilization of the Water Supply System

- 1. The entire water supply system including new water mains outside the building shall thoroughly sterilized with a solution containing no less than 50 parts per million of available chlorine. The chlorinating material shall be calcium hypochlorite or chlorinated lime conforming to Federal specifications O-C-114, and shall be introduced into the system in a manner approved by the Owner's Representative. The sterilizing solution shall be allowed to remain in the system for a period of 8 hours, during which time all valves and faucets shall be opened and closed several times. After sterilization, the solution shall be flushed from the system with clean water until the residual chlorine content is not greater than 0.2 part per million, unless otherwise directed.

2.09 PIPING MATERIALS

Materials for the various piping system shall be as called for in the drawings.

2.10 VALVES AND SELECTED SPECIALTIES

A. Valves and specialties shall be furnished as follows, except otherwise indicated or specified. All valves shall be new and each valve shall be clearly stamped or otherwise marked with the valve is designed. All valves shall be new and each valve shall be clearly stamped or otherwise marked with the manufacturer's name and working pressure for which the valve is designed. All valves shall be Crane, Jenkins, Powell, Walmorth, Lukenheimer or Muller, or approved equal. Working pressure shall be not less

than 125 lbs. steam, unless otherwise noted. Brass shall not be acceptable in lieu of bronze, as per ASTM Standards.

1. Gate Valves

- a. Aboveground: Except where noted otherwise, valves 2 1/2" and smaller shall be bronze, double faced, solid wedge disc., tapered seat, rising stem, equal to Crane Co., No. 428, 2 1/2" and larger shall flanged connections, Crane Co. No. 461, or approved Equal.
- b. Underground: Shall be as per List 15, AWWA, and conforming to Federal Specification WW-W-58, Type II, Class A Valves. Manufacturer: James B. Clow and Sons, Inc. Catalog Nos. F-5226 or F-5225, or approved equal.

2. Roof Drains: Shall be as shown in the drawings, or approved equal.

3. Floor Drains: Shall be as shown in the drawings, or approved equal.

2.11 PIPING SUPPORT AND HANGERS

A. General: Provided auxiliary structural steel members or brackets securely attached to building framing where building structural members are not available for supports of pipes and equipment, and to provide adequate bracing and hanger support. Floor supports shall be provided as shown on the drawings or directed by the Architect. Proposed details on auxiliary supporting members shall be submitted to the Architect for his approval prior to erection.

B. Piping shall be supported, guided and anchored to prevent creeping, sagging, bucking, vibration or misalignment.

C. Pipes shall not be hung from other piping or from equipment of other trades and hanger rods shall not pierce ducts or duct insulation.

D. Wire, chain, band iron, tape or wood hangers shall not be used to support piping.

E. Pipe supports shall be capable of vertical adjustment after installation of piping.

F. Piping at all equipment shall be supported to prevent strains or distortions in the connected equipment. Piping shall be supported to allow for removal of equipment, valves and accessories with a minimum of dismantling and without requiring additional supports after these items are removed.

G. All pipes shall be supported at all changes in direction, and at every joint of

an horizontal run. Maximum pipe spans shall be as per the following tables:

Nominal Pipe size, inches	1	1-1/2	2	2-1/2	3	4	6	8	10
Maximum span feet	7	9	10	11	12	14	17	19	22

It is emphasized that the above table is for maximum spans, and that in case of discrepancy, the first sentence of this paragraph governs. In case of pipes of different size resting on, or hanging from pipe support structures, such as steel brackets, spacing shall be for the condition producing the smallest spacing.

H. All pipes shall be hung independently, hanger rods shall be attached to the concrete structure with steel expansion shields or other approved means.

I. Piping suspended from ceiling slabs, shall be supported with clevis hangers and rods, Grinnell Fig. 260, Instruct, Type "J", "T" hangers, or approved equal.

J. Minimum hanger rod size shall be 3/8", for pipes up to and including 4" dia., for larger pipes use 1/2" rod.

2.12 PIPING SUPPORTS AND HANGERS

K. Piping at walls shall be supported on hook plates, offset clamps or wall brackets.

L. Vertical pipes shall be supported at the bottom on base elbows or floor stands fastened to concrete piers and at floors by riser clamps.

2.13 CLEANOUTS

A. Cleanouts shall be same in size as pipe, except that cleanout larger than 4" will not be required except otherwise indicated in drawings. All cleanouts plugs shall be extended to slightly within finished wall surfaces or slightly below floor surfaces for installation with access cover when required on drawings.

2.14 ACCESS PANELS

A. Access doors and covers shall be furnished and installed in finished walls, ceiling, partitions, etc., to provide access to all valves, controls, shock absorbers, cleanouts, and any other equipment which will require maintenance servicing that is concealed behind finishes construction.

2.15 WATER PRESSURE BOOSTER SYSTEM

THIS SECTION DELETE

A. General: All fixtures shall be free from imperfections, true as to line, angle, curves and color, smooth, watertight, and complete in every respect. Fixture shall be furnished, set and connected in a good substantial, neat and workmanlike manner. All vitreous ware fixtures shall be white of a non absorbent vitreous china, and burned so that the whole mass is thoroughly fused and united to the body, without discoloration, chips or flaws, and free from craze.

All fixtures shown on drawings shall be set, connected, and tested by Contractor. He shall also make all water, waste, vent, soil and other service connections to fixtures as shown on drawings or as directed and shall set, furnish, connect and test all necessary piping, connected thereto.

All pipes at fixtures passing into walls, floors, or partitions shall be provided with heavy cast brass escutcheons and set screws finished to match the pipe.

All fixtures shall be protected after installation and shall be left thoroughly clean before the final inspection.

All exposed fittings, escutcheons, faucets, traps, piping, etc. shall be brass, chrome-plated over nickel plate with polished finish. Any hanger nuts visible shall likewise be chrome-plated over nickel plate.

Before roughing work is started, the Contractor shall submit to the Architect complete figures, drawings and cuts of each of the plumbing fixtures, fittings, trimmings, etc., and secure his approval before proceeding with the installation of any work. Roughing-in of water, waste and soil piping shall be done in accordance with the roughing-in measurements of fixtures submitted by manufacturer in advance.

This Contractor shall furnish and set all hangers, supports and brackets, for the proper installation of all Plumbing Fixtures requiring support. Such supports shall be in accordance with the recommendations of the manufactures of the fixtures, and if build into partitions or walls shall be set as the wall progresses. This Contractor will be held responsible for the stability of all fixtures, furnishing and installing all chair carriers, or other materials necessary to accomplish this. Provide all fixtures that are supported by concealed or exposed arms with lock washers or start washer on the bolts that fasten the fixtures to the arms.

All fixtures of each type, as designated by a common symbol (such as P-1 for example) shall be identical throughout the project; items of trim and fittings of each type shall also be identical throughout the project.

All fixtures and connections thereto shall comply with the Rules Relative to Submerged Inlets and any provisions of the revised National Plumbings Code to prevent contamination of water supply. Connections of floor flanges with fixtures having floor outlets shall be fitted with a composition filler to be water-tight, fume and gas proof, germicidal, stain proof, which shall not harden under any climatic conditions.

2.17 PAINTING

A. Outdoor Metallic Surfaces

All equipment, hangers, support steel, and other metallic surfaces (except aluminum and galvanized) shall be thoroughly wire brushed or otherwise thoroughly cleaned and given two coats of Rust-Oleum 1069 Heavy Duty Rust Inhibitive Red Primer or approved equal, color as directed by the Architect.

B. Interior Metallic Surfaces

All equipment, hangers, support steel, and other metallic surface (except aluminum and galvanized) shall be thoroughly brushed or otherwise thoroughly cleaned and given one coat of Rust-Oleum 769 Damp Proof Red Primer or approved equal, color as directed by the Architect. The Engineer may waive this painting opinion said metallic surface has been painted at the opinion said metallic surface has been painted at the factory in a manner similar to the herein described one and said paint has not been damaged up to the time of turn in the equipment over to the Owner.

C. Fire Protection Piping

All fire protection piping shall be given a coat of Rust-Oleum No. 769 Damp Proof Red Primer or approved equal and one finish coat of bright Red Rust-Oleum Top Coat, or approved equal.

2.18 TEST

A. General: All tests shall be performed in the presence of the Architect of the Owner's Representative. Give written notice in ample time to all concerned of date when tests are to be conducted.

Concealed or insulated work shall remain uncovered until required test have been complete to satisfaction, but if construction scheduled require it, arrange for prior tests on parts of system as approved.

B. Cost: Furnish labor, materials, instruments and bear all other costs involved. Owner shall furnish electrical energy and water.

Installed instruments may be used for test, if calibrated and approved for the purpose.

C. Water-Supply System Test: After completing entire water supply system, and before connecting fixtures, test at lowest levels where directed, to a hydrostatic pressure of 125 psig. Maintain this pressure for at least 1/2 hour. Conduct test of system section in a manner as approved, so that no pipe or joint will be left untested.

D. Drainage System Tests

1. Building sewers: Plug ends at points of connection with public sewers; fill building sewers with water and test to at least 10 feet head.

2. Roughing or water test: Applied to entire drainage system when soil, waste, leader drains, stacks, branches have been installed and system is complete, except for connections to fixtures and connection of building drains to sewer. Proceed as follows:

Close all openings except highest at roof, fill with water to point of overflow.

Allow water to stand for at least two (2) hours before starting inspection. If leaks appear, make tight, repeat test until all joints are tight and approved.

E. Adjustments, Repairs, Retests

1. Make adjustments, repairs, alterations as required to meet specified test results.

2. Correct defects disclosed by test or inspection: Replace defective parts when directed.

3. In replacing defective parts, use only new materials; in case of pipe, replace with same length as defective piece.

4. Caulking of screwed joints or peening of weld will not be permitted.

5. Repeat tests after defect have been corrected and parts replaced as directed, until pronounced satisfactory.

6. Test and adjust pressure valves to specified reduced pressure.

7. Test and set relief valves to specified relief pressure.

8. Test and adjust gauges, thermometers, meters, other instruments, after installation, to assure operation.

9. Test and adjust alarms for satisfactory operating conditions.

F. Operating Test

1. After plumbing work have been completed, tested and approved, test pumps and other mechanical equipment under normal operating conditions for at least two eight-hour days to check, their speeds, capacities, power consumption, and other details as required, to demonstrate that they fulfill requirements of plans and specifications, and that they operate satisfactorily.

2. Where evidence of stoppage appears in piping or equipment, disconnect, clean, repair, reconnect obstructed parts; also bear costs of cutting, patching adjoining work necessitated by such cleaning and repairing.

2.19 INSTRUCTION MANUAL

A. Within 30 days after start of project, four (4) copies of a complete instruction manual, bound in booklet form and suitably indexed, shall be submitted to the Architect for approval to be later turned over to the operating personnel.

B. The Manual shall contain the following item:

1. Brief description of each system covering its basic operating characteristics.
2. List of all equipment with manufacturer's name and model number of each item.
3. Manufacturer's literature describing each item of equipment.
4. Part list of each major item of equipment.
5. Recommended inventory of spare parts for all systems.
6. Detailed step by step instructions for starting, operation, and shutdown of each system.

C. All written material contained in the manual shall by typewritten or printed.

D. If a change in material, equipment or function occurs during the course of installation, these changes shall be incorporated in this manual.

DIVISION 16 ELECTRICAL

SECTION 16050

ELECTRICAL WORK - GENERAL

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

A. Install electric power, lighting and grounding systems, including the installation and wiring of miscellaneous instruments and devices.

B. Furnish temporary circuits, over current devices, conduit and wiring, and other equipment required during change-over from existing to proposed electric system.

1.02 QUALITY ASSURANCE

A. Install electrical work in conformance with latest rules and requirements of National Fire Protection Association Standard No. 70 (National Electrical Code) and with requirements of Puerto Rico Electric Energy Authority.

1.03 AUTHORITY SUBMITTALS

A. Shop Drawings and Data: Include manufacturer's drawings, bills of material, panel and equipment layouts, catalog data, wiring diagrams and other documentary or descriptive information as required for each assembly submitted in one package insofar as possible.

1. Bills of material: Include a numbered list of all components, with manufacturer's name, catalog number or similar identification on all other drawings where item appears.

2. Where additions and modifications are made to existing equipment, provide drawings which include both retained existing equipment and new work.

3. Mark shop drawings and data submitted showing only items applicable to specific contract.

4. Make early submission of certain drawings where dimensions of equipment, location of conduit entrances, etc., are important to facilitate construction.

5. Include one-line diagrams, schematic diagrams and wiring diagrams.

Submit only completed drawings showing all local and remote devices associated with each item. Submit one complete package of shop drawings as far as possible. Partial submittals may be returned without action.

6. Submit list of type and make of conduit, fittings, wires, cables, switches, fixtures, receptacles, pushbuttons, sleeves and inserts, etc.

7. Submit for installation, operation, and maintenance of equipment, and parts list. Specifically mark standard publications forming a part of this contract. Cross out, blank out, or otherwise delete any non-applicable items.

8. Install nameplates on all devices or pieces of equipment for which use or identification not readily apparent, such as, starters, relays, contactors, pushbuttons, indicating lights, and switches. Ensure position of nameplates readable after equipment installation.

9. Submit samples of wires and cables.

10. As soon as possible after award of contract, submit all information and data on wires, cables, and other long delivery items proposed. Early submission for review and early ordering are required to avoid delays in completion of work.

1.04 INTERFERENCE AND ERRONEOUS LOCATIONS

A. Locations of electrical equipment, devices, outlets, and similar items, as indicated, are approximate only. Exact locations determined or accepted during construction.

B. Verify, in field, all data and final locations of work, done under other sections of specifications, required for placing of electrical work.

C. In case of interference with other work or erroneous locations with respect to equipment or structures, furnish all labor and materials necessary to complete work.

1.05 APPROVAL AND MARKING EQUIPMENT

A. Insure that devices and materials are listed and/or labeled by Underwriters Laboratories, Inc., wherever standards have been established by that agency. Where Underwriters Laboratories listing is not available for equipment, submit certified test reports of adequately equipped, recognized, independent testing laboratory, approved by the local inspecting authority, other applicable requirements. In lieu of independent test reports, written approval of equipment by local electrical inspecting authority will be acceptable.

B. Clearly mark equipment, devices and material with name or trademark of manufacturer and rating in volts and amperes and other pertinent information on a nameplate.

1.06 ELECTRIC SERVICE

A. Earth and rock excavation, backfill, concrete masonry, concrete reinforcement, and construction joints required for electrical work: Conform to requirements specified under applicable sections of specifications.

B. Contractor to furnish and install transformer substation, primary cable and conduit, secondary cable and conduit, stress cones, concrete pads, etc.

C. Furnish and install all necessary conduit and wire to service pole, extend conduit up pole for distance of 10 feet, and leave sufficient length of conductors to reach power company's overhead conductors. Connections at pole made by the power company. Perform work at service pole in accordance with power company's requirements.

D. Perform work at transformer substation in accordance with power company's requirements and in manner approved by power company.

PART THREE - EXECUTION

3.01 METERING EQUIPMENT

A. Obtain from power company drilling templates, dimensions, and mounting arrangements for metering transformers.

B. Ensure that metering equipment installation is in accordance with requirements of power company by submitting drawings, sketches, catalog information and other appropriate material for power company approval.

3.02 REMOVAL AND RELOCATION OF MATERIAL AND EQUIPMENT

A. Carefully dismantle and salvage electrical equipment, switches, fixtures, conduits, cables, wiring, etc., as necessary to carry out proposed changes. Rehabilitate and relocate items of equipment as required and as indicated or specified.

B. Deliver material and equipment not indicated for reuse to Owner for his disposal.

3.03 PROTECTION OF ELECTRICAL EQUIPMENT

Protects electrical equipment from the weather, especially from water

dripping or splashing upon it, at all times during shipment, storage, and construction. Do not store equipment outdoors. Where equipment is installed or stored outdoors. Where equipment is installed or stored in moist areas, such as unheated buildings, etc., provide acceptable means to prevent moisture damage, such as uniformly distributed source of heat to prevent condensation.

3.04 DEFECTIVE OR DAMAGE EQUIPMENT

A. GENERAL

- 1.01 Description
- 1.02 Quality Assurance
- 1.03 Authority Submittals
- 1.04 Interference and Erroneous Locations
- 1.05 Approval and Marking Equipment
- 1.06 Electric Service
- 1.07 Power System Study
- 1.08 Incoming Service

C. EXECUTION

- 3.01 Metering Equipment
- 3.02 Removal and Relocation of Material and Equipment
- 3.03 Protection of Electrical Equipment
- 3.04 Defective or Damage Equipment

SECTION 16120

ELECTRIC WIRES AND CABLES

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

A. Furnish and install all wires and cables necessary for complete electrical system, as indicated and specified.

1.02 REFERENCE STANDARDS

A. NEC: National Electrical Code: National Fire Protection Association, 470 Atlantic Avenue, Boston, MA.

B. U.U. Underwriters Laboratories, Inc., 333 Pfingston Road, Northbrook, IL.

1. U.L. 44 - Wires and Cables Rubber Insulated

2. U.L. 83 - Wires Thermoplastic-Insulated

3. U.L. 854 - Cable, Service Entrance

C. NEMA: National Electrical Mfg's Association, 2101 L Street, N.W., Washington, D.C. 20037.

1. WC 3 - Rubber Insulated Wire & Cable

2. WC 5 - Thermoplastic Insulated Wire & Cable

3. WC 7 - Cross-Linked-Thermosetting Polyethylene-Insulated Wire & Cable

4. WC 8 - Ethylene-Propylene-Rubber-Insulated Wire & Cable

5. WC 30- Color Coding of Wires & Cable

1.03 SUBMITTALS

A. Shop drawings and manufacturer's product data in accordance with requirements of Section 01000.

B. Two sample of each type of wire. Samples of necessary length with

manufacturer's name and number of type, voltage rating, conductor size, and insulation type on each conductor sample. Color code all control, indicating and metering wiring, and lighting branch-circuit wiring.

1.04 MANUFACTURER'S COMPLIANCE

- A. Contingent upon products compliance with specifications.
- B. 15 Kv Cable:
 - 1. General Electric Company, 1260 Boston Avenue, Bridgeport, CT-Type.
 - 2. Rome Cable Division of Alcoa, 1501 Alcoa Building, Pittsburgh, PA-Type XLP.
 - 3. Triangle Conduit and Cable Company, Inc., P.O. Box 711, New Brunswick, NJ - Everene cable.
 - 4. The Anaconda Company, Wire and Cable Division, Greenwich, CT.
- C. 600V, 480V, 380V, 220V, 208V, 200V, 115V cable:
 - 1. General Electric Company.
 - 2. Rome Cable Division.
 - 3. The Rockbestos Company, 550 Nicoll Street, New Haven, CT.
- D. Control and metering wire:
 - 1. The Rockbestos Wire and Cable Company, single and multiconductor, 600V control cable.
 - 2. General Electric Company - Vulkene control cable, Type SI.
 - 3. Rome Cable Company - Control cable, 600V, Type B, size 12, 7 strand.
- E. Cable fireproofing tape:
 - 1. MAC Products, Inc., 60 Pennsylvania Avenue, Kearny, NJ.
 - 2. Acceptable equivalent.

PART TWO - PRODUCTS

2.01 MATERIALS

A. Furnish copper conductors. Material and stranding of conductors: Conform to ASTM B33-80, ASTM B3-80, and to ASTM B8-77, for the appropriate class. No.12 Awg minimum wire size unless otherwise noted.

B. Tinned wire used with natural rubber insulation: Conforms to ASTM B33. Uncoated, soft or annealed copper wire conforming to ASTM B3-80.

C. 15 Kv/5 Kv cables: single-conductor, shielded, grounded cross-linked polyethylene insulated, 90 degrees c, copper conductors. The outer jacket: polyvinylchloride.

D. Wires and cables for maximum 600-volt power circuits: Type XHHW rated RHW with cross-linked polyethylene insulation, Type RHW-75C with rubber or rubberlike insulation and neoprene jacket or ethylene propylene rubber EPR.

E. Wires and cables for lighting and other 120/240-volt and 120/208-volt circuits: Type THW-75C.

F. Wires and cables for control, indicating, metering, or alarm circuits: single and multi-conductor control cable, copper conductors, Class B or C stranding. Insulation, 600-volt polyethylene, polyvinylchloride, or E.P.R.

G. Shielded cable for instrumentation wiring: 19-strand copper conductors, size No. 16 AWG. Insulate conductors individually with color coded polyethylene or polyvinylchloride. Twist pairs twisted with varying lay (if more than one pair) and cover with cable tape and copper or aluminum coated mylar shielding tape and tinned copper drain wire. Jacket: polyvinylchloride. Cables: rated 600 volts and 90 degrees C.

PART THREE - EXECUTION

3.01 GENERAL INSTALLATION

A. Install wiring in accordance with applicable provisions of National Electrical Code, and as indicated.

B. Wire and cable sizes are indicated however, in no case use smaller cable sizes than required by the National Electrical Code.

C. Unless otherwise indicated, use no conductor smaller than No. 12 AWG.

D. Conductors for branch lighting circuit: Install conductors of sizes that greatest voltage drop between lighting panel and center of load will not exceed 3 percent at rated load.

E. Number and sizes of wires and conduits indicated are guide only and are not necessarily correct numbers and sizes necessary for actual equipment installed. Install as many wires and conduits as required and necessary for complete electrical system, and provide adequately for the equipment actually installed.

F. Install conductors continuous from outlet to outlet and make no splices except within outlet or junction boxes.

G. Draw all conductors contained within single conduit at same time.

H. Apply wire pulling compound if required to conductors being drawn through conduits. Use pulling compound, Minerallac No. 100, Y-er-Eas, Yellow 77 or acceptable equivalent.

I. Use no cable bend with radius of less than eight times its diameter.

J. Wires and cables installed without prior submittal review and approval are subject to removal at no additional expense to Owner.

K. Support cables in rise conduits at intervals as required by National Electrical Code.

3.02 15 KV AND 5 KV CABLE SPLICING AND TERMINATIONS

A. Use primary 15 Kv/5 Kv cable terminations with rating of 15,000 volts/5,000 volt. Ensure that standard withstand conforms to IEEE Std. 48 and is in compliance with specification Section 16999, Field Acceptance Tests. Use potheads, elbows connectors, clamp type connectors or termination as recommended by equipment manufacturer.

B. Ensure that all splicing and terminating of 15 Kv and 5 Kv cable is in accordance with designs, materials, and instructions set forth by cable manufacturer.

C. Wrap cables in manholes with fireproof tape which meets ASTM D 626. Install tape in accordance with manufacturer's instructions.

3.03 CONDUCTOR IDENTIFICATION

A. Label each wire at both termination points. Carry individual conductor or circuit identification throughout, with circuit numbers or other identification clearly stamped on terminal boards and printed on directory cards in distribution cabinets and panelboards.

B. Identify each wire in junction boxes, cabinets, and terminal boxes where total

number of control, indicating, and metering wires is three or more and no terminal board is provided, including all power wire by means of plastic-coated, self-adhesive, wire marker.

C. In cases similar to above where terminal boards are provided for the control, indicating, and metering wires, identify all wires including motor leads and other power wires too large for connection to terminal boards, by wire markers as specified above.

D. In manholes, identify each wire by laminated plastic tag located so easily seen.

3.04 CONNECTORS, TERMINAL LUGS AND BOARDS

A. For wiring of circuits consisting of No. 10 or No. 12 AWG solid wires, such as for lighting branch circuits, utilize self-insulated pressure type connectors for all splices or joints.

B. Terminate all wires connected to terminal boards, terminal blocks, or to other similar terminals by means of ring and tongue, nylon self-insulated, tin-plated copper pressure terminals.

C. Fabricated terminal boards, installed where indicated, of type 600 volts, 30 amperes, screw terminals, with white marking strips for wire identification, of the 4-, 6-, 8-, or 12 pole type, as necessary.

D. Clearly and permanently mark terminal strips with ink or indelible pencil. Mark each wire consistently throughout entire system, using notation of wires given on manufacturer's wiring diagrams wherever possible.

PART FOUR - SUBSECTION INDEX

A. GENERAL

1.01 DESCRIPTION

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

1.04 MANUFACTURER'S COMPLIANCE

B. PRODUCTS

2.01 MATERIALS

C. EXECUTION

3.01 GENERAL INSTALLATION

- 3.02 15 KV CABLE SPLICING AND TERMINATIONS
- 3.03 CONDUCTOR IDENTIFICATION
- 3.04 CONNECTORS, TERMINAL LUGS AND BOARDS

SECTION 16140

WIRING DEVICES

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

A. Furnish, install, field test, and place in successful operating condition, wiring devices as indicated and as specified.

1.02 REFERENCE STANDARDS

A. NEMA: National Electrical Manufacturer's Association, 2102 L Street Northwest, Washington, D.C.

B. Federal Specifications, Superintendent of Documents, U.S. Government Printing Office Washington, D.C. 20402.

1. W-S 89c(1) Switch, Toggle, Single Unit with wall plates.

2. W-C-596, b(1) Plug, Electrical Connector, Receptacle, Electrical.

C. Underwriter's Laboratories, Incorporated Standards.

PART TWO - PRODUCTS

2.01 MANUFACTURERS

A. Arrow-Hart, Inc., Florence, KY.

B. Allen-Bradley Co., Milwaukee, WI.

C. Appleton Electric Co., Chicago, IL.

D. Bryant Electric, Div. of Westinghouse, Bridgeport, CT.

E. Cutler Hammer, Inc., Milwaukee, WI.

F. Crouse-Hinds Co., Syracuse, NY.

G. Harvey Hubbell, Inc., Bridgeport, CT.

- H. Midland-Ross Corp., Electrical Products Div., Pittsburgh, PA.
- I. Sierra Electric, Div. of Sola Basic Inc., Gardena, CA.

2.02 WALL SWITCHES

A. Provide alternating current, general-use, snap switches, in flush device boxes or on outlet box covers, totally enclosed in composition case, with insulated mounting yoke and sidewired, binding screw-type terminals. Single-pole, 2-pole, 3-way, or 4-way switches rated 20 amperes at 120/277 volts a.c.

B. Switches for controlling lighting:

1. Arrow-Hart Cat. No. 1991, 1992 or 1994
2. Harvey Hubbell Cat. No. 1221, 1222, 1223, or 1224
3. Bryant Electric Cat. No. 5721X, 5722X, 5723X, or 5724X

C. Provide pilot lights for switches controlling lights in seldom frequented locations consisting of either separate units or a 2-unit combination with separate switch and yoke-mounted candelabra base socket rated 75 watts, 125 volts and fitted with a ruby lens. Provide a clear 6- or 7-watt lamp with each pilot.

2.03 WATERTIGHT SWITCHES

A. Provide watertight switches consisting of flush mounting switches in NEMA type 4 gasketed cast metal boxes, switch operable through shaft in matching cast metal cover, twenty-ampere, 120/277-volt switch enclosures:

1. Crouse-Hinds Type MC or MCC
2. Allen-Bradley Cat. No. 600-TCX-r
3. Cutler-Hammer Cat. No. 91-1 H 96

2.04 EXPLOSIONPROOF SWITCHES

A. Provide explosionproof switches consisting of flush mounting switches in cast metal boxes meeting requirements for NEMA Type 7D enclosure approved for use in National Electric Code Class I, Group D, Div. 1, atmosphere. Switch operable through shaft in matching cast metal cover, 20-ampere, 120/277-volt switch assemblies:

1. Crouse-Hinds Type EFS

2. Midland-Ross Type EFS
3. Appleton Electric Type EFS

2.05 FLUSH RECEPTACLES

A. Provide twenty-ampere, 125-volt flush receptacles constructed in flush device boxes, and of grounding type in composition case with insulated mounting yoke, side wired, binding screw-type terminals.

B. Duplex receptacles

1. Arrow-Hart Cat. No. 5739-S
2. Harvey Hubbell Cat. No. 5362
3. Bryant Electric Cat. No. 5362
4. Sierra Electric Cat. No. 14602

C. Single receptacles

1. Arrow-Hart Cat. No. 5361
2. Harvey Hubbell Cat. No. 5361
3. Bryant Electric Cat. No.
4. Sierra Electric Cat. No. 1260S

2.06 CLOCK RECEPTACLES

A. Provide 3-Wire, 15-ampere, 125-volt hanger receptacle with flush stainless steel plate for each clock:

1. Arrow-Hart Cat. No. 5708
2. Harvey Hubbell Cat. No. 5235
3. Bryant Electric Cat. No. 2828GS
4. Sierra Electric Cat. No. 2123

2.07 SPECIAL RECEPTACLES

A. Provide weatherproof devices rated 20 ampere, 125 volt, consisting of single receptacles with spring loaded, soft gasketed hinged covers with stainless steel spring. Covers as follows:

1. Arrow-Hart Cat. No. 4500FS
2. Harvey Hubbell Ct. No. 5206
3. Bryant Electric Cat. No. 4510

B. Provide watertight, gasketed cast-metal enclosures with covers in areas subject to hose-down, meeting requirements, and either standard single or duplex type:

1. Appleton Electric Cat. No. AEE3382 and AEP3361, Style 2.
2. Crouse-Hinds Cat. No. ARRH3322 and APJ3385, Style 2.
3. Midland-Ross Cat. No. 3313 and 3317, Type SCA.

C. Provide receptacles with matching plug or cord cap designed to meet NEMA 4 requirements when plug, cord and receptacle are assembled.

D. Provide explosionproof 20-amperes receptacles, of the delayed action type, preventing contact from being broken until arc has been extinguished. Receptacles with angle covers and spring-closed flaps:

1. Crouse-Hinds Type CPS
2. Appleton Electric Type CPS
3. Midland-Ross Type EFS

E. Furnish one explosionproof plug for each three receptacles, with minimum of one, plugs to match receptacles and from same manufacturer.

F. Provide welding receptacles whereby plug ground contact makes contact with receptacle ground contact before current carrying contacts engage, and when withdrawing plug, ground contact remains engaged until after current carrying ground contacts disengage.

2.08 OUTLET BOXES AND ENCLOSURES

A. Provide outlet boxes and enclosures conforming to Section 160, Electrical

Raceway Systems unless otherwise indicated.

2.09 DEVICE PLATES

A. Provide device plates suitable for type of outlet boxes and enclosures used. Plates for flush-mounting by device manufacturer. Plates for surface-mounting boxes by either device manufacturer or box manufacturer.

B. Provide flush device plates of high corrosion resistant, Type 302 stainless steel, in process areas, laboratories and in other areas exposed to corrosive condition. Provide plates of 93,000 series thickness, not less than 0.030 in.

C. Provide flush device plates either Types 302 or 430 stainless steel in noncorrosive areas. Provide plates of either 93,000 series or 97,000 series, not less than 0.030 in.

D. Provide flush device plates of material and finish indicated, in certain designated areas.

2.10 NAMEPLATES

A. Provide nameplates or equivalent markings on switch enclosures to indicate ON and OFF positions of each switch. Do not use ON and OFF for 3-way or 4-way switches. Receptacles for special purpose shall have nameplates indicating their use, unless use is obvious. Nameplates shall otherwise conform to requirements specified under Section 16050.

PART THREE - EXECUTION

3.01 CONNECTION

A. Securely and rigidly attach wiring devices in accordance with regulating agency, and as indicated, avoiding interference with other equipment.

B. Securely fasten nameplates using screws, bolts, or rivets and centered under or on the device, unless otherwise indicated.

3.02 GROUNDING

A. Ground all devices.

B. Ground switches and their metal plates through switch mounting yoke, outlet box, and raceway system.

B. Ground flush receptacles and their metal plates through positive ground

connection to outlet box and grounding system. Maintain ground to each receptacle by spring-loaded grounding contact to mounting screw, or by grounding jumper, both making positive connection to outlet box and grounding system at all times.

D. Ground explosionproof receptacles and plugs by making contact between the metal shells, and also by using a grounding pin to make contact before power contacts are made.

PART FOUR - SUBSECTION INDEX

A. GENERAL

- 1.01 DESCRIPTION
- 1.02 REFERENCE STANDARDS

B. PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 WALL SWITCHES
- 2.03 WATERTIGHT SWITCHES
- 2.04 EXPLOSIONPROOF SWITCHES
- 2.05 FLUSH RECEPTACLES
- 2.06 CLOCK RECEPTACLES
- 2.07 SPECIAL RECEPTACLES
- 2.08 OUTLET PLATES
- 2.09 DEVICE PLATES
- 2.10 NAMEPLATES

C. EXECUTION

- 3.01 CONNECTION
- 3.02 GROUNDING

SECTION 16160

PANELBOARDS

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

A. Furnish and install panelboards including circuit breakers and cabinets complete, in conformance with the latest NEMA Standards and Federal Specifications listed below.

1.02 REFERENCE STANDARDS

A. NEMA: National Electrical Manufacturers Association, 2101 L Street Northwest, Washington, D.C.

1. PBI-1971

2. ABI-1975

B. NEC: National Electrical Code, National Fire Protection Association, 470 Atlantic Avenue, Boston, MA.

C. UL: Underwriter's Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL.

1. UL 67-74 (Revise 1976)- Panelboards

PART TWO - PRODUCTS

2.01 PANELBOARD MANUFACTURERS

A. Manufacturers acceptable contingent upon products' compliance with the specifications:

1. General Electric Company, 1 River Road Schenectady, NY.

2. Westinghouse Electric Corp., Distribution Equipment Division, 1945 Craig Road, St. Louis, MO.

3. Square D Company, Park Ridge, IL.

2.02 PANELBOARDS

- A. Factory assembled deadfront type panelboards.
- B. Furnish panelboards complete with branch circuit breakers and a main circuit breaker or main lugs only as indicated.
- C. Furnish panelboards with full capacity separate ground bus and furnish panelboards connected to a 3-phase, 4-wire service with an insulated neutral bus.
- D. Provide panelboards with the voltage, frequency and current ratings as indicated conforming to NEMA Standard PBI, Federal Specification W-P-1154 U.L. 67, and the N.E.C.
- E. Furnish panelboards with main and neutral buses, with minimum 98 percent conductivity rectangular copper bars provided with bolted type lugs as necessary.
- F. Drill buses to fit either "A", "B", or "C" phase connectors, and ensure that connectors are interchangeable and installed in a distributed phase sequence.
- G. Silver plate buses, connectors and terminals to a minimum thickness of 0.005-in., conforming to the requirements of Federal Spec. QQ-S-365B.
- H. Prevent terminal lugs from turning per NEMA standard PBI-1971 and ensure they are suitable for the conductor material and size.
- I. Main bus-bracing for each panel board shall be for 10,000 amperes symmetrical short circuit or as otherwise indicated.

2.03 CIRCUIT BREAKERS

- A. Furnish bolt-on type branch and main circuit breakers. Furnish frame sizes, trip setting and number of poles as indicated. Circuit breakers shall have their ampere trip rating clearly marked and visible.
- B. Furnish all breakers with quick-make, quick-break, toggle mechanisms and thermal-magnetic, inverse time-limit overload and instantaneous short circuit protection on all poles, unless otherwise indicated. Automatic tripping shall be indicated by the breaker handle assuming a clearly distinctive position from the manual ON and OFF position. Furnish all breakers handle that is trip-free on overloads.
- C. Do not use single pole breakers with handle ties or bails in lieu of multipole breakers.
- D. Furnish handle lock device on breakers as indicated to prevent the manual

opening of the selected breakers.

E. Furnish padlocking device on breakers as indicated to prevent the opening if indicated breakers.

F. Ensure that voltage and interrupting rating of all breakers in a panelboard is not less than voltage and short circuit rating of the panelboard main buses, as indicated. Furnish breakers suitable to operate satisfactorily at the frequency indicated.

G. Furnish ground fault interrupter circuit breakers for certain circuits as indicated on the drawings.

H. Furnish single pole breakers with full module size. Do not install two pole breakers in a single module.

I. Furnish time-current characteristic curves and other necessary information and data for each size of breaker furnished.

J. Ensure that branch and main circuit breakers rated 120 and 240 volts have an interrupting rating of not less than 10,000 rms amperes, symmetrical, at rated voltage.

2.04 CABINET

A. Cabinets shall be NEMA I type, unless otherwise indicated and shall be without knockouts. Drill cabinets only for the exact conduit entrances and mounting bolts.

B. Finish cabinet fronts, trims and surface-mounted boxes in ANSI No. 61, light-gray enamel over a rust-inhibitive primer. Attach the fronts (exterior trims) to the boxes or interior trims, by quarter-turn, indicating trim clamps. Design cabinets for surface or flush mounting as indicated.

C. Unless otherwise specified, construct panelboard cabinets of code-gauge galvanized, sheet steel and equip with gutters of ample size for the risers and outgoing circuits. Ensure that the cabinets do not exceed 78-in. (1980 mm) in height.

PART THREE - EXECUTION

3.01 INSTALLATION

A. Mount all panelboards such that the height of the top operating handle does not exceed 6 ft. 6-in. (1980 mm) from the floor.

B. Hang each door of the cabinet on semi or fully concealed hinges with a combination catch and lock.

C. On cabinets 48 in. (1200 mm) high and over, install a 3 point, catch assembly latching at top, bottom and approximate middle.

D. All panelboard locks shall be keyed alike.

PART FOUR - SUBSECTION INDEX

A. GENERAL

1.01 DESCRIPTION

1.02 REFERENCE STANDARDS

B. PRODUCTS

2.01 PANELBOARDS MANUFACTURERS

2.02 PANELBOARDS

2.03 CIRCUIT BREAKERS

2.04 CABINET

C. EXECUTION

3.01 INSTALLATION

SECTION 16450

GROUNDING

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

A. Furnish and install a single, complete, integrated grounding system, including all conductors, raceways, and connections, specified and indicated.

B. Include grounding of switchgear, substations, motor control centers, electric equipment enclosures etc., outdoor substations, transformers, switch structures, etc.; ground grid system with ground rod and water pipe connections; structural steel, and lightning protection system.

C. Include grounding conductors completely interconnecting water supply pipe, ground rods, ground grid, substation, switchgear and motor control center ground buses, other distribution equipment, and other groundable equipment.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Install complete grounding system in accordance with codes, and standards.

1.03 REFERENCE STANDARDS

A. American National Standards Institute:

1. ANSI C2.-1978 National Electrical Safety Code

B. National Fire Protection Association, 470 Atlantic Avenue, Boston, MA:

1. NFPA 70-1981 National Electric Code

2. NFPA 78-1975 Lightning Protection Code

1.04 TESTS

A. Measure ground grid resistance with earth test megohmmeter and install additional ground rods and conductors as required until resistance to interconnected ground system is 5 ohms or less. Measure ground resistance in normally dry conditions and not less than 48 hours after rainfall.

PART TWO - PRODUCTS

2.01 MANUFACTURERS ACCEPTABLE

- A. Contingent upon products compliance with the specifications.
- B. Ground rods - Copperweld Corporation, 2 Oliver Plaza, Pittsburgh, PA.

2.02 CONDUCTORS

A. Furnish soft drawn stranded copper grounding conductors. Minimum size of unenclosed grounding conductor shall be No. 6 Awg. All conductors shall be protected if physical damage would result from exposure.

B. Furnish bare conductors where buried in earth or where embedded in concrete.

C. In buildings run insulated grounding conductors with green insulation only.

D. Furnish insulated grounding conductors with insulation rated at 600 volts.

E. Furnish grounding conductors for installation in all non-metallic raceway in addition to, and not to be considered as, the neutral wire of the system.

F. Connect a grounding conductor between panelboard and grounding system. Where a grounding bar is furnished with panelboard, connect grounding conductor to bar.

2.03 GROUND BUS

A. Furnish a 2-in. by 1/4-in. copper bar complete with bolted type connectors as indicated. Connect grounding conductors from equipment in area to this ground bus. Connect ground bus to grounding system. Mount ground bus on 600 v pedestal insulators.

2.04 CONNECTIONS

A. Make all buried and concealed ground connections by exothermic welding.

B. Make accessible connections to structural members by exothermic welding process or by bolted connector. Connections to equipment or ground bus by acceptable bolted connectors. Furnish bolted ground connectors suitable for, and matching, grounding provisions furnished.

C. Furnish copper, brass, or silicon bronze ground clamps for use on copper or brass pipes.

D. Furnish ground clamps, for use on iron pipes, of galvanized or malleable iron, or of standard noncorrosive material.

E. Furnish ground clamps, for use on pipes, with rigid the pipe. Do not use strap type clamps.

F. Design cable to ground rod connectors capable of being installed without having to pass over end of ground rod.

G. Where conduits are not affectively grounded by firm contact with a grounded enclosure, apply grounding bushings on at least one end of conduit run.

H. Furnish copper-clad steel or galvanized steel ground rods; type, diameter and length as indicated on drawings.

PART THREE - EXECUTION

3.01 INSTALLATION OF GROUNDING CONDUCTORS

A. Install grounding conductors so not exposed to physical damage. Install connections firm and tight. Arrange conductors and connectors so no strain on connections.

B. Run grounding conductors associated with direct burial cables in common trenches above or if indicated beside cables.

C. Bury equipment grounding conductors 18-in. deep. Bring loops or taps up for connection to equipment or other items to be grounded.

D. Where raceways are used to contain and protect grounding conductors, install in accordance with Electrical Raceway System Section.

E. Where bare grounding conductors are contained within by suitable fittings.

F. Install loop type, low impedance, grounding system interconnecting all components so at least two grounding connections are provided for each major item of electrical equipment. Ensure that severing of any single grounding conductor in this system does not remove grounding protection on any major item.

G. Connect structural steel at locations indicated by an external perimeter loop of grounding conductor installed around all sides of building foundation, buried at least 18-in. (450 mm) below grade, and connect to each vertical column by loop or tap. Connect two opposite points on external loop to two different points on grounding system.

H. Perform exothermic welding with properly sized molds in good condition.

3.02 INSTALLATION OF GROUND RODS

A. Install ground rods in manholes in accordance with requirements specified under the section Underground Distribution Systems. Connect each grounding conductor entering a manhole to ground rod.

B. Install ground rods where indicated. Install the top of the rod 12-in. below the ground surface. Measure ground resistance of electric power service ground rod and if it is not 25 ohms or less, drive additional rods to obtain resistance of 25 ohms or less.

C. Make connection to overall grounding system as indicated.

D. Ensure that final resistance of interconnected ground system is 5 ohms, or less. Measure ground resistance in normally dry conditions, and not less than 48 hours after rainfall.

3.03 EQUIPMENT GROUNDING

A. Ground each piece of electrical equipment by means of a grounding conductor installed in raceway feeding that piece of equipment with copper wire sized in accordance with National Electric Code. Grounding conductors installed in conduit furnished with green, 600-volt insulation.

B. Connect transformer cases and neutrals to grounding system. Connect neutral ground connection at transformer terminal. Provide two separate, independent, diagonally opposite, connections for power transformers so removal of one connection will not impair continuity of other.

C. Connect two separate ground connections from ground grid to ground bus of switchgear, motor control centers and all outdoor substation equipment. Ensure that each connection for item of equipment is from different section of ground grid.

D. Install a separate grounding conductor from ground system to motors of 100 hp. and larger, in addition to raceway system. Ground motor ground connection to motor frame, independent of mounting bolts or sliding base. Ground motor to nearest point of grounding system, unless otherwise indicated.

E. Connect lightning arresters to ground system by suitable conductors.

F. Connect emergency generator neutral to grounding system by a grounding conductor of size required by National Electrical Code, unless a larger size is indicated. Connect grounding conductor to generator disconnect. Ground generator frame with two separate independent connections, so removal of one connection will not impair continuity of other.

G. Ground each street lighting standard by ground rod driven near base of standard, in accordance with requirements of National Electric Safety Code. Connect ground rods to grounding conductor brought with street lighting feeder cable.

H. Ground transformers, lightning arresters, insulators, etc., installed on poles, poles and timber structures, on metal structure. Run grounding conductors between poles or structure and ground rods. Protect grounding conductor by molding applied for at least 8 ft. above ground, with both molding and conductor stapled. Install ground rod where indicated, and driven until top of rod is 1 ft. below ground. Measure ground resistance of rod and if not 25 ohms or less, drive additional rods to obtain resistance of 25 ohms or less.

I. Ground wire fences when used to enclose electrical equipment. Unless otherwise indicated, provide minimal grounding by buried outside peripheral ground loop; connections to each corner fence post and nearby ground rod; flexible connections to each gate; and at least two connections to grounding system from approximately opposite positions on fence.

J. Also connect the ground rods to the grounding conductor run with the direct burial cable.

3.04 COMMERCIAL GROUNDING

A. Telephone:

1. Install one No. 2 insulated ground conductor to ground bus in telephone equipment cabinet.

2. Connect one No. 12 insulated ground conductor to all 68 conduits terminating at backboard.

PART FOUR - SUBSECTION INDEX

A. GENERAL

1.01 DESCRIPTION

1.02 REFERENCE STANDARDS

1.03 REQUIREMENTS OF REGULATORY AGENCIES

1.04 TESTS

B. PRODUCTS

2.01 TRANSFORMERS

2.02 TRANSFORMER MANUFACTURERS

C. EXECUTION
3.01 INSTALLATION

SECTION 16500

LIGHTING

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Furnish and install complete indoor lighting system.

1.02 REFERENCE STANDARD

- A. Underwriters' Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL.
- B. National Fire Protection Association, Battery March Park, Quincy, MA, 02269
NFPA 70 1981, National Electrical Code.
- C. Federal Specifications and Standards Superintendent of Documents U.S.
Government Printing Office, Washington, D.C., 20402:
 - 1. W-L-101 (5) Lamp, Incandescent (Electric, large, Tungsten Filament).
 - 2. W-L-001166 Lamps, Fluorescent.
 - 3. W-L-142a Lampholder, adaptor, and shadeholder, medium screw-shell,
125, 250, and 600 volts.
- D. American National Standards Institute:
 - 1. Fluorecent Lamp Ballasts, ANSI C82, 1-1972 and Supplement C82.1a.
 - 2. High Intensity Discharge Lamp Reference Ballasts, ANSI C82.5-1975.
 - 3. Mercury Lamp Ballasts, (Multiple Supply Type), ANSI C82.4-1974.
 - 4. Electric Lamp Bases and Holders, Fluorescent types, ANSI C81.20-1976.
 - 5. Electric Lamp Bases and Holders, Screw-Shell Types, ANSI C81.10-1976.

1.03 SUBMITTALS

- A. Submit manufacturer's installation instructions in accordance with General Specifications.

B. Submit manufacturer's shop drawings including photometric data to show that fixtures proposed are of same type, construction and quality as those indicated. Lighting fixtures listed and labeled by Underwriters Laboratories.

PART TWO - PRODUCTS

2.01 MANUFACTURERS

A. Lighting equipment as indicated or specified.

2.02 LAMPS

A. Furnish lamps of types and wattages shown in fixture scheduled.

B. Unless otherwise indicated, furnish fluorescent lamps suitable for 12-volt operation. Type: Rapid start, standard cool white, 48-in. long. 34 watt.

2.03 BALLASTS

A. Furnish high power factor type ballasts for fluorescent lamps. Ballasts are required to operate one, two, or four lamps as required by fixture schedule.

B. Ballast sound rating: "A".

C. Furnish ballasts class "P" type or equivalent protection, containing a nonrenewable, nonresetting thermal protector; designed for applicable indoor or outdoor use; conforming to UL Standard 935.

D. Furnish ballasts with power factor not less than 95 percent.

E. Furnish constant wattage (regulator) type ballasts for mercury vapor and metal halide lamps.

F. Ballast: In non-air conditioned spaces, rate for operation in 40-deg. C temperature environment.

G. Furnish mercury vapor and other H.I.D. ballasts suitable for 120 volt, 277 volt or 480 volt operation as indicated.

2.04 FIXTURES

A. Furnish fixtures complete with lamps of wattage indicated.

B. Furnish each fluorescent fixture with ballast of proper type and characteristic for lamps in fixture and with voltage rating as required by circuit in which fixture is

connected.

2.05 EMERGENCY LIGHTING AND EXIT LIGHTING FIXTURES

- A. Furnish types of fixtures shown in fixture scheduled.

PART THREE - EXECUTION

3.01 LIGHTING FIXTURES AND LAMPS

A. Install types and sizes indicated, complete. Deliver lamps of proper type, wattage and voltage and voltage rating to site and install in fixtures prior to completion of project.

B. Install all fixtures to comply with applicable provisions of National Electrical Code. Suspend pendant fixtures by means of suitable outlet box cover-type aligners, each having flexible joint permitting unit to hang plumb. Install stems on 1/2-in. galvanized steel conduits, unless otherwise specified.

C. Use aligners of shock absorbing type, where indicated.

D. Use vaportight aligners with vaportight fixtures.

E. Install each explosion-proof pendant fixture having stem longer than 12-in. (305 mm), with explosion-proof swivel of flexible fitting permitting fixture to hang plumb. Fixtures with stems shorter than 12-in. (305 mm) aligned by level outlet box mounting, explosion-proof swivels, or other acceptable means.

F. Install recessed fluorescent fixtures in suspended ceiling openings in conformance with manufacturer's recommendations. Install fixtures with adjustable fittings to permit alignment with ceiling panels. Install fixtures in fire-resistive type of suspended ceiling construction, equipped with fireproofing boxes constructed of materials of same fire rating as ceiling panels. Materials in conformance with UL approved building materials list.

G. Install accessories such as straps, mounting plates, nipples, or brackets necessary for proper installation.

H. Connect emergency light fixtures to separate unswitched circuit in lighting panelboard in a lighting circuit breaker locked in closed position.

PART FOUR - SUBSECTION INDEX

A. GENERAL

1.01 DESCRIPTION

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

B. PRODUCTS

2.01 MANUFACTURERS

2.02 LAMPS

2.03 BALLASTS

2.04 FIXTURES

2.05 EMERGENCY LIGHTING AND EXIT LIGHTING FIXTURES

C. EXECUTION

3.01 LIGHTING FIXTURES AND LAMPS

SECTION 16999

FIELD ACCEPTANCE TESTS

For listing of subsections, see subsection index at end of section.

PART ONE - GENERAL

1.01 DESCRIPTION

A. After electrical installation is complete, make tests to demonstrate that entire system is in proper working order and in accordance with drawings and specifications. Make no test less than those outlined hereafter, unless requested in writing and approved by Program Manager. Tests are in addition to, and no substitution for, tests of individual items at manufacturer's plant. Make insulation and ground resistance tests before operating tests. Determine proper rotation of motors before permanent connections are made.

B. Pay all costs for tests including expenses incident to retests occasioned by defects and failures of equipment to meet specifications.

1. Replace wiring and equipment found defective, or failing to meet specified requirements, without charge.

2. Furnish three copies of all test results to Engineer.

3. Unless otherwise specified, owner will supply electric current necessary for tests.

1.02 REFERENCE STANDARDS

A. NEMA: National Electrical Manufacturers Association, 2101 L Street, Northwest, Washington, D.C.

B. IEEE: Institute of Electrical and Electronic Engineers, 345 East 47th Street, New York, NY.

PART TWO - PRODUCTS

2.01 TESTING EQUIPMENT

A. Calibration

1. Furnish suitable electrical instruments including voltmeters, ammeters, wattmeters, tachometers and all other equipment necessary to perform test

specified. Furnish certified copies of calibration curves of these instruments which have been calibrated for specific tests.

2. Make necessary openings in circuits for testing instruments and place and connect all instruments, equipment, and devices, necessary for the test. Upon completion of test, remove instruments and instrument connections and restore all circuits to permanent condition.

3. Other sections of these specifications require services of one or more manufacturer's representatives, to ensure that equipment supplied has been installed properly and adjusted to proper working order. Advise representative of all applicable tests in this Section, so that work will be coordinated, and tests combined where feasible.

2.02 TESTING

A. Coordination

1. Coordinate activities, and cooperate with others on project, to ensure that system are energized when required, loads applied, and other requirements of Section are carried out on timely, coordinated basis.

2. Conduct tests in presence of Engineer. Notify Engineer seven calendar days or more in advance when any test to be performed, and do not start tests without Engineer's permission.

B. Preparation

1. Make up no high and/or medium-voltage connections at service entrance, transformers, substations, motors, medium voltage motor control centers, switchgear and generator permanently until correct phase rotation of all equipment is determined.

2. Install and insulate these connections temporarily, if necessary, while determining proper rotation. Have permanent connections after proper rotation has been established and subsequent to completion of insulation resistance and dielectric tests.

PART THREE - INSULATION

3.01 INSULATION RESISTANCE TESTS OF CIRCUITS, 600 VOLTS AND BELOW

A. Do not subject conductors rated 600 volts and below to high potential dielectric tests. Test each complete feeder and branch circuit of 600 volts or below with everything but power supply and power-consuming equipment, connected thereto, and

have an insulation resistance between conductors and between each conductor and ground of not less than 1,000,000 ohms, unless otherwise accepted by Engineer.

B. Determine insulation resistance values with all switch boards, panelboards, fuseholders, switches, receptacles, and overcurrent devices in place.

C. Use megohmmeter having output of at least 500 volts to determine insulation resistance value for 600 volt rated conductors, and a 2400 volt megohmmeter for 5 kv and 15 kv rated conductors.

D. List each circuit and measured resistance as test data.

E. Maintain record of all insulation resistance valued. Identify conductor or equipment, data that value was taken and resistance value. Arrange information in suitable neat tabular form and turn to Engineer in triplicate.

3.02 DIELECTRIC TESTS OF CONDUCTORS RATED 2400 VOLTS AND ABOVE

A. After all high and/or medium-voltage conductors are installed, and before connecting and putting into service, subject to dielectric tests. Perform direct current, high-potential test from phase to phase and from phase to ground. Make tests as specified in latest edition of the applicable I CEA-NEMA Standard.

B. Complete and enclose splices in conductor system being tested within all pull, junction or splice boxes before test is started, and complete all potheads and switchgear terminations. Disconnect potential transformers an all power consuming equipment or devices from circuit, if any are present.

3.03 GROUND RESISTANCE

A. Test each ground rod in accordance with IEEE Std. 142, and submit tabulation of results. Include identification of electrode, date of reading and ground resistance value in results.

B. Test each entire grounding system for continuity of connections and for resistance. Ensure that ground resistance of conduits, equipment cases, and supporting frames does not vary appreciably from that of system as whole and does not exceed 5 ohms.

PART FOUR - SUBSECTION INDEX

A. GENERAL

1.01 DESCRIPTION

1.02 REFERENCE STANDARDS

B. PRODUCTS

2.01 TESTING EQUIPMENT

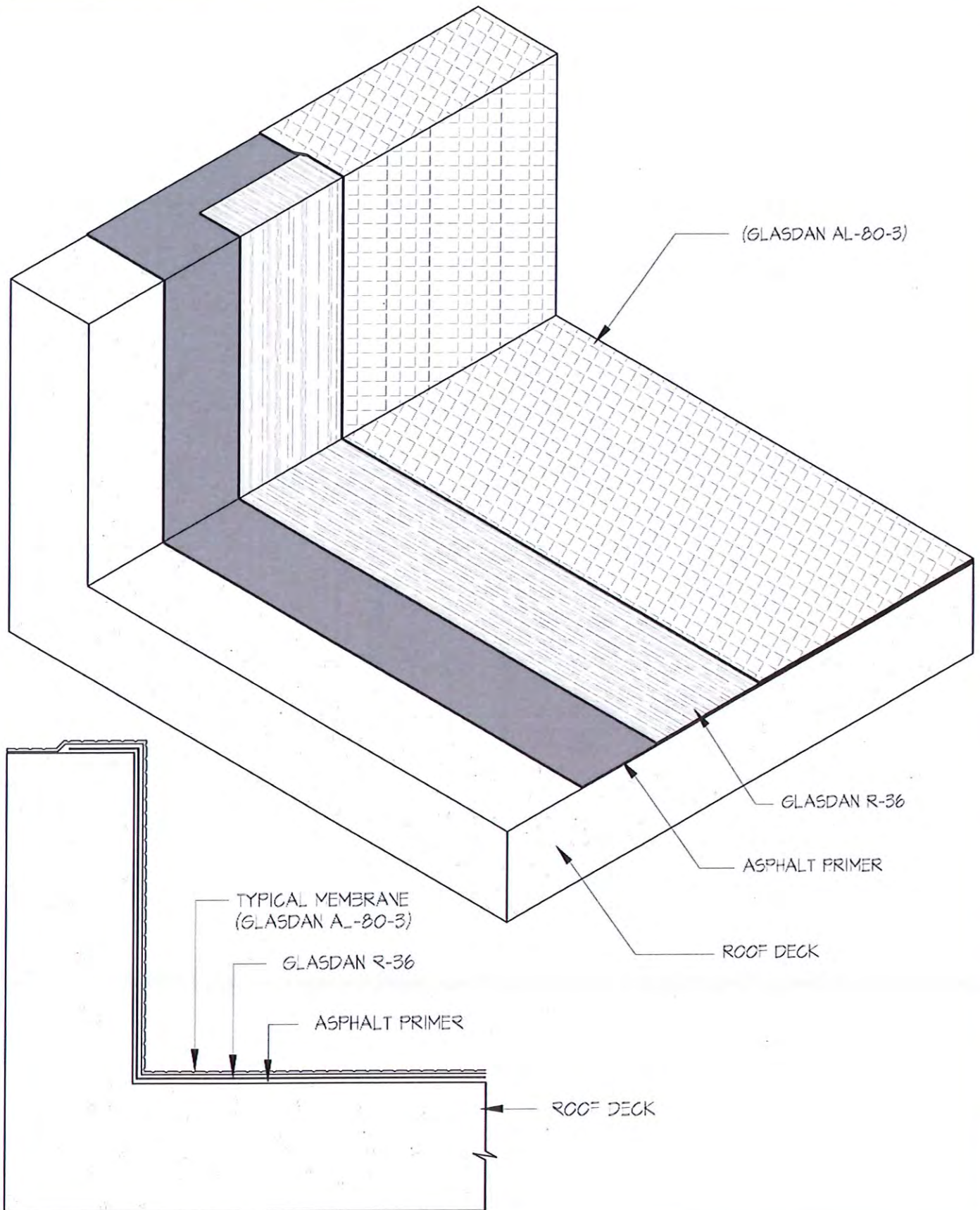
2.02 TESTING

C. EXECUTION

3.01 INSULATION RESISTANCE TESTS OF CIRCUITS, 600 VOLTS AND
BELOW

3.02 DIELECTRIC TEST OF CONDUCTORS RATED 2400 VOLTS AND
ABOVE

3.03 GROUND RESISTANCE



PROJECT:

PARAPET

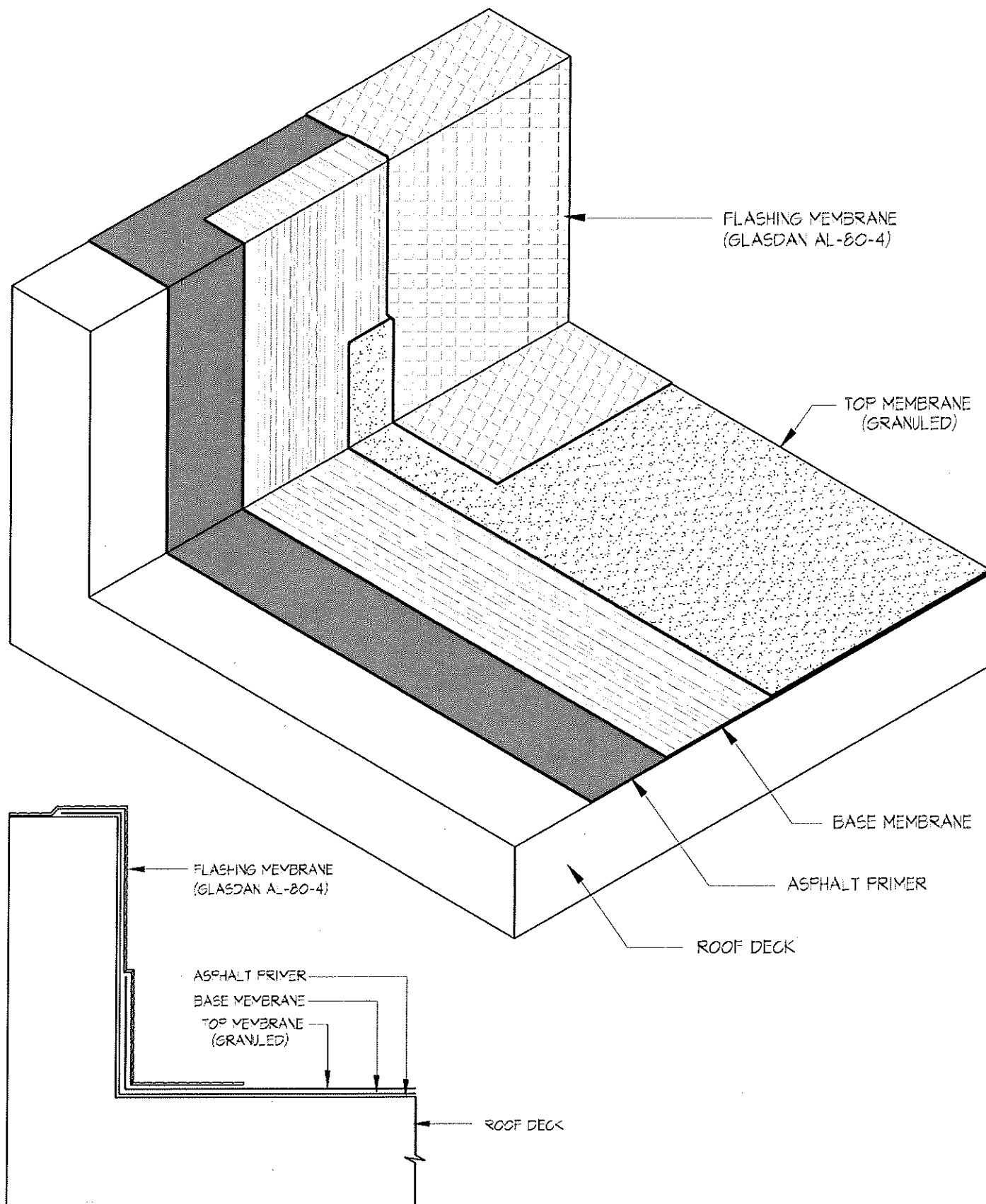
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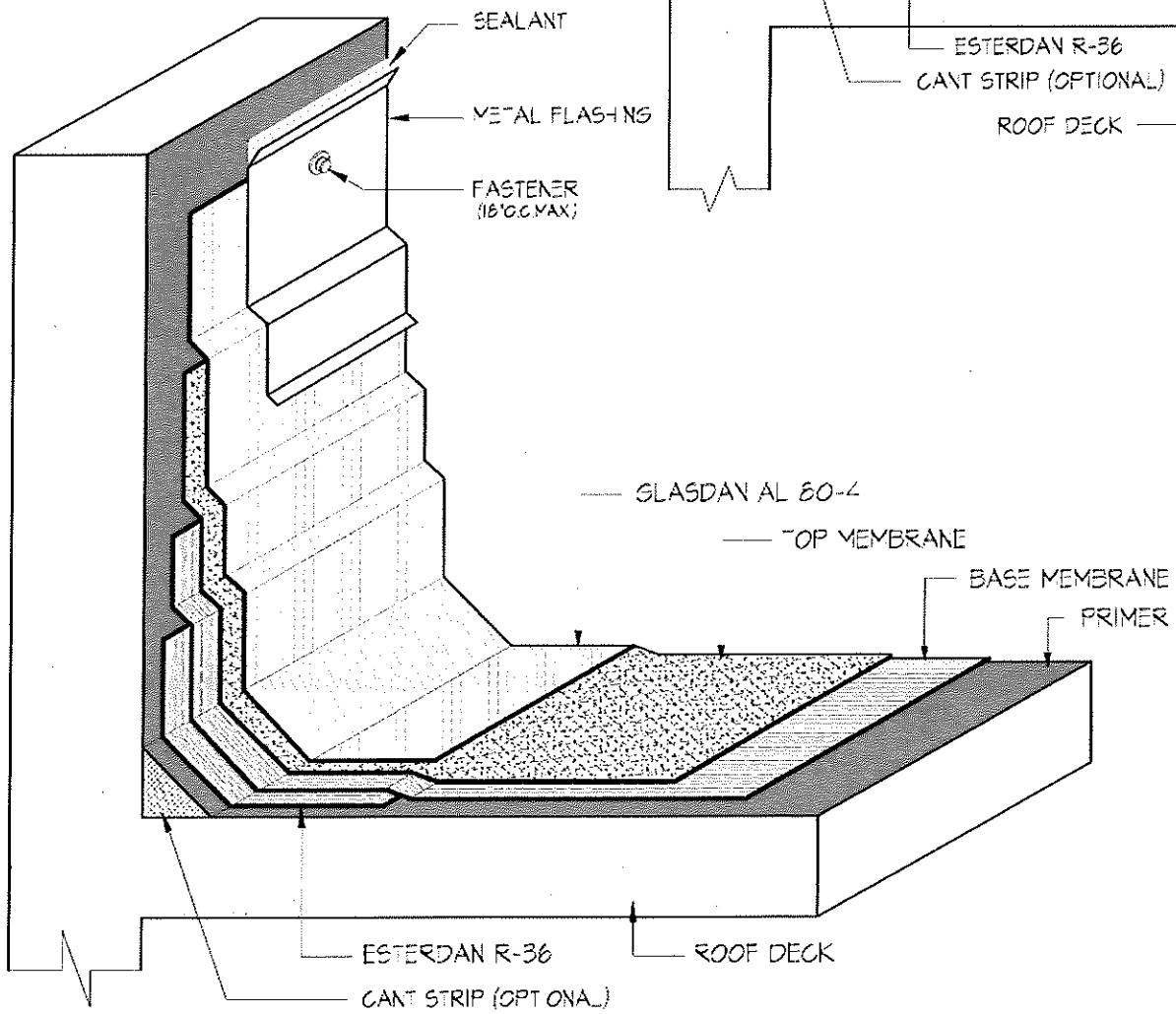
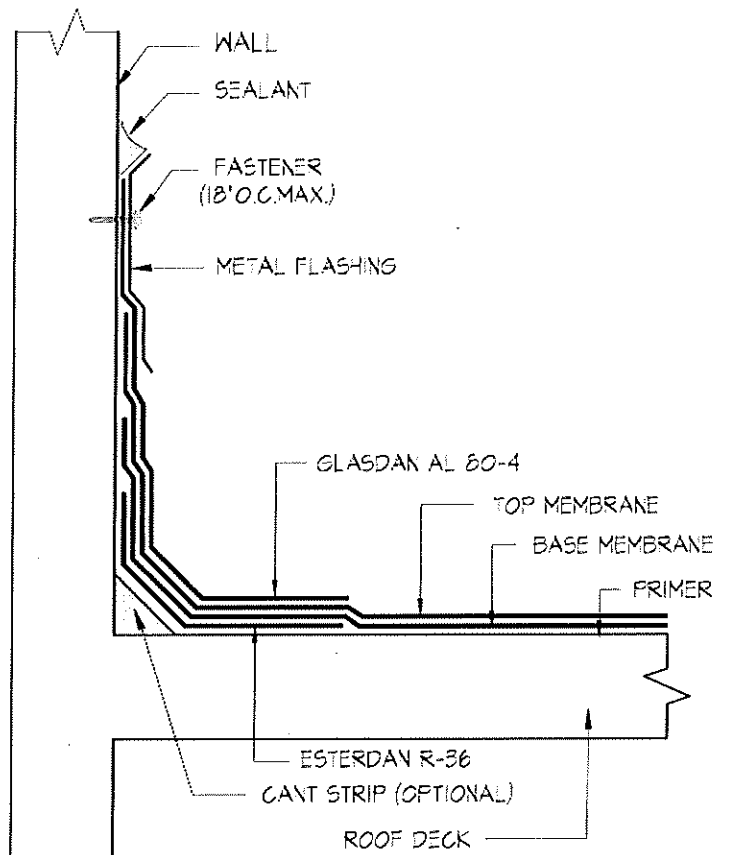
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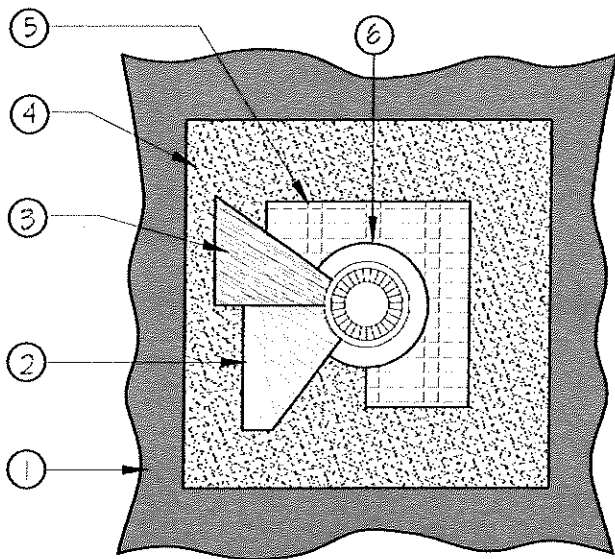
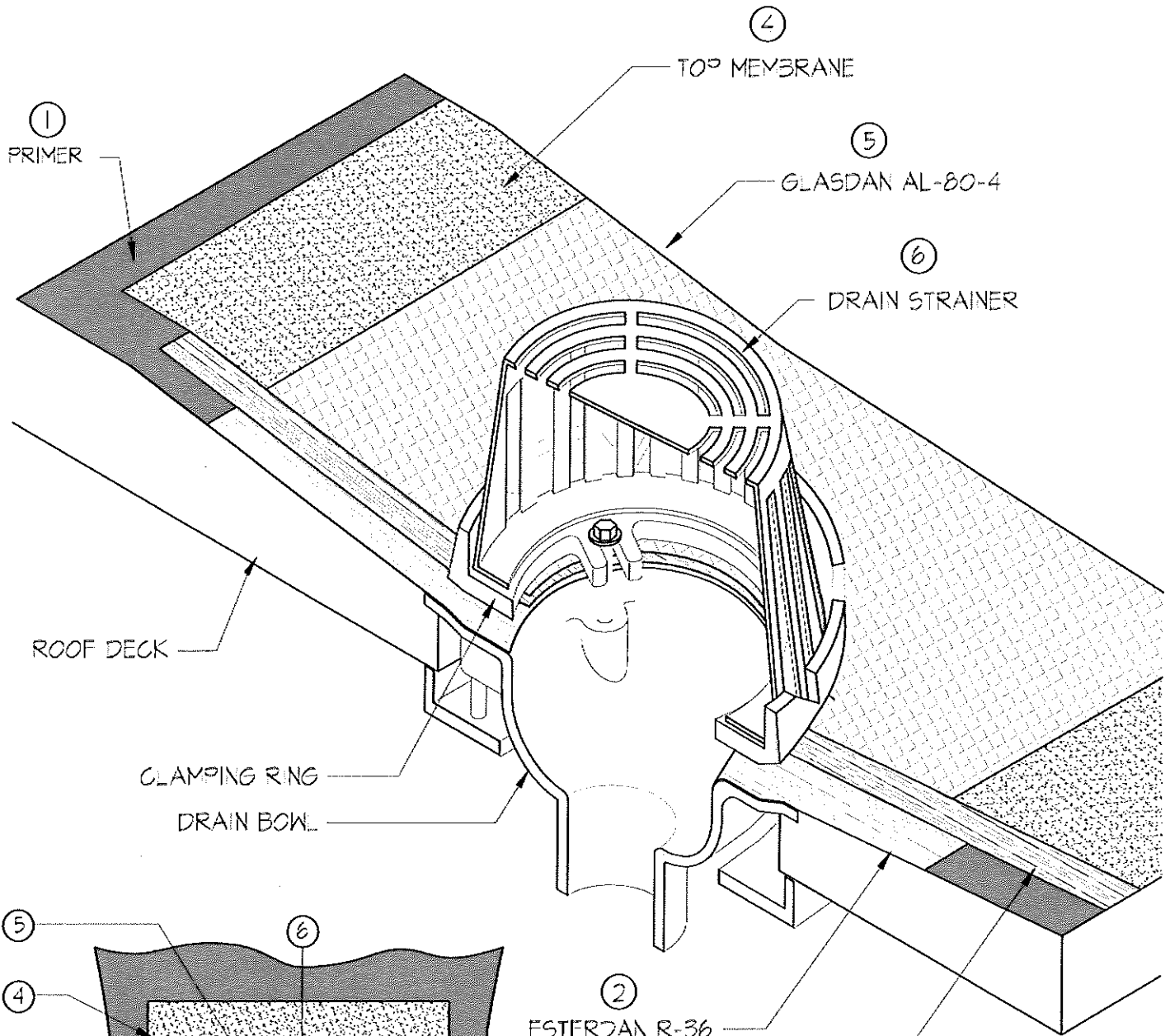
DATE:

APRIL-2010

REVISION:







45-2526-001
PROYECTO DE MEJORAS AL TERMINAL DE ITURREGUI
REQUISICIÓN 20853

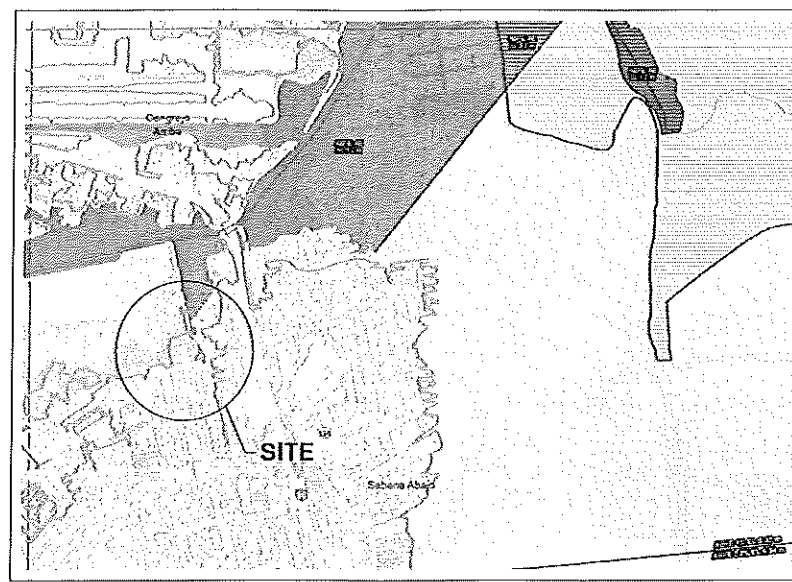
III. PLANOS





LOCATION MAP

1:20,000



FLOODING MAP

1:6,000



AERIAL PHOTO

ITURREGUI BUS STATION

ENGINEERING & PROJECT MANAGEMENT SERVICES FOR

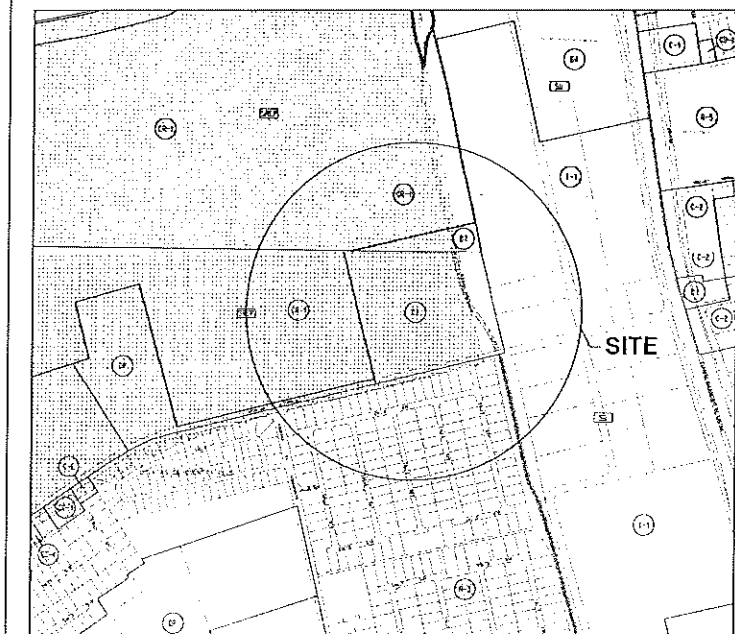
METROPOLITAN BUS AUTHORITY

PROPERTY OF: METROPOLITAN BUS AUTHORITY
LOCATED AT: AVE. ITURREGUI, SABANA ABAJO
CAROLINA, PUERTO RICO



INDEX

1	T-1	TITLE
2	SI-1	SITE PLAN
3	A-1	EXISTING FLOOR PLAN
4	A-2	PROPOSED FLOOR PLAN
5	A-3	ROOF PLAN & DETAILS
6	A-4	WATERPROOFING DETAILS & NOTES
7	A-5	FINISH SCHEDULE & DETAILS
8	P-1	CISTERN & DETAILS



ZONIFICATION

GEO ENGINEERS, P.S.C.

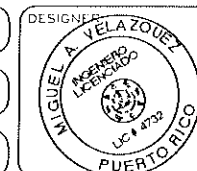
P.O. BOX 2842 GUAYAMA, P.R. 00970
TEL: 787-782-3301 FAX: 787-783-0762
EMAIL: geotulders@gmail.com

DRAWING BY:
ESA/VV

FILE:
EST ITURREGUI

SCALE:
1:100

DATE:
MAY 2025



SHEET NO.
1-1 1 OF 8

PROJECT
METROPOLITAN BUS AUTHORITY

COORDINATES NAD 83:

X= 246600.4335
Y= 265245.8749

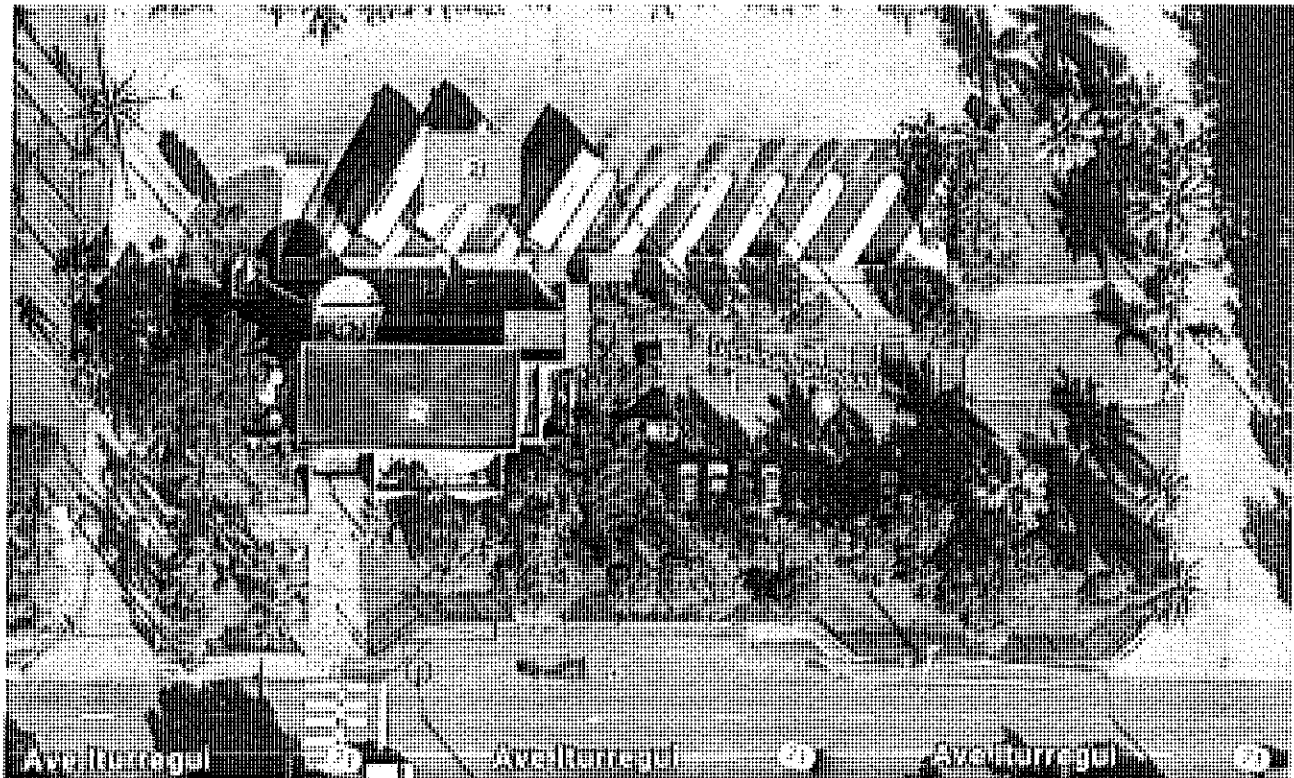
FLOODING MAP NUMBER:

MAP: 72000C0390J
ZONE: X

ZONING MAP:

ZONING: D1





1:500

SITE PLAN

NOTES:

- REFRESH CONCRETE SIDEWALK (MAIN ENTRANCE)
- REMOVE AND CONSTRUCT NEW CONCRETE SLAB (BUS PARKING)
- REPAIR EXISTING SIDEWALK

GENERAL NOTES

- FOR SPECIFICATIONS SEE
 - US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION (FHWA)
 - NATIONAL HIGHWAY SYSTEM
 - THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
 - AMERICAN WITH DISABILITIES ACT (ADA)
- THE FRONT FACE OF THE CONCRETE CURBS FOR ALL DEGREES OF CURVATURE SHALL CONFORM TO THE CONTOUR OF THE CURVE AND NO CHORD SECTIONS WILL BE PERMITTED
- CONCRETE EXPANSION JOINT MATERIAL IS TO BE 1/2" IN THICKNESS AT ALL LOCATIONS. ALL MATERIAL IS TO BE FIBERGLASS FIBER IN ACCORDANCE WITH SECTION 906 - JOINT MATERIALS OF THE STANDARD SPECIFICATIONS
- CONTRACTION JOINTS ARE TO BE SPACED AT 10 FEET. THE SPACING OF 10 FEET MAY BE REDUCED FOR CLOSURES, BUT NOT LESS THAN 6 FEET.
- EDGES OF JOINTS SHALL BE FINISHED ON 1/4" RAD
- TO BE USED FOR PROPOSED RAMP OPENINGS.

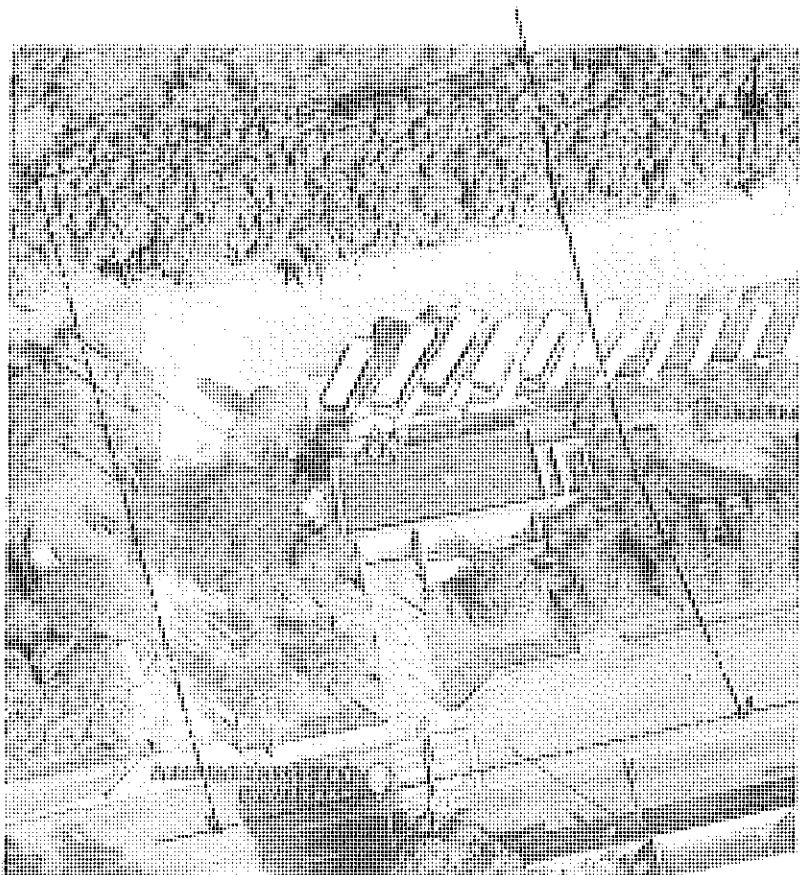
DEMOLITION NOTES

- PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE PROJECT SITE AND SHALL NOTIFY ANY DISCREPANCIES BETWEEN THE EXISTING CONDITION AND THE CONTRACT DOCUMENTS THAT COULD POTENTIALLY AFFECT THE PROPER DEMOLITION AND CONSTRUCTION SCOPE OF WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES INCURRED TO THE OWNERS PROPERTY OR OTHER AREAS TO REMAIN DURING DEMOLITION AND PHASES. DAMAGES ITEMS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT CONTRACTORS EXPENSES.
- CONTRACTOR SHALL PRESERVE UNDERGROUND UTILITIES. CONTRACTOR SHALL VERIFY UTILITY LOCATIONS PRIOR COMMENCEMENT OF DEMOLITION WORKS.
- ALL CONCRETE TO BE REMOVED SHALL BE SAW CUT TO ENSURE REINSTALLATION IS CLEAN AND SMOOTH. ANY CRACKS OR CHIPS IN CUT PROCESS TO BE FIXED BY CONTRACTOR.
- THE AMOUNT OF DUST RESULTING FROM DEMOLITION SHALL BE CONTROLLED AS PER GOVERNMENT REGULATIONS.
- CONTRACTOR SHALL SCHEDULE AND COORDINATE WITH AMA ALL THE WORK TO BE PERFORMED AT THE AREAS IN PRESENT USE, SO AS NOT TO INTERFERE WITH DAILY OPERATIONS.
- ALL SALVAGE MATERIALS SHALL BECOME PROPERTY OF THE CONTRACTOR AND MUST BE DEPOSED IN A LEGAL MANNER.
- ALL SALVAGE EQUIPMENT IS PROPERTY OF AMA AND ONCE REMOVED WILL BE DELIVERED TO THE OWNER OR SITE REPRESENTATIVE.

LEGEND	
	STRUCTURE
	SPEED BUMP
	TRAFFIC PAINT
	GATE BARRIER SYSTEM
	STEEL GATE
	EXISTING ASPHALT PAVEMENT & AREA
	EXISTING CONCRETE PAVEMENT & AREA
	NEW ASPHALT PAVEMENT & AREA
	NEW CONCRETE PAVEMENT & AREA

LEYENDA

	EXISTING TREE
	EXISTING FENCE
	EXISTING STRUCTURE
	CONTROL STATION
	PROPERTY LINE
	PROPERTY LINE
	STREET CENTER LINE



1:1000

LOT

NOTAS:

- ALL DISTANCES ARE EXPRESSED IN METERS UNLESS OTHERWISE NOTED
- HORIZONTAL CONTROLS TO A COORDINATE SYSTEM LAUSERT 140111
- CATASTER 14.0508 06420-030-01



CONCRETE SIDEWALK DETAIL

HORIZONTAL AND VERTICAL CONTROLS

POINT	(Y) NORTH	(X) EAST	DESCRIPTION
1	265127.2717	245551.7342	PROPERTY POINT
2	265330.8176	245492.9127	PROPERTY POINT
3	265387.5575	245647.6124	PROPERTY POINT
4	265163.5507	245716.7655	PROPERTY POINT

CENTER STATION	(Y) NORTH	(X) EAST
A	265245.8743	245600.4335

GEO ENGINEERS, P.S.C

P.O. BOX 2842 GUAYAMA, P.R. 00976
TEL. 787-782-3301 FAX 787-782-0762
EMAIL: geohub@geopsc.com



Miguel A. Velazquez
Professional Engineer
Lic. No. 4732

REVISIONS

1	
2	
3	
4	

ENGINEERING & PROJECT MANAGEMENT SERVICES FOR
METROPOLITAN BUS AUTHORITY

SITE PLAN
ITURREGUI BUS STATION

DRAWN BY

ESA/AV

SCALE

1:500

FILE NAME

AMA

DATE

May 2023

DWG. NO.

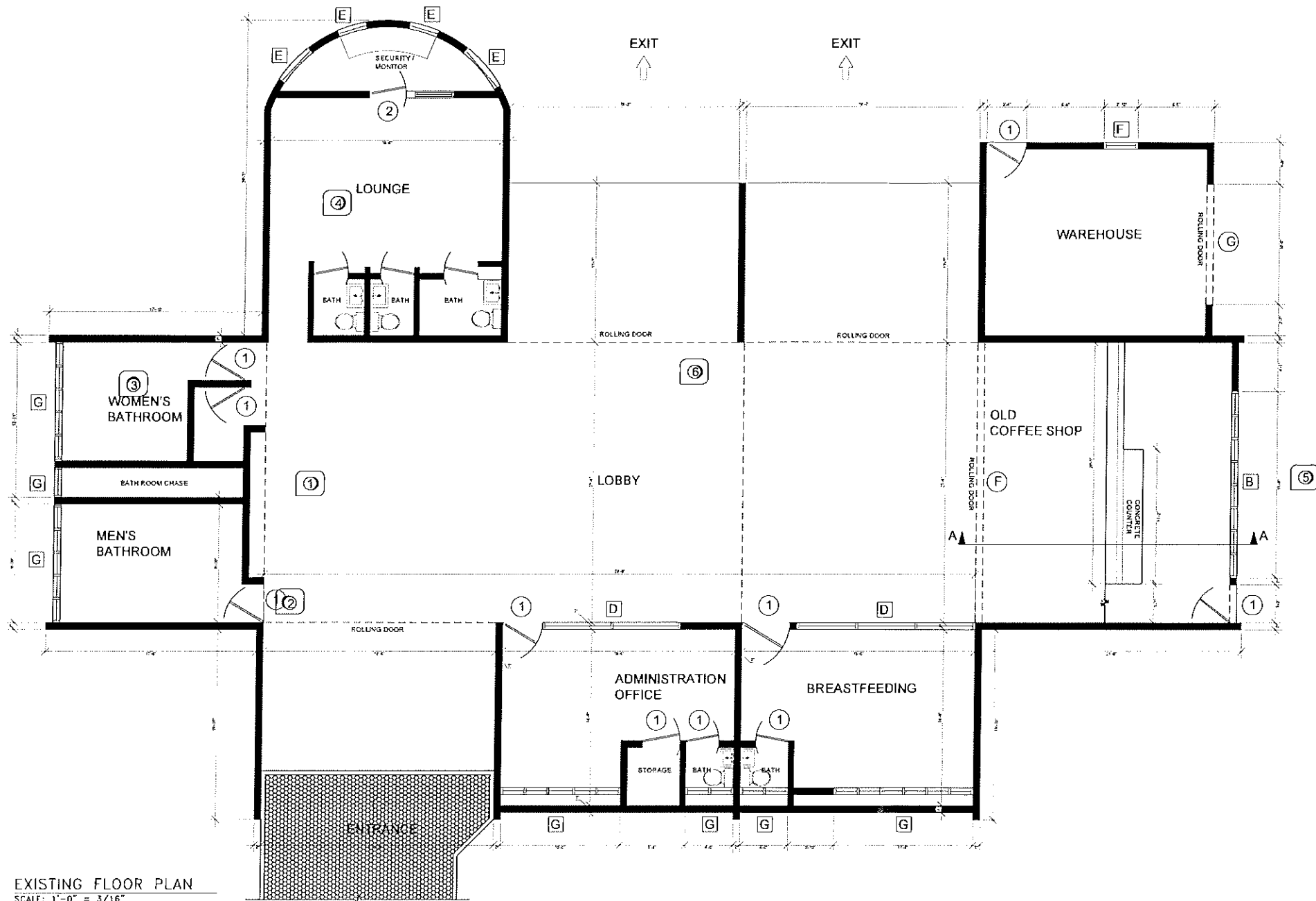
SI-1

SHEET NO.

2

OF

8



EXISTING FLOOR PLAN
SCALE: 1"=0" = 3/16"

LEGEND	
	STEEL WALL (INDICATED)
	CONCRETE BLOCK WALL
	WINDOW
	CONCRETE WALL
	DRAWING NUMBER SECTION SHEET NUMBER
	FINISH
	DOOR SWING
	WINDOW SWING
	STEP
	NOT IN CONTRACT

GEO ENGINEERS, P.S.C
P.O. BOX 2442 GUAYAMA, P.R. 00932
TEL: 787-782-3301 FAX: 787-783-0762
EMAIL: geobuilders@gmail.com

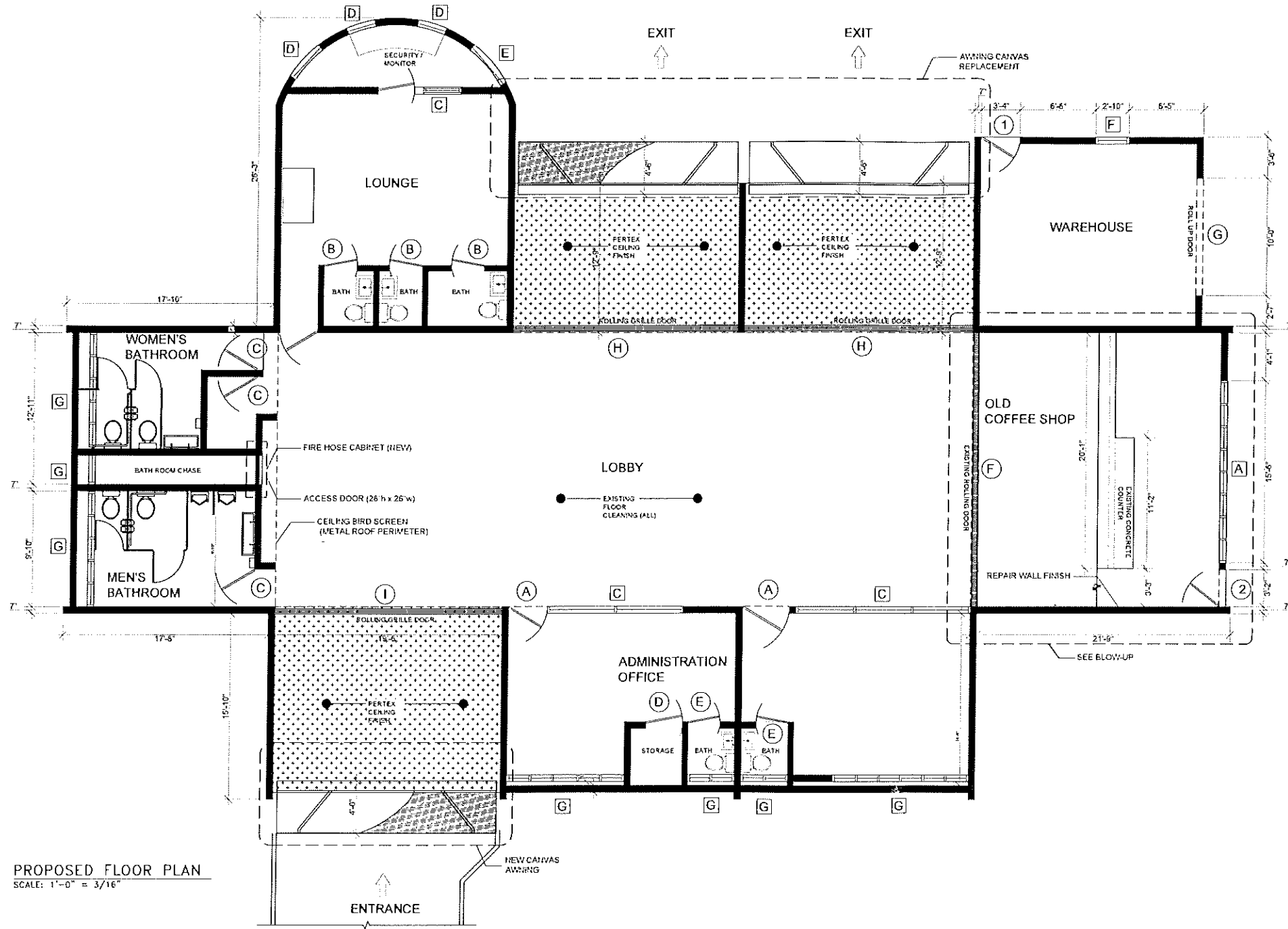


DESIGNER:
Miguel A. Velazquez
Professional Engineer
Lic. NO. 4732

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ENGINEERING & PROJECT MANAGEMENT SERVICES FOR
METROPOLITAN BUS AUTHORITY
EXISTING FLOOR PLAN
ITURREGUI BUS STATION

DESIGN BY:	ESA/AV
SCALE:	1"=0" = 3/16"
FILE NAME:	JWA
DATE:	MAY 2025
DWG. NO.:	A-1
SHEET NO.:	3
	8



PROPOSED FLOOR PLAN
SCALE: 1"=0' = 3/16"

LEGEND	
	OFFSET WALL (AS-NOTED)
	CONCRETE BLOCK WALL
	WINDOW
	CONCRETE WALL
	EXISTING NUMBER SECTION SHEET NUMBER
	FINISH
	DOOR SYMBOL
	WINDOW SYMBOL
	STEP
	NOT IN CONTRACT

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P.O. BOX 2842 GUAYAMA, P.R. 00970
TEL: 787-782-3301 FAX: 787-783-0762
EMAIL: geodesign@psd.com

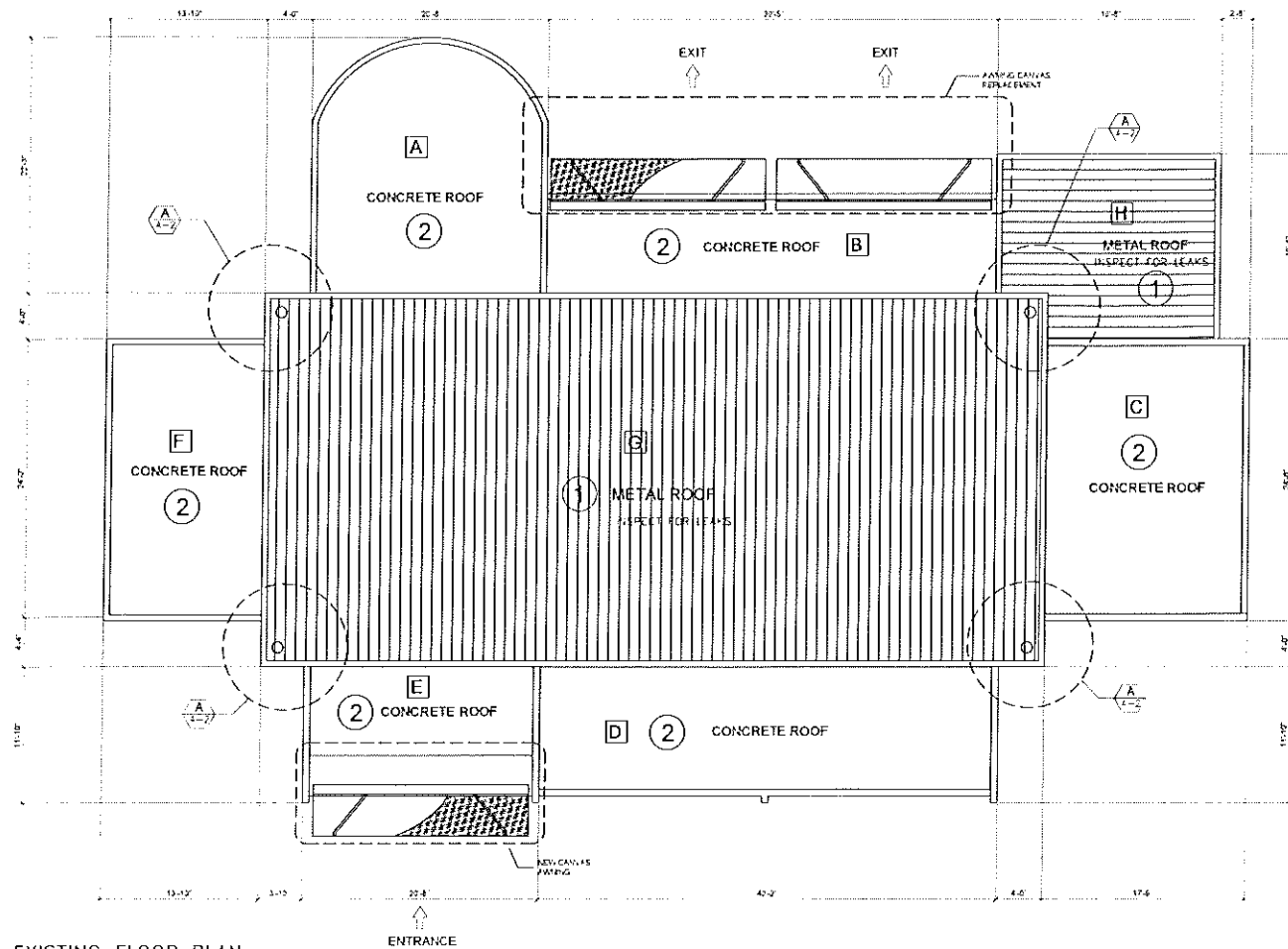


DESIGNER:
Miguel A. Velazquez
Professional Engineer
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**ENGINEERING & PROJECT MANAGEMENT SERVICES FOR
METROPOLITAN BUS AUTHORITY**
**PROPOSED FLOOR PLAN
ITURREGUI BUS STATION**

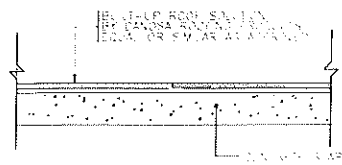
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FILE NAME:	AUX
DATE:	MAY 2025
CAD FILE:	
SHEET NO.:	A-2
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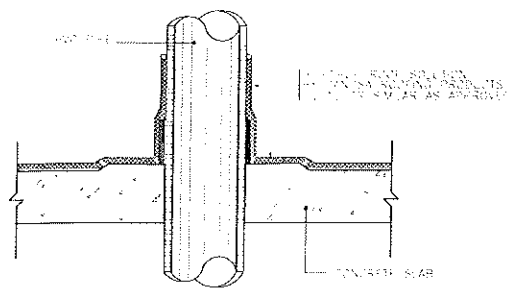
EXISTING FLOOR PLAN
SCALE: 1" = 0" = 1"

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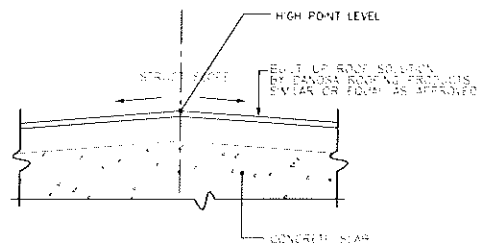
- ① INSPECT AND REPAIR METAL ROOF
- ② CLEAN AND INSTALL NEW WATERPROOFING SYSTEM



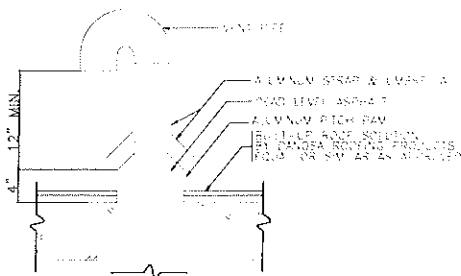
TYPICAL WATERPROOFING DETAIL
SCALE: NTS



TYPICAL DETAIL
SCALE: NTS

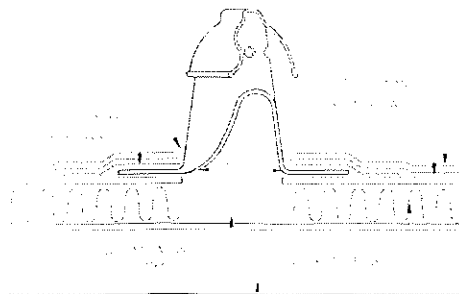


TYPICAL DETAIL
SCALE: NTS

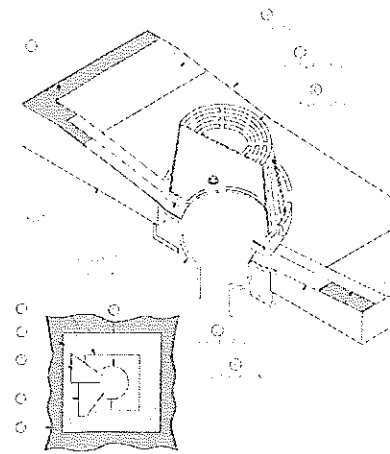


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SCALE: NTS

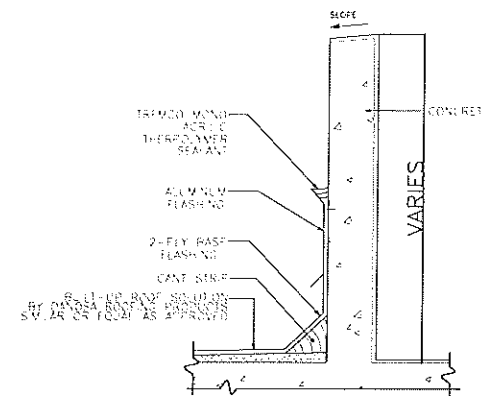
COUNTER FLASHING FOR CONCRETE WALL
SCALE: NTS



TYPICAL RELIEF VENT DETAIL
SCALE: NTS



ROOF DRAIN DETAIL
SCALE: NTS



DETAIL
SCALE: NTS

TYPICAL PITCH POCKET DETAIL
SCALE: NTS

Missing or invalid reference:
File: External reference: Details All (01) 22.mxd
Sheet: 1

ROOF AREAS	
1	140.00
A	401.50
B	242.50
C	402.50
D	422.50
E	141.50
F	315.50
TOTAL CONCRETE ROOF AREA: 2111.50	
G	215.50
H	225.50
TOTAL METAL ROOF AREA: 441.00	

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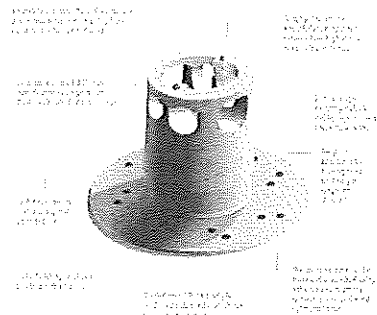
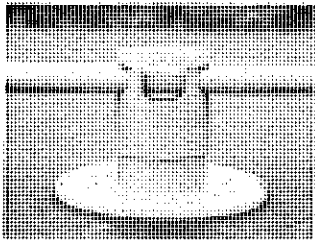


DESIGNER:
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Professional Engineer
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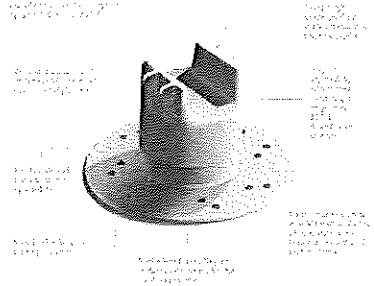
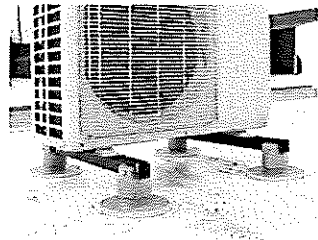
REVISIONS	
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ENGINEERING & PROJECT MANAGEMENT SERVICES FOR
METROPOLITAN BUS AUTHORITY
ROOF PLAN & DETAILS
ITURREGUI BUS STATION

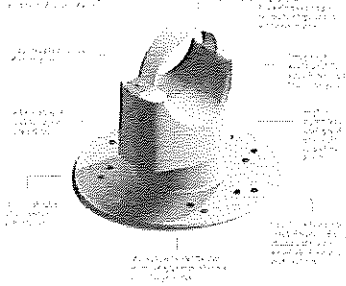
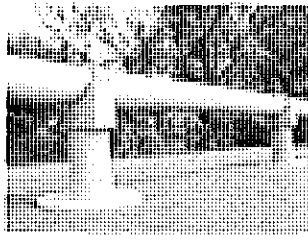
DESIGNED BY	ESA/VR
SCALE	1" = 0" = 1/8"
FILE NAME	AWA
DATE	MAY 2025
DWG. NO.	A-3
SHEET NO.	5
OF	8



KNUCKLEHEAD ROOFTOP LITE PIPE



KNUCKLEHEAD ROOFTOP SRUT



KNUCKLEHEAD ROOFTOP
HEAVY PIPE

SUPPORT SYSTEM

SCALE: NTS

ROOF WATERPROOFING SYSTEM NOTES

- The following items shall be considered as part of the waterproofing system installation.
 - Removal of the existing membrane and clean the area.
 - Check and verify the moisture content and condition of the sub-surface material. See the infrared study made concerning the sub-surface moisture content.
 - Remove the damaged sub-surface material.
 - Pour lightweight cellular concrete where required.
 - Install the two new roofing membranes system.
 - Install the vent devices as required.
 - Install the pitch pockets as required.
 - Install the Philadelphia type flashing at high walls.
 - Install the cap flashing type at parapets edges.
- Install new cap cover grates at all roof drains. Clean and paint the existing roof drains prior to the grate cap installation.
- Contractor to investigate the existing roof membrane sub-surface moisture and material condition. On those areas with heavy moisture content and the material is damaged, the material shall be removed and replaced by an appropriate lightweight cellular concrete with the same thickness as the material removed.
- Parapets Waterproofing: Parapets sides and top edges shall be checked for cracks and porosities not suitable to receive the sealing membrane. If the area is too porous and the top edge unlevel, both areas shall be rubbed and level with an appropriate mortar sealing material prior o the waterproofing sealing membrane installation. Proper triangular cant devices shall be used at the joint of the parapet with the roof slab.
- High Walls Waterproofing: Waterproofing sealing membrane shall be applied at the high walls. The waterproofing membrane shall be raised one foot, or the required high, on the wall surface. It shall end in a continuous appropriate Philadelphia flashing at its edge. Use triangular cant piece at the base corner of the wall with the roof slab.
- Expansion Joints Waterproofing: Expansion joints shall be waterproofed using the detail shown on plans.
- Seal properly all equipment pads, curbs, legs and protruding pipes.
- Electrical and Mechanical pipes and cables: There are electrical and mechanical cables and pipes running wld at roof surfaces and parapet walls. Contractor shall group these pipes and cables in a proper way and improve their running with the appropriate support and holding devices at these areas.
- Waterproofing system shall be equal or similar to Danosa's two membrane system and its specifications.
- Warranty on the system shall be 12 years. The maintenance clauses shall be specified and followed accordingly.
- It is reminded to Contractors that all buildings are in use. The removal of the existing membrane as well as the substrate below shall be done in a way that do not affect the work in the areas below. All roof work performed shall be sealed properly at the end of the working day. Works below shall be protected at all time.
- All Contractors participating in the Bids proposals shall be certified as an approved installer by the Manufacturing Company of the system he is using for the waterproofing. They shall supply the certificate as part of the required documents jointly with the document of the warranty for the work to be performed.
- Contractors to consider the weather conditions prior to initiate the work in any working day.
- All work shall be checked and inspected by the PM Inspector prior to initiate the different phase. Work not according to the specs. will be rejected and contractor shall re-do the same to comply with the specs. as expected. All finished work shall be approved by the PM Inspector. Punch list items, if any, shall be corrected immediately for the work acceptance.

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REVISIONS

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ENGINEERING & PROJECT MANAGEMENT SERVICES FOR
METROPOLITAN BUS AUTHORITY
WATERPROOFING DETAILS & NOTES
ITURREGUI BUS STATION

DESIGNED BY
ESA/AV

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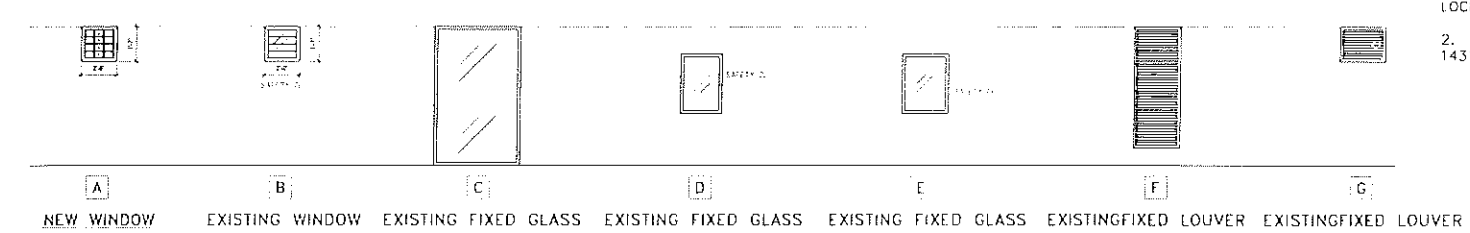
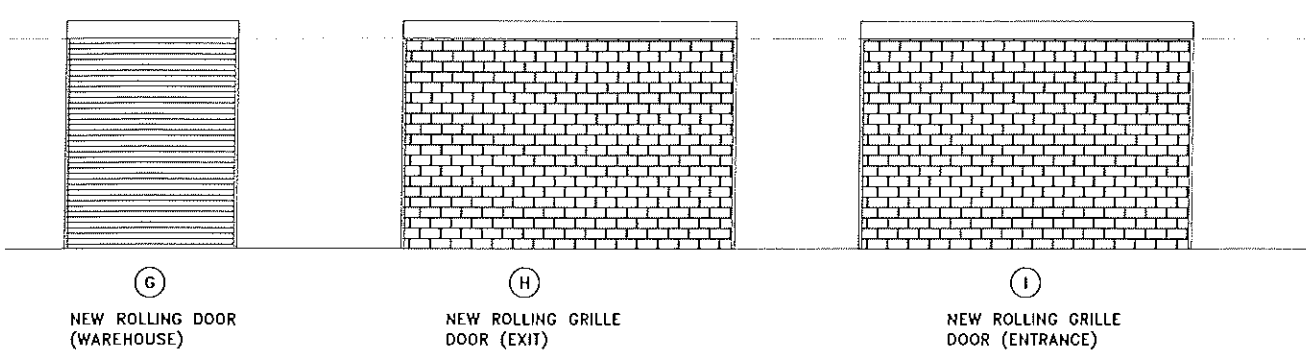
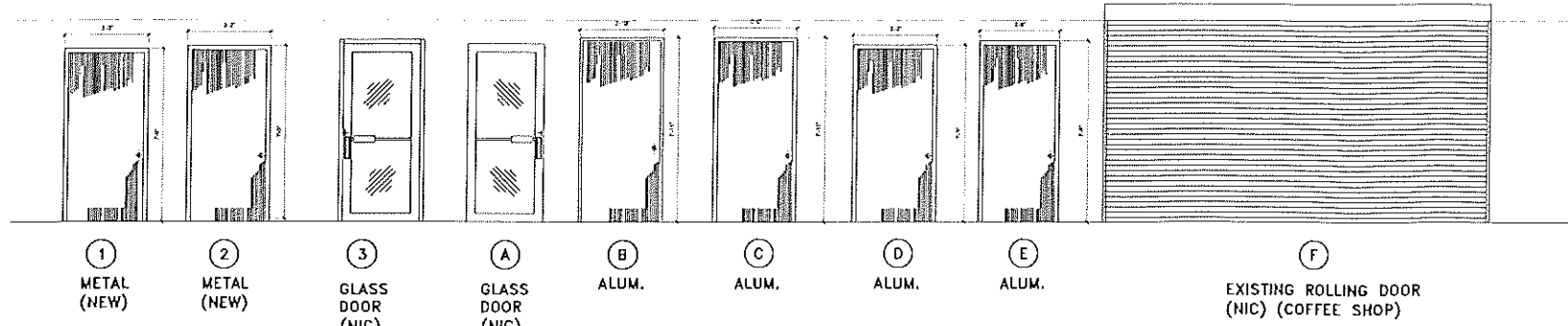
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A00

DATE
JUNE 2024

DWG. NO.
A-4

SHEET NO.
6

OF
8



SCHEDULE OF DOORS				
NO.	SIZE	NO. OF LEAFS	MATERIAL	DESCRIPTION
1	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
2	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
3	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
4	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
5	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
6	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
7	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
8	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
9	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
10	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
11	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
12	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
13	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
14	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
15	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
16	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
17	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
18	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
19	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK

SCHEDULE OF WINDOWS & GLASS				
NO.	SIZES	NO. OF LEAFS	MATERIAL	DESCRIPTION
1	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
2	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
3	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
4	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
5	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
6	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
7	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
8	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
9	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
10	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
11	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
12	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
13	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
14	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
15	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
16	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
17	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
18	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
19	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK

- GENERAL NOTES:**
- ALL ENTRANCE SHALL HAVE DOOR CLOSERS (VERIFY).
 - FOR PROPOSED ENTRANCE DOORS NO. 1 & 2 THE OPERATORS SHALL HAVE SECURITY LOCK.
 - ALL GLASS AT WINDOWS AND DOOR SHALL HAVE NEW SOLAR BRONZE COLOR FILM.
 - ALL EXISTING DOORS & WINDOWS SHALL BE INSPECTED, REPAIRED AND PAINTED.

NOTES:

1. ALL DOORS SHALL BE SANDED, PRIMED AND PAINTED.

2. ALL DOOR SHALL BE PROVIDED WITH FOUR STAINLESS STEEL (PERMANENTLY LUBRICATED NON DETACHABLE BALL BEARINGS) & STYLE DOOR STOPPERS.

3. ALL HOLLOW ALUMINUM DOORS & FRAMES SHALL BE POWDER COATED.

4. ALL EXTERIOR DOORS SHALL BE PROVIDED WITH ASTRAGAL RUBBER DOOR SWEEP.

5. INSTALL AN ALUMINUM THRESHOLD AT ALL EXTERIOR DOORS. THRESHOLD DETAIL)

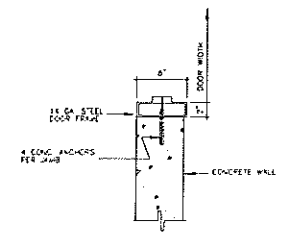
NOTES:

- ALL LOCKSET SHALL BE HEAVY DUTY TYPE EQUAL OR SIMILAR TO 10 LINE LEVER L LEVER LOCKSET BY SARGENT.
- DOOR CLOSER EQUAL OR SIMILAR TO MODEL 1431 SERIES WITH BRASS FINISH BY SARGENT.

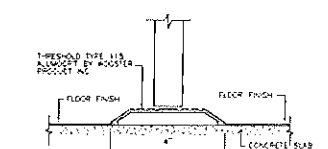
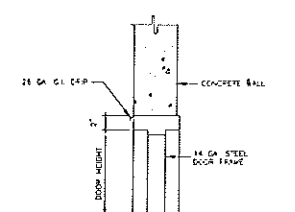
DOOR NOTES

- ALL DOORS SHALL BE SANDED, PRIMED AND PAINTED.
 - ALL DOOR SHALL BE PROVIDED WITH FOUR STAINLESS STEEL (PERMANENTLY LUBRICATED NON DETACHABLE BALL BEARINGS) & STYLE DOOR STOPPERS.
 - ALL HOLLOW ALUMINUM DOORS & FRAMES SHALL BE POWDER COATED.
 - ALL EXTERIOR DOORS SHALL BE PROVIDED WITH ASTRAGAL RUBBER DOOR SWEEP.
 - INSTALL AN ALUMINUM THRESHOLD AT ALL EXTERIOR DOORS. THRESHOLD DETAIL)
- NOTES:
- ALL LOCKSET SHALL BE HEAVY DUTY TYPE EQUAL OR SIMILAR TO 10 LINE LEVER L LEVER LOCKSET BY SARGENT.
 - DOOR CLOSER EQUAL OR SIMILAR TO MODEL 1431 SERIES WITH BRASS FINISH BY SARGENT.

INT. DOOR IN CONCRETE WALL



EXT. DOOR IN CONCRETE WALL



ALUMINUM TECHNOLOGY

DOOR HARDWARE SCHEDULE				
NO.	SIZE	NO. OF LEAFS	MATERIAL	DESCRIPTION
1	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
2	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
3	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
4	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
5	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
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17	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
18	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK
19	3'-0" x 7'-0"	1	METAL	NEW METAL DOOR - 1/2" THICK

FINISH SCHEDULE & DETAILS

1. ALL DOORS SHALL BE SANDED, PRIMED AND PAINTED.

2. ALL DOOR SHALL BE PROVIDED WITH FOUR STAINLESS STEEL (PERMANENTLY LUBRICATED NON DETACHABLE BALL BEARINGS) & STYLE DOOR STOPPERS.

3. ALL HOLLOW ALUMINUM DOORS & FRAMES SHALL BE POWDER COATED.

4. ALL EXTERIOR DOORS SHALL BE PROVIDED WITH ASTRAGAL RUBBER DOOR SWEEP.

5. INSTALL AN ALUMINUM THRESHOLD AT ALL EXTERIOR DOORS. THRESHOLD DETAIL)

NOTES:

- ALL LOCKSET SHALL BE HEAVY DUTY TYPE EQUAL OR SIMILAR TO 10 LINE LEVER L LEVER LOCKSET BY SARGENT.
- DOOR CLOSER EQUAL OR SIMILAR TO MODEL 1431 SERIES WITH BRASS FINISH BY SARGENT.

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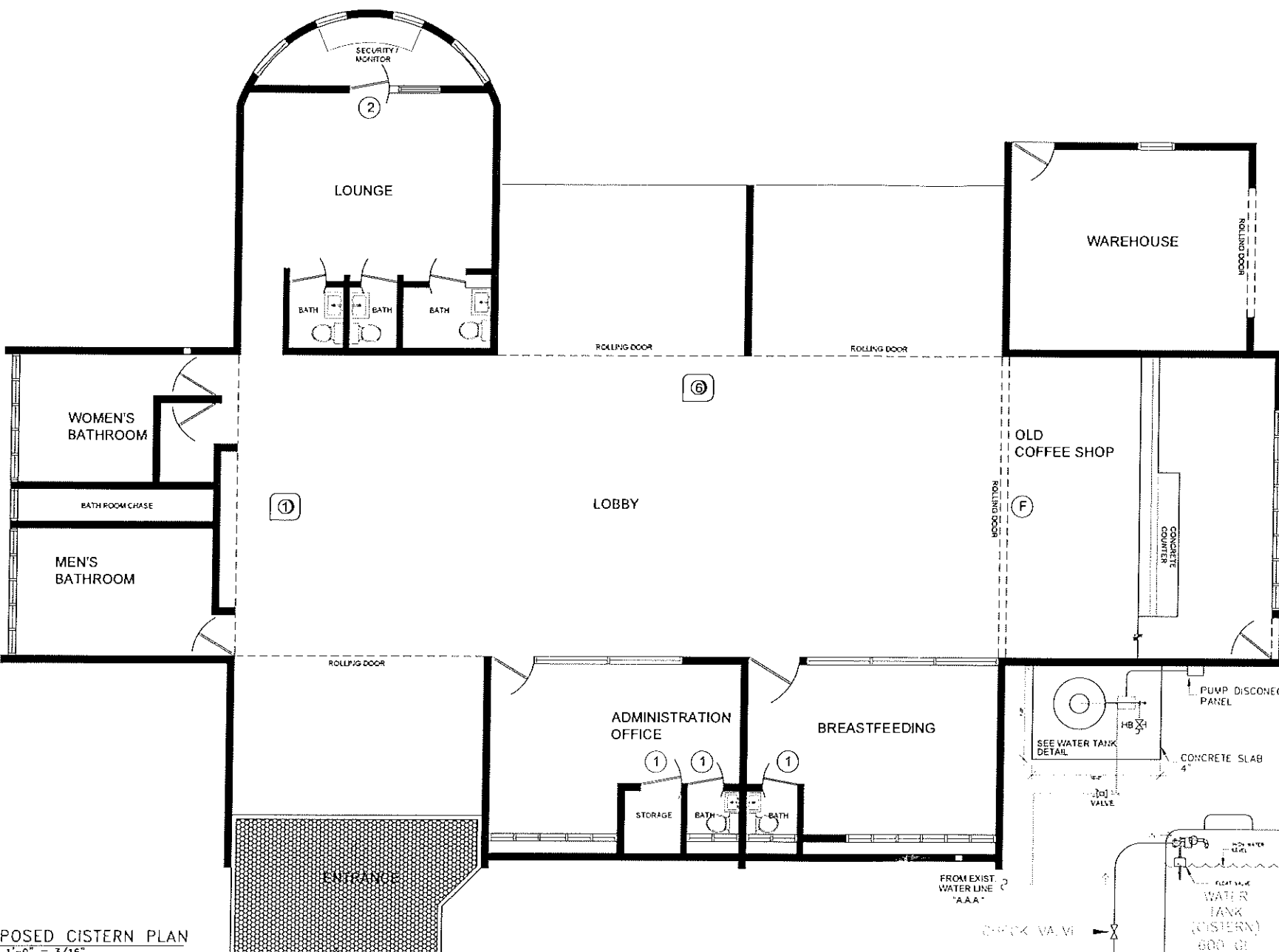


DESIGNER:
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Professional Engineer
Lic. NO. 4732

REVISIONS	
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ENGINEERING & PROJECT MANAGEMENT SERVICES FOR METROPOLITAN BUS AUTHORITY
FINISH SCHEDULE & DETAILS
ITURREGUI BUS STATION

CREATED BY: H/S/C
SCALE: 1"=0' = 3/16"
FILE NAME: A-4
DATE: MAY 2025
DWS. NO.: A-4
SHEET NO.: 7
OF: 8

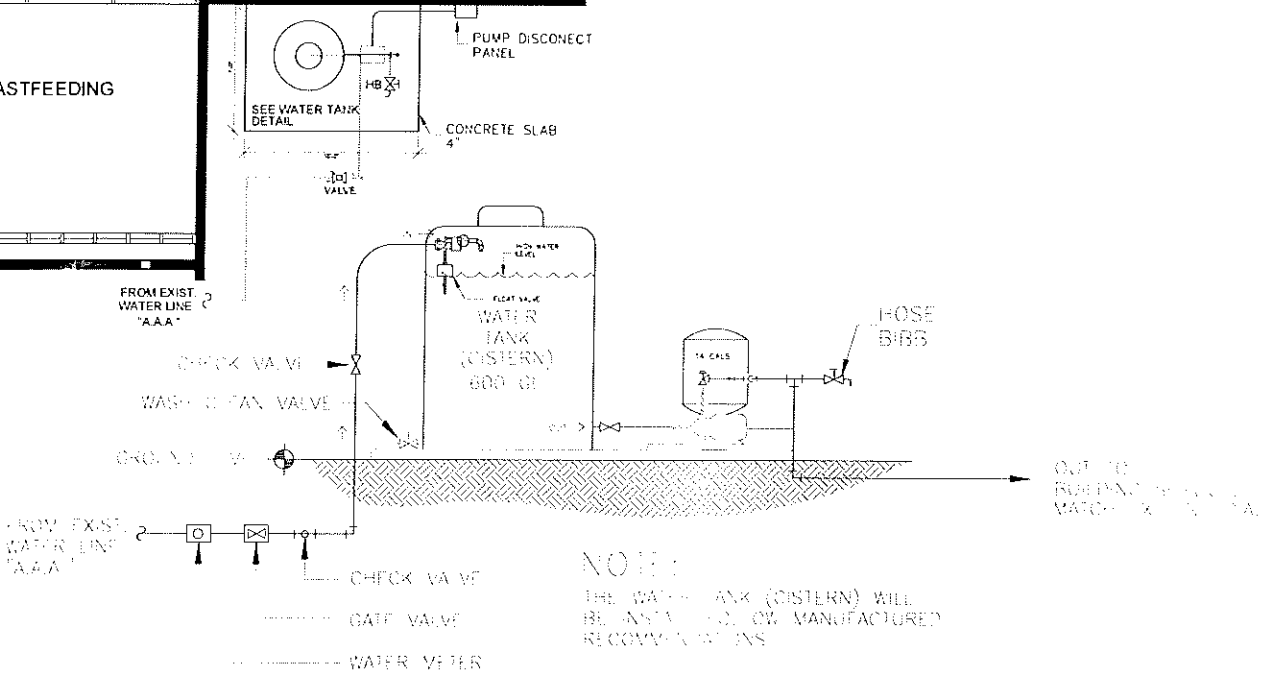


PROPOSED CISTERN PLAN
SCALE: 1"=0' = 3/16"

LEGEND

- SANITARY LINE
- COLD WATER LINE
- HOT WATER LINE
- WALL CLEAN OUT
- HOSE BIB
- VALVE
- CLEAN OUT
- FLOOR DRAIN
- FLOOR DRAIN (SUMP CHANNEL)
- WATER HEATER
- CONDUIT

- NOTES:
- 1. PROVIDE NEW DISCONNECT FOR PUMP.
 - 2. PROVIDE PUMP CAPACITY FOR FLUSH SYSTEM.



NOTE:
THE WATER TANK (CISTERN) WILL
BE ANSA 100% LOW MANUFACTURED
RECOMMENDATIONS

WATER TANK DETAIL
NOT TO SCALE

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EMAIL: geobuilders@gmail.com

DESIGNER:
Miguel A. Velazquez
Professional Engineer
Lic. NO. 4732

**ENGINEERING & PROJECT MANAGEMENT SERVICES FOR
METROPOLITAN BUS AUTHORITY**
**CISTERN & DETAILS
ITURREGUI BUS STATION**

DESIGNED BY	ESM/JVV
SCALE:	1"=0' = 3/16"
FILE NAME	AMA
DATE:	JUNE 2024
DWG. NO.	P-1
SHEET NO.	7
OF	7

IV. CLÁUSULAS FEDERALES



FEDERAL TRANSIT ADMINISTRATION CLAUSES
ATTACHMENT

MATRIX OF FTA THIRD-PARTY CONTRACT CLAUSES

(This matrix does not apply to micro-purchases,¹ except that Davis Bacon requirements apply to all federal construction contracts over \$2,000)

Last revised: September 22, 2022

This Matrix is not meant to be all inclusive. Please review the specific funding source, as well as all clauses for applicability to the type of contract and flow down requirements.

	CLAUSE	TYPE OF PROCUREMENT					Applicable
		Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction* (*See Note Below)	Materials & Supplies	
1.	<u>No Federal government obligations to third parties by use of a disclaimer</u>	All	All	All	All	All	✓
2.	<u>Program fraud and false or fraudulent statements and related acts</u>	All	All	All	All	All	✓
3.	<u>Access to Records</u>	All	All	All	All	All	✓
4.	<u>Federal changes</u>	All	All	All	All	All	✓

¹ Currently set at \$10,000. 2 CFR § 200.320.

* Per 41 CFR Part 60- 1.3, *Construction work* means the construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

	CLAUSE	TYPE OF PROCUREMENT					Applicable
		Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction * (*See Note Below)	Materials & Supplies	
5.	<u>Civil Rights (EEO, Title VI & ADA)</u>	All	All	All	All	All	✓
6.	<u>Incorporation of FTA Terms</u>	All	All	All	All	All	✓
7.	<u>Energy Conservation</u>	All	All	All	All	All	✓
8.	<u>Termination Provisions (not required of states)</u>	>\$10,000	>\$10,000	>\$10,000	>\$10,000	>\$10,000	✓
9.	<u>Debarment and Suspension</u>	>\$25,000	>\$25,000	>\$25,000	>\$25,000	>\$25,000	✓
10.	<u>Buy America</u>			>\$150,000	>\$150,000	>\$150,000 (for steel, iron, manufactured products)	✓
11.	<u>Provisions for resolution of disputes, breaches, or other litigation</u>	>\$150,000 (see Note)	>\$150,000 (see Note)	>\$150,000 (see Note)	>\$150,000 (see Note)	>\$150,000 (see Note)	
12.	<u>Lobbying</u>	>\$100,000	>\$100,000	>\$100,000	>\$100,000	>\$100,000	✓
13.	<u>Clean Air</u>	>\$150,000	>\$150,000	>\$150,000	>\$150,000	>\$150,000	✓
14.	<u>Clean Water</u>	>\$150,000	>\$150,000	>\$150,000	>\$150,000	>\$150,000	✓

	CLAUSE	TYPE OF PROCUREMENT					Applicable
		Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction* (*See Note Below)	Materials & Supplies	
15.	<u>Cargo Preference</u>			Involving property that may be transported by ocean vessel	Involving property that may be transported by ocean vessel	Involving property that may be transported by ocean vessel	✓
16.	<u>Fly America</u>	Involving foreign transport or travel by air	Involving foreign transport or travel by air	Involving foreign transport or travel by air	Involving foreign transport or travel by air	Involving foreign transport or travel by air	✓
17.	<u>Davis Bacon Act and Copeland Anti-Kickback Act</u>				Construction contracts and subcontracts, including actual construction, alteration and/or repair, including decorating and painting, >\$2,000 (including ferry vessels)		✓
18.	<u>Contract Work Hours & Safety Standards Act</u>		Contracts >\$100,000 that involve the	Contracts >\$100,000 that involve the	Contracts >\$100,000 that involve the		✓

CLAUSE	TYPE OF PROCUREMENT					Applicable
	Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction* (*See Note Below)	Materials & Supplies	
		employment of mechanics or laborers	employment of mechanics or laborers	employment of mechanics or laborers (including ferry vessels)		✓
19. <u>Bonding</u>				>\$250,000 (including ferry vessels) or as determined by the Authority and the federal awarding agency.		✓
20. <u>Seismic Safety</u>	A&E for new buildings & additions			New buildings & additions		✓
21. <u>Public Transportation Employee Protective Arrangements</u>		FTA programs involving public transportation operations funded with 5307-5312, and 5316				

CLAUSE	TYPE OF PROCUREMENT					Applicable ✓
	Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction* (*See Note Below)	Materials & Supplies	
22. <u>Charter Service Operations</u>		All transit operations contracts involving FTA funding under 49 USC 5307, 5309, 5311 or 5316 funds				
23. <u>School Bus Operations</u>		All transit operations contracts				
24. <u>Drug and Alcohol Testing</u>		All transit operations contracts				
25. <u>Patent and Rights in Data</u>	Research & development					
26. <u>Special DOL EEO clause for construction projects</u>				>\$10,000		✓
27. <u>Disadvantaged Business Enterprises (DBEs)</u>	All	All	All	All	All	✓

	CLAUSE	TYPE OF PROCUREMENT					Applicable
		Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction* (*See Note Below)	Materials & Supplies	
28.	<u>Recycled Products (Solid Wastes)</u>		Contracts for items designated by EPA, when procuring \$10,000 or more per year		Contracts for items designated by EPA, when procuring \$10,000 or more per year	Contracts for items designated by EPA, when procuring \$10,000 or more per	✓
29.	<u>ADA Access</u>	A&E	All	All	All		✓
30.	<u>Veterans Preference</u>	All	All	All	All	All	✓
31.	<u>Motor Carrier Safety</u>	All	All	All	All	All	✓
32.	<u>Safe Operation of Motor Vehicles</u>	All	All	All	All	All	✓
33.	<u>Protection of Sensitive and Personally Identifiable Information</u>	All	All	All	All	All	✓
34.	<u>Trafficking in Persons</u>	All	All	All	All	All	✓
35.	<u>Tax Liability and Recent Felony Convictions</u>	All	All	All	All	All	✓
36.	<u>Construction Site Safety</u>				All		✓
37.	<u>Domestic Preferences for</u>	All	All	All	All	All	✓

	CLAUSE	TYPE OF PROCUREMENT					Applicable
		Professional Services/A&E	Operations/ Management/ Subrecipients	Rolling Stock Purchase	Construction* (*See Note Below)	Materials & Supplies	
	<u>Procurements</u>						✓
38.	<u>Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment</u>	All	All	All	All	All	✓
39.	<u>Bus Testing</u>			All, except minivans			
40.	<u>Pre-Award and Post-Delivery Audit Requirements</u>			All			
41.	<u>FTA Clauses Required when DBE threshold has been met</u>	If DBE threshold has been met	DBE threshold has been met	DBE threshold has been met	DBE threshold has been met	DBE threshold has been met	✓
42.	Representation Regarding Certain Telecommunication and Video Surveillance Services or Equipment						

REQUIRED CLAUSES FOR FTA-ASSISTED CONTRACTS

These requirements do not apply to micro-purchases (\$10,000 or less), except that Davis-Bacon requirements apply to contracts over \$2,000.

Applicability data is found on the table above and with each clause below. Please review your specific funding source for additional applicability and requirements.

1. No Federal Government Obligation to Third Parties.

Authority - FTA Master Agreement FY2020 at Section 3(I)

Applicability - all contracts

The Recipient and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the Recipient, Contractor or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying Contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by the FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

2. Program Fraud and False or Fraudulent Statements and Related Acts.

Authority - 49 U.S.C. § 5323(l) (1), 31 U.S.C. §§ 3801-3812, 18 U.S.C. § 1001 and 49 C.F.R. part 31, FTA Master Agreement at Section 39(b)(2).

Applicability - all contracts

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

Additional Notice to U.S. DOT Inspector General. The Contractor must promptly notify the U.S. DOT Inspector General in addition to the FTA Chief Counsel or Regional Counsel for the Region in which the Project is located, if the Contractor has knowledge of potential fraud, waste, or abuse occurring on any project receiving assistance from FTA. The notification provision applies if a person has or may have submitted a false claim under the False Claims Act, 31 U.S.C. § 3729 et seq., or has or may have committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bid rigging, misappropriation or embezzlement, bribery, gratuity, or similar misconduct involving federal assistance. This responsibility occurs regardless of whether the project is related to this Contract or another agreement with FTA, and also applies to subcontractors at any tier. "Knowledge," as used in this paragraph, includes, but is not limited to, knowledge of a criminal or civil investigation by a Federal, state, or local law enforcement or other investigative agency, a criminal indictment or civil complaint, or probable cause that could support a criminal indictment, or any other credible information in the possession of the Contractor. In this paragraph, "promptly" means to refer information without delay and without change.

The Contractor agrees to include the above clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

Flow Down Requirements - The Program Fraud clause extends to all contractors and their subcontracts at every tier who make, present, or submit covered claims and statements.

3. Access to Records and Reports.

Authority - 49 U.S.C. § 5325(g), 2 C.F.R. § 200.333 and 49 C.F.R. part 633, 49 CFR part 625, 49 CFR part 630, FTA Master Agreement FY2020 at Sections 8(c)(1) and 20.

Applicability – all contracts

a. Record Retention. The Contractor will retain, and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, data, documents, reports, statistics, sub-agreements, leases, subcontracts, arrangements, other third party agreements of any type, and supporting materials related to those records.

b. Retention Period. The Contractor agrees to comply with the record retention requirements in accordance with 2 C.F.R. § 200.333. The Contractor shall maintain all books, records, accounts and reports required under this Contract for a period of at not less than three (3) years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.

c. Access to Records. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to performance of this contract as reasonably may be required. Contractor is notified that the Authority may be subject to the Single Audit Act, set forth in 2 CFR Part 200, Subpart F – Audit Requirements, as amended.

d. Access to the Sites of Performance. The Contractor agrees to permit FTA and its contractors access to the sites of performance under this contract as reasonably may be required.

e. Contractor agrees to comply with FTA regulations, “Transit Asset Management; National Transit Database,” 49 C.F.R. parts 625 and 630, as applicable, and follow applicable federal guidance.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

4. Federal Changes.

Authority – FTA Master Agreement (25) at Section 9(c)(1)

Applicability – all contracts

Contractor shall comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the purchaser and FTA, Super Circular 2 CFR Part 200 and FTA Circular 4220.1F as they may be amended or promulgated from time to time during the term of the contract. Contractor's failure to comply shall constitute a material breach of the contract.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

5. Civil Rights (Title VI, EEO, ADA).

Authority – Appendix II to Part 200, FTA Master Agreement FY2020 at Section 12(b)-(d), FTA Best Procurement Practices Manual

Applicability - all contracts

The XXX is an Equal Opportunity Employer. As such, the XXX agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, the XXX agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications.

Under this Agreement, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof.

1. **Nondiscrimination.** In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

2. **Race, Color, Religion, National Origin, Sex.** In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

3. **Age.** In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

4. **Disabilities.** In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

Sanctions for Noncompliance. In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the Authority shall impose such contract sanctions as it, the FTA, FDOT or the U.S. DOT may determine to be appropriate, including, but not limited to: withholding of payments to the Contractor under the Contract until the Contractor complies and/or cancellation, termination or suspension of the Contract, in whole or in part.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier. In all solicitations made by the Contractor and all subcontractors, either by competitive bidding or negotiation for work to be performed under a subcontract, including procurements of materials and leases of equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this Contract and the Regulations relative to nondiscrimination on the basis of race, creed, color, sex, sexual orientation, gender identity, national origin, religion, age, disability, or family status and that these same obligations extend to any subcontractor, supplier or lessor.

6. Incorporation of Federal Transit Administration (FTA) Terms.

Authority – FTA Master Agreement (25) at Section 3(i)(5)

Applicability - all contracts

All contractual provisions required by FTA, as set forth in FTA Circular 4220.1F and the Super Circular 2 CFR Part 200, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any State requests, which would cause the State to be in violation of the FTA terms and conditions.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

7. Energy Conservation.

Authority - 42 U.S.C. 6321 et seq. and 49 C.F.R. part 622, subpart C

Applicability - all contracts

Contractor shall comply with mandatory standards and policies relating to energy efficiency, stated in the state energy conservation plan issued in compliance with the Energy Policy & Conservation Act, as amended, 42 U.S.C. § 6321 et seq., and perform an energy assessment for any building constructed, reconstructed, or modified with federal assistance required under FTA regulations, "Requirements for Energy Assessments," 49 C.F.R. part 622, subpart C.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

8. Termination Provisions.

Authority - 2 C.F.R. § 200.339 and 2 C.F.R. part 200, Appendix II (B), FTA Master Agreement at Section 16(d)(2)

Applicability – all contracts

For all contracts in excess of \$10,000, termination provisions are referenced in Section IV. **Term of Contract and Termination** of the Contract under Section IV of this solicitation package. These termination provisions address termination for cause and for convenience by the non-federal entity and includes the manner by which it will be effected and the basis for settlement.

Flow Down Requirements – none.

9. Government-Wide Debarment and Suspension.

Authority - 2 C.F.R. part 180, 2 C.F.R. § 180.300, 2 C.F.R. part 1200, 2 C.F.R. § 200.213, 2 C.F.R. part 200 Appendix II (I), Executive Order 12549 and Executive Order 12689, FTA Master Agreement FY2020 at Section 4(h), FTA Best Procurement Practices Manual

Applicability - All contracts over \$25,000

The Contractor shall comply and facilitate compliance with U.S. DOT regulations, “Nonprocurement Suspension and Debarment,” 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) “Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement),” 2 C.F.R. part 180. These provisions apply to each contract at any tier of \$25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

- a) Debarred from participation in any federally assisted Award;
- b) Suspended from participation in any federally assisted Award;
- c) Proposed for debarment from participation in any federally assisted Award;
- d) Declared ineligible to participate in any federally assisted Award;
- e) Voluntarily excluded from participation in any federally assisted Award; or
- f) Disqualified from participation in any federally assisted Award.

By signing and submitting its bid or proposal, the bidder or Bidder certifies as follows:

The certification in this clause is a material representation of fact relied upon by the XXX. If it is later determined by the XXX that the bidder or Bidder knowingly rendered an erroneous certification, in addition to remedies available to the XXX, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or

Bidder agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or Bidder further agrees to include a provision requiring such compliance in its lower tier covered transactions.

Flow Down Requirements - Recipients, contractors, and subcontractors who enter into covered transactions with a participant at the next lower level, must require that participant to: (a) comply with subpart C of 2 C.F.R. part 180, as supplemented by 2 C.F.R. part 1200; and (b) pass the requirement to comply with subpart C of 2 C.F.R. part 180 to each person with whom the participant enters into a covered transaction at the next lower tier.

10. Buy America Requirements.

Authority - 49 U.S.C. 5323(j) and 49 C.F.R. part 661 (49 C.F.R. § 661.13(b) and 49 C.F.R. § 661.6), FTA Master Agreement FY2020 at Sections 3(h) and 16(d)(1), FTA Best Procurement Practices Manual

Applicability – Construction Contracts and Acquisition of Goods or Rolling Stock valued at more than \$150,000. Work orders and small purchases of less than one hundred fifty thousand dollars (\$150,000.00) made with capital, operating, or planning funds are waived from Buy America requirements.

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11.

The Bidder must submit to XXX the appropriate Buy America certification below with its Bid. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

The XXX presumes that any Contractor who submitted such certificate is complying with the Buy America provisions. A false certification is a criminal act in violation of 18 U.S.C. § 1001. A Contractor who certifies that it will comply with the applicable Buy America requirement is bound by its original certification (in the case of a sealed bidding procurement) or the certification it submitted with its final offer (in the case of a negotiated procurement) and is not permitted to change its certification after bid opening or submission of its final offer. Where a Contractor certifies that it will comply with Buy America requirements, the Contractor is not eligible for a waiver of those requirements. The XXX reserves the right to request additional information, and/or to conduct both pre-award and post-award audits to ensure that the Contractor is in compliance with Buy America requirements.

In addition to the aforementioned Buy America Requirements, the Infrastructure Investment and Jobs Act (“IIJA”), Pub. L. No. 117-58 that includes the Build America, Buy America Act (“the Act”) Pub. L. No. 117-58, §§ 70901-58, specifically §70914 of the Act, requires the following Buy America preference:

1. All iron and steel used in the project are produced in the United States. This means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
2. All manufacturer products used in the project are produced in the United States. This means the manufactured product was manufactured in the United States, and the cost of the components of the manufacturer product that are mined, produced or manufactured in the United States is greater than 55 percent (55%) of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established in applicable law or regulation.
3. All construction materials are manufactured in the United States. This means that all manufacturing processes for the construction material occurred in the United States (IIJA §70912(2) and (6)(B)(ii)).

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

Definitions

“Construction materials” include an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives – that is or consists primarily of:

- Non-ferrous metals;
- Plastic and polymer-based products (including polyvinylchloride, composite building materials and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

“Domestic content procurement preference’ means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

“Infrastructure” includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

“Project” means the construction, alteration, maintenance, or repair of infrastructure in the United States.

Flow Down Requirements - The Buy America requirements flow down from FTA recipients and subrecipients to first tier contractors, who are responsible for ensuring that lower tier contractors and subcontractors are in compliance.

11. Provisions for resolution of disputes, breaches, or other litigation.

Authority – FTA Master Agreement FY2020 at Section 39(b)(1)-(2).

Applicability – all contracts

If a current or prospective legal matter that may affect the Federal Government emerges, the Contractor must promptly notify the Authority. The Contractor must include a similar notification requirement in its subcontracts at every tier for any agreement that is a “covered transaction” according to 2 C.F.R. §§ 180.220 and 1200.220.

(1) The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason.

(2) Matters that may affect the Federal Government include, but are not limited to, the Federal Government’s interests in the Award, the accompanying Underlying Agreement, and any Amendments thereto, or the Federal Government’s administration or enforcement of federal laws, regulations, and requirements.

Flow Down Requirements - The Contractor must include a similar notification requirement in its subcontracts at every tier for any agreement that is a “covered transaction” according to 2 C.F.R. §§ 180.220 and 1200.220.

12. Lobbying Restrictions.

Authority - 31 U.S.C. § 1352, 2 C.F.R. § 200.450, 2 C.F.R. part 200 appendix II (I) and 49 C.F.R. part 20, appendix A, FTA Master Agreement FY2020 at Section 4(c)

Applicability - All contracts over \$100,000

A. Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of \$100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non- Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

B. The lobbying requirements mandate the maximum flow down pursuant to Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352(b)(5). The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

Flow Down Requirements - The lobbying requirements mandate the maximum flow down pursuant to Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352(b)(5).

13. Clean Air

Authority - 42 U.S.C. 7401–7671q and FTA Master Agreement FY2020 at Section 16(d)(7)

Applicability - All contracts over \$150,000

The Contractor agrees:

- 1) It will not use any violating facilities;
- 2) It will report the use of facilities placed on or likely to be placed on the U.S. EPA "List of Violating Facilities;"
- 3) It will report violations of use of prohibited facilities to FTA; and
- 4) It will comply with the inspection and other requirements of the Clean Air Act, as amended, (42 U.S.C. §§ 7401 – 7671q); and the Federal Water Pollution Control Act as amended, (33 U.S.C. §§ 1251-1387).

Flow Down Requirements - The Clean Air Act requirements flow down to all subcontracts over \$150,000 at every tier.

14. Clean Water.

Authority - 33 U.S.C. 1251–1388, the Federal Water Pollution Control Act 33 U.S.C. 1251-1387, as amended, FTA Master Agreement FY2020 at Section 16(d)(7)

Applicability - All contracts over \$150,000

Contractor shall comply with all applicable standards, orders or regulations issued pursuant to Section 508 of the Clean Water Act, as amended, 33 U.S.C. § 1368, and other requirements of the Clean Water Act, as amended, 33 U.S.C. §§ 1251 – 1377. Contractor shall report each violation to the recipient and understands and agrees that the recipient shall, in turn, report each violation as required to FTA and the appropriate EPA Regional Office. Contractor shall include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with FTA assistance.

Flow Down Requirements - The Clean Water requirements flow down to all subcontracts over \$150,000 at every tier.

15. Cargo Preference - Use of United States-Flag Vessels.

Authority - 46 U.S.C. § 55305 and 46 C.F.R. part 381.7, FTA Master Agreement FY2020 at Section 15(b), FTA C 4220.1F at Appendix D

Applicability - Contracts involving equipment, materials or commodities which may be transported by ocean vessels.

Contractor shall: (a) use privately owned US-Flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners and tankers) involved, whenever shipping any equipment, material or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for US flag commercial vessels; (b) furnish within 20 working days following the loading date of shipments originating within the US or within 30 working days following the loading date of shipments originating outside the US, a legible copy of a rated, "on-board" commercial bill-of-lading in English for each shipment of cargo described herein to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the recipient (through contractor in the case of a subcontractor's bill-of-lading.); (c) include these requirements in all subcontracts issued pursuant to this contract when the subcontract involves the transport of equipment, material or commodities by ocean vessel.

Flow Down Requirements - The Cargo Preference requirements flow down to all subcontracts involved with the transport of equipment, material, or commodities by ocean vessel.

16. Fly America.

Authority - 49 U.S.C. § 40118, 41 C.F.R. part 301-10 and 48 C.F.R. part 47.4, FTA Master Agreement FY2020 at Section 15(c), FTA C 4220.1F at Appendix D

Applicability - All contracts involving transportation of persons or property, by air between the U.S. and/or places outside the U.S.

a) Definitions. As used in this clause--

“International air transportation” means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.

“United States” means the 50 States, the District of Columbia, and outlying areas.

“U.S.-flag air carrier” means an air carrier holding a certificate under 49 U.S.C. Chapter 411.

b) When Federal funds are used to fund travel, Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) (Fly America Act) requires contractors, recipients, and others use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

c) If available, the Contractor, in performing work under this contract, shall use U.S.-flag carriers for international air transportation of personnel (and their personal effects) or property.

d) In the event that the Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, the Contractor shall include a statement on vouchers involving such transportation essentially as follows:

Statement of Unavailability of U.S.-Flag Air Carriers

International air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons. See FAR § 47.403. [State reasons]:

(End of statement)

e) The Contractor shall include the substance of this clause, including this paragraph (e), in each subcontract or purchase under this contract that may involve international air transportation.

Flow Down Requirements - The Fly America requirements flow down from FTA recipients and subrecipients to first tier contractors who are responsible for ensuring that lower tier contractors and subcontractors are in compliance.

17. Davis-Bacon and Copeland Anti-Kickback Acts.

Authority – Appendix II to Part 200, 49 U.S.C. § 5333(a), 40 U.S.C. §§ 3141 – 3148, 29 C.F.R. part 5, 18 U.S.C. § 874, and 29 C.F.R. part 5 (29 C.F.R. § 5.5), 29 C.F.R. § 3.1 and 3.11, 18 U.S.C. § 874, 40 U.S.C. § 3145, FTA Master Agreement FY2020 at Section 16(d)(4), FTA C 4220.1F at Appendix D

Applicability - Construction contracts and subcontracts, including actual construction, alteration and/or repair, including decorating and painting, over \$2,000.

For all prime construction, alteration or repair contracts in excess of \$2,000 awarded by FTA, the Contractor shall comply with the Davis-Bacon Act and the Copeland “Anti-Kickback” Act. Under 49 U.S.C. § 5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, “Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction.” In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor shall also comply with the Copeland “Anti-Kickback” Act (40 U.S.C. § 3145), as supplemented by DOL regulations at 29 C.F.R. part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States.” The Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

Certification of eligibility. (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1). (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Flow Down Requirements - These requirements extend to all third party contractors and their subcontracts at every tier and subrecipients and their subcontracts at every tier.

18. Contract Work Hours and Safety Standards Act

Authority – Appendix II to Part 200, 40 U.S.C. §§ 3701-3708 and 29 C.F.R. part 1926, FTA Master Agreement FY2020 at Section 16(d)(5), FTA C 4220.1F at Appendix D

Applicability - Contracts over \$100,000 that involve the employment of mechanics or laborers.

For all contracts in excess of \$100,000 that involve the employment of mechanics or laborers, the Contractor shall comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701-3708), as supplemented by the DOL regulations at 29 C.F.R. part 5. Under 40 U.S.C. § 3702 of the Act, the Contractor shall compute the wages of every mechanic and laborer, including watchmen and guards, on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or to contracts for transportation or transmission of intelligence.

In the event of any violation of the clause set forth herein, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, the Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of this clause in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by this clause.

The FTA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime

Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in this section.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this agreement.

Contract Work Hours and Safety Standards for Awards Not Involving Construction

The Contractor shall comply with all federal laws, regulations, and requirements providing wage and hour protections for non-construction employees, in accordance with 40 U.S.C. § 3702, Contract Work Hours and Safety Standards Act, and other relevant parts of that Act, 40 U.S.C. § 3701 et seq., and U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 C.F.R. part 5.

The Contractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three (3) years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

Such records maintained under this paragraph shall be made available by the Contractor for inspection, copying, or transcription by authorized representatives of the FTA and the Department of Labor, and the Contractor will permit such representatives to interview employees during working hours on the job.

The contractor shall require the inclusion of the language of this clause within subcontracts of all tiers.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

19. Bonding.

Authority - 2 CFR 200.325, FTA Master Agreement FY2020 at Section 16(n), FTA C 4220.1F at Appendix D

Applicability – For all FTA Funded construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold (currently \$250,000), the federal awarding agency may accept the bonding policy and requirements of XXX if the federal awarding agency has made a determination that the federal interest is adequately protected.

As per **Section I Bonds & Insurance**, in this solicitation package, a Bid Security in the amount of five percent (5%) of the total Bid price is required. The Contract, if awarded, shall require a Performance Bond and Payment Bond equal to 100% of the contract price from the awarded Contractor. Specific bonding and insurance requirements are set forth in the Solicitation package. Insurance shall be written by an insurer who holds a current Certificate of Authority pursuant to Chapter 624, Florida Statutes, and who has a most recently published rating by A.M. Best & Company of "A" or better.

20. Seismic Safety.

Authority - 42 U.S.C. 7701 et seq., 49 C.F.R. § 41.117 and Executive Order (E.O.) 12699, FTA C 4220.1F at Appendix D

Applicability – Design and construction of new buildings and additions to existing buildings.

Contractor agrees that any new building or addition to an existing building shall be designed and constructed in accordance with the standards required in USDOT Seismic Safety Regulations 49 CFR 41 and shall certify compliance to the extent required by the regulation. Contractor shall also ensure that all work performed under this contract, including work performed by subcontractors, complies with the standards required by 49 CFR 41 and the certification of compliance issued on the project.

Flow Down Requirements - The Seismic Safety requirements flow down from FTA recipients and subrecipients to first tier contractors to assure compliance with the applicable building standards for Seismic Safety, including the work performed by all subcontractors.

21. Public Transportation Employee Protective Arrangements.

Authority - 49 U.S.C. § 5333(b) ("13(c)") and 29 C.F.R. part 215, FTA Master Agreement FY2020 at Section 24(d)

Applicability - Each contract for transit operations performed by employees of a Contractor recognized by FTA to be a transit operator.

The Contractor agrees to comply with the following employee protective arrangements of 49 U.S.C. § 5333(b):

A. U.S. DOL Certification. Under this Contract or any Amendments thereto that involve public transportation operations that are supported with federal assistance, a certification issued by U.S. DOL is a condition of the Contract.

B. Special Warranty. When the Contract involves public transportation operations and is supported with federal assistance appropriated or made available for 49 U.S.C. § 5311, U.S. DOL will provide a Special Warranty for its Award, including its Award of federal assistance under the Tribal Transit Program. The U.S. DOL Special Warranty is a condition of the Contract.

C. Special Arrangements. The conditions of 49 U.S.C. § 5333(b) do not apply to Contractors providing public transportation operations pursuant to 49 U.S.C. § 5310. FTA reserves the right to make case-by-case determinations of the applicability of 49 U.S.C. § 5333(b) for all transfers of funding authorized under title 23, United States Code (flex funds), and make other exceptions as it deems appropriate, and, in those instances, any special arrangements required by FTA will be incorporated herein as required.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

22. Charter Service Operations.

Authority - 49 U.S.C. 5323(d) and (r) and 49 C.F.R. part 604, FTA Master Agreement FY2020 at Section 28

Applicability – all transit operations contracts involving FTA funding under 49 USC 5307, 5309, 5311 or 5316 funds

The contractor agrees to comply with 49 U.S.C. 5323(d), 5323(r), and 49 C.F.R. part 604, which provides that recipients and subrecipients of FTA assistance are prohibited from providing charter service using federally funded equipment or facilities if there is at least one private charter operator willing and able to provide the service, except as permitted under:

1. Federal transit laws, specifically 49 U.S.C. § 5323(d);
2. FTA regulations, “Charter Service,” 49 C.F.R. part 604;
3. Any other federal Charter Service regulations; or
4. Federal guidance, except as FTA determines otherwise in writing.

The contractor agrees that if it engages in a pattern of violations of FTA’s Charter Service regulations, FTA may require corrective measures or impose remedies on it. These corrective measures and remedies may include:

1. Barring it or any subcontractor operating public transportation under its Award that has provided prohibited charter service from receiving federal assistance from FTA;
2. Withholding an amount of federal assistance as provided by Appendix D to part 604 of FTA’s Charter Service regulations; or
3. Any other appropriate remedy that may apply.

The contractor should also include the substance of this clause in each subcontract that may involve operating public transit services.

Flow Down Requirements - The Charter Bus requirements flow down from FTA recipients and subrecipients to first tier service contractors.

23. School Bus Operations.

Authority - 49 U.S.C. 5323(f) and 49 C.F.R. part 605, FTA Master Agreement FY2020 at Section 29

Applicability - Contracts for operating public transportation service.

The contractor agrees to comply with 49 U.S.C. 5323(f), and 49 C.F.R. part 604, and not engage in school bus operations using federally funded equipment or facilities in competition with private operators of school buses, except as permitted under:

1. Federal transit laws, specifically 49 U.S.C. § 5323(f);
2. FTA regulations, "School Bus Operations," 49 C.F.R. part 605;
3. Any other Federal School Bus regulations; or
4. Federal guidance, except as FTA determines otherwise in writing.

If Contractor violates this School Bus Agreement, FTA may:

1. Bar the Contractor from receiving Federal assistance for public transportation; or
2. Require the contractor to take such remedial measures as FTA considers appropriate.

When operating exclusive school bus service under an allowable exemption, the contractor may not use federally funded equipment, vehicles, or facilities.

The Contractor should include the substance of this clause in each subcontract or purchase under this contract that may operate public transportation services.

Flow Down Requirements - The School Bus requirements flow down from FTA recipients and subrecipients to first tier service contractors.

24. Drug and Alcohol Testing - Substance Abuse Requirements.

Authority - 49 U.S.C. § 5331, 49 C.F.R. part 655 and 49 C.F.R. part 40.11(c), FTA Master Agreement FY2020 at Section 35, FTA C 4220.1F at Appendix D

Applicability – all transit operations contracts

Third party contractors who perform safety-sensitive functions must comply with FTA's substance abuse management program under 49 C.F.R. part 655, "Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations." Under 49 C.F.R. § 655.4, Safety-sensitive function means any of the following duties, when performed by employees of recipients, subrecipients, operators, or contractors:

- 1) Operating a revenue service vehicle, including when not in revenue service;
- 2) Operating a nonrevenue service vehicle, when required to be operated by a holder of a Commercial Driver's License;
- 3) Controlling dispatch or movement of a revenue service vehicle;
- 4) Maintaining (including repairs, overhaul and rebuilding) a revenue service vehicle or equipment used in revenue service. This section does not apply to the following: an employer who receives funding under 49 U.S.C. § 5307 or § 5309, is in an area less than 200,000 in population, and contracts out such services; or an employer who receives funding under 49 U.S.C. § 5311 and contracts out such services;
- 5) Carrying a firearm for security purposes.

Additionally, third party contractors providing testing services involving the performance of safety sensitive activities must also comply with 49 C.F.R. part 40, "Procedures for Transportation Workplace Drug and Alcohol Testing Programs."

The Contractor agrees to comply with the following Federal substance abuse regulations:

- (A) Drug-Free Workplace. U.S. DOT regulations, "Drug-Free Workplace Requirements (Grants)," 49 C.F.R. Part 32, that implements the Drug-Free Workplace Act of 1988 as amended, 41 U.S.C. §§ 8103 et seq., and 2 CFR part 182,
- (B) Alcohol Misuse and Prohibited Drug Use. FTA Regulations, "Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations," 49 USC 5331, as amended by Map-21, 49 CFR part 40, 49 USC chapter 53, 49 CFR Part 655, to the extent applicable.

The Contractor shall establish an anti-drug use and alcohol misuse program that includes the following:

- (A) A statement describing the employer's policy on prohibited drug use and alcohol misuse in the workplace, including the consequences associated with prohibited drug use and alcohol misuse. This policy statement shall include all of the elements specified in §655.15. Each employer shall disseminate the policy consistent with the provisions of §655.16.
- (B) An education and training program which meets the requirements of §655.14.
- (C) A testing program, as described in Subparts C and D of this part, which meets the requirements of this part and 49 CFR Part 40.
- (D) Procedures for referring a covered employee who has a verified positive drug test result or an alcohol concentration of 0.04 or greater to a Substance Abuse Professional, consistent with 49 CFR Part 40.

Flow Down Requirements -The Substance Abuse requirements flow down to all third party contractors at every tier who perform a safety-sensitive function for the XXX.

25. Patent and Rights in Data.

Authority - 2 C.F.R. part 200, Appendix II (F) and 37 C.F.R. §401.3, FTA Master Agreement FY2020 at Sections 17 and 18, FTA C 4220.1F at Appendix D

Applicability - Research projects in which FTA finances the purpose of the grant is to finance the development of a product or information. These patent and data rights requirements do not apply to capital projects or operating projects, even though a small portion of the sales price may cover the cost of product development or writing the user's manual or to micro-purchases (less than \$3,500). If the federal award meets the definition of "funding agreement" under 37 C.F.R. § 401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 C.F.R. part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

Intellectual Property Rights

This Project is funded through a Federal award with FTA for experimental, developmental, or research work purposes. As such, certain Patent Rights and Data Rights apply to all subject data first produced in the performance of this Contract. The Contractor shall grant the Authority intellectual property access and licenses deemed necessary for the work performed under this Agreement and in accordance with the requirements of 37 C.F.R. part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by FTA or U.S. DOT. The terms of an intellectual property agreement and software license rights will be finalized prior to execution of this Agreement and shall, at a minimum, include the following restrictions: Except for its own internal use, the Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the Contractor authorize others to do so, without the written consent of FTA, until such time as FTA may have either released or approved the release of such data to the public. This restriction on publication, however, does not apply to any contract with an academic institution. For purposes of this agreement, the term "subject data" means recorded information whether or not copyrighted, and that is delivered or specified to be delivered as required by the Contract. Examples of "subject data" include, but are not limited to computer software, standards, specifications, engineering drawings and associated lists, process sheets, manuals, technical reports, catalog item identifications, and related information, but do not include financial reports, cost analyses, or other similar information used for performance or administration of the Contract.

1. The Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use for "Federal Government Purposes," any subject data or copyright described below.

For "Federal Government Purposes," means use only for the direct purposes of the Federal Government. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party.

a. Any subject data developed under the Contract, whether or not a copyright has been obtained; and

b. Any rights of copyright purchased by the Contractor using Federal assistance in whole or in part by the FTA.

2. Unless FTA determines otherwise, the Contractor performing experimental, developmental, or research work required as part of this Contract agrees to permit FTA to make available to the public, either FTA's license in the copyright to any subject data developed in the course of the Contract, or a copy of the subject data first produced under the Contract for which a copyright has not been obtained. If the experimental, developmental, or research work, which is the subject of this Contract, is not completed for any reason whatsoever, all data developed under the Contract shall become subject data as defined herein and shall be delivered as the Federal Government may direct.

3. Unless prohibited by state law, upon request by the Federal Government, the Contractor agrees to indemnify, save, and hold harmless the Federal Government, its officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data furnished under that contract. The Contractor shall be required to indemnify the Federal Government for any such liability arising out of the wrongful act of any employee, official, or agents of the Federal Government.

4. Nothing contained in this clause on rights in data shall imply a license to the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Federal Government under any patent.

5. Data developed by the Contractor and financed entirely without using Federal assistance provided by the Federal Government that has been incorporated into work required by the underlying Contract is exempt from the requirements herein, provided that the Contractor identifies those data in writing at the time of delivery of the Contract work.

6. The Contractor agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance.

Flow Down Requirements - The Patent Rights and Rights in Data requirements flow down to all third party contractors and their contracts at every tier that meet the definition of a research-type project under 37 U.S.C. § 401.2.

26. Special Department of Labor (DOL) EEO clause for Construction Projects.

Authority - Executive Order 11246, 41 CFR § 60-1.4(b), FTA Master Agreement FY2020 at Section 12(d), FTA C 4220.1F at Appendix D

Applicability – Federal or federally assisted construction contracts and subcontracts in excess of \$10,000.

Additional Equal Opportunity Clauses for Construction Contracts.

The equal opportunity clause published at 41 CFR 60-1.4(a) and published at 41 CFR 601.4(b) in accordance with Executive Order 11246, "Equal Employment Opportunity" ([30 FR 12319](#), 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at [41 CFR part 60](#), "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." are incorporated herein by reference. In addition to those clauses, the following applies to all construction contracts in excess of \$10,000.

(full language follows):

Equal Opportunity Clause

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's

essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Flow Down Requirements - The Special Department of Labor (DOL) EEO clause for Construction Projects requirements flow down to all third party contractors at every tier who perform a safety-sensitive function for the recipient or subrecipient.

27. Disadvantaged Business Enterprises (DBEs).

Authority - 49 C.F.R. part 26, 49 C.F.R. § 26.13(b), FTA Master Agreement FY2020 at Section 12(e)(4)(ii), FTA C 4220.1F at Appendix D

Applicability - all contracts

This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs and with section 1101(b) of SAFETEA LU, 23 U.S.C. §101.

The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this FTA-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as XXX deems appropriate. Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph. The successful Bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.

Flow Down Requirements - The DBE contracting requirements flow down to all third party contractors and their contracts at every tier. Note that it is the XXX's and prime contractor's responsibility to ensure the DBE requirements are applied across the board to all subrecipients/contractors/subcontractors. Should a subcontractor fail to comply with the DBE regulations, FTA would look to the XXX to make sure it intervenes to monitor compliance. The onus for compliance is on the XXX.

28. Recycled Products (Solid Wastes).

Authority - 42 U.S.C. § 6962, 40 C.F.R. part 247, 2 C.F.R. part § 200.323, FTA Best Procurement Practices Manual, FTA C 4220.1F at Appendix D

Applicability -All contracts over \$10,000 for items designated by the EPA Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

1. The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or
2. The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

The Contractor agrees to provide a preference for those products and services that conserve natural resources, protect the environment, and are energy efficient by complying with and facilitating compliance with Section 6002 of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. § 6962, and U.S. Environmental Protection Agency (U.S. EPA), "Comprehensive Procurement Guideline for Products Containing Recovered Materials," 40 C.F.R. part 247.

Flow Down Requirements - These requirements flow down to all applicable subcontracts at all tiers.

29. ADA Access.

Authority – 49 U.S.C. § 5301, 29 U.S.C. § 794, 42 U.S.C. § 12101, FTA Master Agreement FY 2020 at Section 12(h), FTA C 4220.1F at Appendix D-3.

Applicability – all contracts

The Contractor agrees to comply with the requirements of 49 U.S.C. § 5301(d) which expresses the federal policy that the elderly and persons with disabilities have the same right as other persons to use mass transportation service and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement those policies. The Contractor also agrees to comply with all applicable requirements of sections 503 and 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, which prohibits discrimination on the basis of handicaps, and with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 et seq., which requires the provision of accessible facilities and services, and with the following federal regulations, including any amendments thereto: (1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37; (2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27; (3) Joint U.S. Architectural and Transportation Barriers Compliance Board/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38; (4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35; (5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36; (6) U.S. GSA regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19; (7) U.S. Equal Employment Opportunity Commission,

“Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act,” 29 C.F.R. Part 1630; (8) U.S. Federal Communications Commission regulations, “Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled,” 47 C.F.R. Part 64, Subpart F; and (9) FTA regulations, “Transportation for Elderly and Handicapped Persons,” 49 C.F.R. Part 609; and (10) Any implementing requirements FTA may issue.

Flow Down Requirements - This section applies to subcontractors at all tiers.

30. Veterans Preference.

Authority – 49 USC § 5325(k), FTA Master Agreement FY 2020 at Section 16(u)

Applicability – all contracts

To the extent practicable, the Contractor agrees to give a hiring preference to veterans (as defined in 5 USC § 2108) who have the skills and abilities required to perform construction work required for a capital project supported with funds made available or appropriated for 49 USC chapter 53; provided, however, the Contractor may not give a hiring preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability or a former employee.

Flow Down Requirements – None.

31. Motor Carrier Safety

Authority - FTA Master Agreement, FY2020 Section 33

Applicability - all contracts

Contractor agrees that it will comply with the applicable economic and insurance registration requirements of the:

(1) U.S. Federal Motor Carrier Safety Administration (U.S. FMCSA) regulations, “Minimum Levels of Financial Responsibility for Motor Carriers,” 49 C.F.R. part 387, if it is engaged in operations requiring compliance with 49 C.F.R. part 387, it is engaged in interstate commerce, and it is not within a defined commercial zone;

(2) The provisions of 49 U.S.C. § 31138(e)(4), which supersede inconsistent provisions of 49 C.F.R. part 387, and reduce the amount of insurance the Recipient must obtain to the highest amount required by any state in which the public transportation provider operates, if it operates within a public transportation service area located in more than one state, and receives federal assistance under 49 U.S.C. §§ 5307, 5310, and 5311;

(3) The safety requirements of U.S. FMCSA regulations, “Federal Motor Carrier Safety Regulations,” 49 C.F.R. parts 390 – 397, to the extent applicable; and

(4) The driver's license requirements of U.S. FMCSA regulations, "Commercial Driver's License Standards, Requirements, and Penalties," 49 C.F.R. part 383, and "State Compliance with Commercial Driver's License," 49 C.F.R. part 384, to the extent applicable, with the substance abuse requirements and guidance of U.S. FMCSA's regulations, "Controlled Substances and Alcohol Use and Testing," 49 C.F.R. part 382, and implementing federal guidance, to the extent applicable.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

32. Safe Operation of Motor Vehicles.

Authority - FTA Master Agreement, FY2020 Section 34(a)(2) and (b)(iii)

Applicability - all contracts

Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company rented vehicles, or personally operated vehicles. The terms "company owned" and "company-leased" refer to vehicles owned or leased either by the Contractor or XXX. Contractor is further encouraged to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contractor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this agreement. Contractor is also encouraged to conduct workplace safety initiatives in a manner commensurate with its size, such as establishing new rules and programs to prohibit text messaging while driving, re-evaluating the existing programs to prohibit text messaging while driving, and providing education, awareness, and other outreach to employees about the safety risks associated with texting while driving.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

33. Protection of Sensitive and Personally Identifiable Information

Authority - FTA Master Agreement, FY2020 Section 36(c), US DOT Common Rules

Applicability - all contracts

Contractor must implement reasonable measures to safeguard protected personally identifiable information as well as any information that the FTA or pass-through entity designates as sensitive.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

34. Trafficking in Persons

Authority - Section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended, 22 U.S.C. § 7104(g); FTA Master Agreement FY 2020 at Section 4(f)

Applicability - all contracts

Contractor agrees that it and its employees that participate in the Contract, may not: Engage in severe forms of trafficking in persons during the period of time that the Contract is in effect, Procure a commercial sex act during the period of time that the Contract is in effect, or Use forced labor in the performance of the Contract or subagreements thereunder. Violation of this provision provides XXX the right to unilaterally terminate the Contract.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

35. Federal Tax Liability and Recent Felony Convictions

Authority - 2019 Pub. L 116-6; FTA Master Agreement FY 2020 at Section 4(g), DOT Order 4200.6.

Applicability - all contracts

By submitting a bid or otherwise attempting to enter into a contract with the XXX, the undersigned Contractor certifies that it:

(A) Does not have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

(B) Was not convicted of the felony criminal violation under any Federal law within the preceding 24 months.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

36. Construction Site Safety

Authority - Section 107 of the Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. § 3704, 40 U.S.C. § 3701 et seq.; U.S. DOL regulations, “Recording and Reporting Occupational Injuries and Illnesses,” 29 C.F.R. part 1904; “Occupational Safety and Health Standards,” 29 C.F.R. part 1910; and “Safety and Health Regulations for Construction,” 29 C.F.R. part 1926, and FTA Master Agreement FY 2020 at Section 24(a)(4)

Applicability - all construction contracts

The Contractor agrees that it will comply with all federal laws, regulations, and requirements providing protections for construction employees involved in the Project or related activities, including the: (i) Section 107 of the Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. § 3704, and other

relevant parts of that Act, 40 U.S.C. § 3701 et seq.; and (ii) U.S. DOL regulations, “Recording and Reporting Occupational Injuries and Illnesses,” 29 C.F.R. part 1904; “Occupational Safety and Health Standards,” 29 C.F.R. part 1910; and “Safety and Health Regulations for Construction,” 29 C.F.R. part 1926.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

37. Domestic Preferences for Procurements

Authority - 2 CFR part 200 Appendix II (L); 2 C.F.R. § 200.322

Applicability - all contracts

As appropriate and to the extent consistent with law, the Contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this Contract.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

38. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

Authority - 2 CFR part 200 Appendix II (K); 2 C.F.R. § 200.216

Applicability - all contracts

(a) Definitions. As used in this clause—

Backhaul means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (e.g., connecting cell phones/towers to the core telephone network). Backhaul can be wireless (e.g., microwave) or wired (e.g., fiber optic, coaxial cable, Ethernet).

Covered foreign country means The People’s Republic of China.

Covered telecommunications equipment or services means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Critical technology means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled-

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials, software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

Interconnection arrangements means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately delivered (e.g., connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

Reasonable inquiry means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

Roaming means cellular communications services (e.g., voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

Substantial or essential component means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(b) *Prohibition.* (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits XXX from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Contractor is prohibited from providing to the XXX any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the XXX on or after August 13, 2020, from entering into a contract, or extending or renewing a contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

(c) *Exceptions.* This clause does not prohibit contractors from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(d) *Reporting requirement.* (1) In the event the Contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Contractor is notified of such by a subcontractor at any tier or by any other source, the Contractor shall report the information in paragraph (d)(2) of this clause to the XXX immediately.

Flow Down Requirements – This requirement flows down to all subcontracts at every tier.

39. Bus Testing.

Authority - 49 U.S.C. § 5318(e) and 49 C.F.R. part 665, FTA Master Agreement FY2020 at Section 16(m)

Applicability - Rolling stock, except minivans

Contractor shall comply with 49 USC A5323(c) and FTA's implementing regulation 49 CFR part 665, to the extent they are consistent with 49 U.S.C. § 5318(e), as amended; and shall perform the following: (1) A manufacturer of a new bus model or a bus produced with a major change in components or

configuration shall provide a copy of the final test report to the recipient prior to the recipient's final acceptance of the first vehicle. (2) A manufacturer who releases a report under para. 1 above shall provide notice to the operator of the testing facility that the report is available to the public. (3) If the manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to the recipient's final acceptance of the first vehicle. If configuration or components are not identical, the manufacturer shall provide a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing. (4) If the manufacturer represents that the vehicle is "grandfathered" (has been used in mass transit service in the US before Oct. 1, 1988, and is currently being produced without a major change in configuration or components), the manufacturer shall provide the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

Flow Down Requirements - none.

40. Pre-Award and Post-Delivery Audit Requirements.

Authority - 49 U.S.C. 5323(m) and 49 C.F.R. part 663, FTA Master Agreement FY2020 at Section 16(m)

Applicability - Rolling stock

The Contractor agrees to comply with 49 U.S.C. § 5323(m) and FTA's implementing regulation at 49 C.F.R. part 663. The Contractor shall comply with the Buy America certification(s) submitted with its proposal/bid. The Contractor agrees to participate and cooperate in any pre-award and post-delivery audits performed pursuant to 49 C.F.R. part 663 and related FTA guidance.

Flow Down Requirements – none.

41. FTA Clauses Required when DBE Threshold Has Been Met

Applicability – all contracts where there is DBE Participation

a. Contract Assurance. 49 CFR Part 26.13

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 C.F.R. part 26.13 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the Authority deems appropriate.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

b. Monitoring the Performance of other Program Participants. 49 CFR Part 26.37

The XXX will monitor each DOT funded contract with DBE participation to ensure that all work committed to DBEs at contract award or subsequently (as a result of contract modification) is actually performed by the DBEs to which the work was committed. Site visit will be conducted periodically by staff. Contractor's Request for Payment forms will be monitored to ensure that DBEs are being paid in accordance to their signed agreements.

All Prime Contractors will be required to self-report all payments received from the XXX into the B2GNow (Contract Compliance Tracking System). This system tracks payments made to the prime contractor and all payments made by the prime to any subcontractors, to include DBEs, and the timeliness of those payments in accordance to XXX's Prompt Payment Clause.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

c. Prompt Payment. 49 CFR part 26.29(a)

Contractors are required to pay all subcontractors for satisfactory performance of their contracts within seven (7) business days from receipt of each payment from the XXX. Failure to comply may result in future withholdings of prime contractor's reimbursements and/or other sanctions until the prime contractor ensure all subcontractors are being promptly paid for all work performed.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

d. Return of Retainage. 49 CFR Part 26.29(b), FY2019 FTA Procurement System Review Guide at P11.

Contractor is required to ensure prompt and full payment of retainage to all subcontractors within thirty (30) days after the subcontractor's work is satisfactorily completed. Contractor is prohibited from holding retainage from subcontractors until the project is completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the XXX. When XXX has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

e. Termination for Convenience (DBE). 49 CFR Part 26.53

No prime contractor will terminate for convenience a DBE subcontractor that was listed and agreed to perform a project task (or an approved substitute DBE firm) and then perform the work of the terminated subcontract with its own forces or those of an affiliate, without prior written consent from XXX's Diversity & Equity Program Office.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the prime contractor obtains written consent from XXX's Diversity & Equity Program Office; and unless the consent is provided the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Appropriate administrative remedies will be invoked to any Prime Contractor that terminates and/or removes a DBE firm/s for convenience. Those remedies may include requirement to pay terminated DBE firm/s; withholding of future payments and/or retainage; and/or disbarment from future consideration of project awards with the XXX.

Flow Down Requirements - This requirement flows down to all subcontracts at every tier.

Other Federal Requirements

The following requirements are not federal clauses, but apply to all contracts except micro-purchases (\$3,500 or less)

Full and Open Competition.

In accordance with 49 U.S.C. § 5325(a) all procurement transactions shall be conducted in a manner that provides full and open competition.

Prohibition Against Exclusionary or Discriminatory Specifications.

Apart from inconsistent requirements imposed by Federal statute or regulations, the contractor shall comply with the requirements of 49 USC 5323(h)(2) by refraining from using any FTA assistance to support procurements using exclusionary or discriminatory specifications.

Access Requirements for Persons with Disabilities.

Contractor shall comply with 49 USC 5301(d), stating Federal policy that the elderly and persons with disabilities have the same rights as other persons to use mass transportation services and facilities and that special efforts shall be made in planning and designing those services and facilities to implement that policy. Contractor shall also comply with all applicable requirements of Sec. 504 of the Rehabilitation Act (1973), as amended, 29 USC 794, which prohibits discrimination on the basis of handicaps, and the Americans with Disabilities Act of 1990 (ADA), as amended, 42 USC 12101 et seq., which requires that accessible facilities and services be made available to persons with disabilities, including any subsequent amendments thereto.

Notification of Federal Participation.

To the extent required by law, in the announcement of any third party contract award for goods and services (including construction services) having an aggregate value of \$500,000 or more, contractor shall specify the amount of Federal assistance to be used in financing that acquisition of goods and services and to express that amount of Federal assistance as a percentage of the total cost of the third party contract.

Interest of Members or Delegates to Congress.

No members of, or delegates to, the US Congress shall be admitted to any share or part of this contract nor to any benefit arising therefrom.

Ineligible Contractors and Subcontractors.

Any name appearing upon the Comptroller General's list of ineligible contractors for federally-assisted contracts shall be ineligible to act as a subcontractor for contractor pursuant to this contract. If contractor is on the Comptroller General's list of ineligible contractors for federally financed or assisted construction, the recipient shall cancel, terminate or suspend this contract.

Compliance with Federal Regulations.

Any contract entered pursuant to this solicitation shall contain the following provisions: All USDOT-required contractual provisions, as set forth in FTA Circular 4220.1F, are incorporated by reference. Anything to the contrary herein notwithstanding, FTA mandated terms shall control in the event of a conflict with other provisions contained in this Agreement. Contractor shall not perform any act, fail to perform any act, or refuse to comply with any grantee request that would cause the recipient to be in violation of FTA terms and conditions. Contractor shall comply with all applicable FTA regulations, policies, procedures and directives, including, without limitation, those listed directly or incorporated by reference in the Master Agreement between the recipient and FTA, as may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

Real Property.

Any contract entered into shall contain the following provisions: Contractor shall at all times comply with all applicable statutes and USDOT regulations, policies, procedures and directives governing the acquisition, use and disposal of real property, including, but not limited to, 49 CFR 18.31-18.34, 49 CFR 19.30-19.37, 49 CFR Part 24, 49 CFR 5326 as amended by FAST Act, 49 CFR part 18 or 19, 49 USC 5334, applicable FTA Circular 5010, and FTA Master Agreement, as they may be amended or promulgated during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

Access to Services for Persons with Limited English Proficiency.

To the extent applicable and except to the extent that FTA determines otherwise in writing, the Recipient agrees to comply with the policies of Executive Order No. 13166, "Improving Access to Services for Persons with Limited English Proficiency," 42 U.S.C. § 2000d 1 note, and with the provisions of U.S. DOT Notice, "DOT Guidance to Recipients on Special Language Services to Limited English Proficient (LEP) Beneficiaries," 70 Fed. Reg. 74087, December 14, 2005.

Environmental Justice.

Except as the Federal Government determines otherwise in writing, the Recipient agrees to promote environmental justice by following: (1) Executive Order No. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low- Income Populations," February 11, 1994, 42 U.S.C. § 4321 note, as well as facilitating compliance with that Executive Order, and (2) DOT Order 5610.2, "Department of Transportation Actions To Address Environmental Justice in Minority Populations and Low Income Populations," 62 Fed. Reg. 18377, April 15, 1997, and (3) The most recent and applicable edition of FTA Circular 4703.1, "Environmental Justice Policy Guidance for Federal Transit Administration Recipients," August 15, 2012, to the extent consistent with applicable Federal laws, regulations, and guidance.

Environmental Protections.

Compliance is required with any applicable Federal laws imposing environmental and resource conservation requirements for the project. Some, but not all, of the major Federal laws that may affect the project include: the National Environmental Policy Act of 1969; the Clean Air Act; the Resource Conservation and Recovery Act; the comprehensive Environmental response, Compensation and Liability Act; as well as environmental provisions with Title 23 U.S.C., and 49 U.S.C. chapter 53. The U.S. EPA, FHWA and other federal agencies may issue other federal regulations and directives that may affect the project. Compliance is required with any applicable Federal laws and regulations in effect now or that become effective in the future.

Geographic Information and Related Spatial Data.

Any project activities involving spatial data or geographic information systems activities financed with Federal assistance are required to be consistent with the National Spatial Data Infrastructure promulgated by the Federal Geographic Data Committee, except to the extent that FTA determines otherwise in writing.

Geographic Restrictions.

All project activities must be advertised without geographic preference, (except in A/E under certain circumstances, preference for hiring veterans on transit construction projects and geographic-based hiring preferences as proposes to be amended in 2 CFR Part 1201).

In-State Bus Dealer Restrictions.

The Recipient agrees that any state law requiring buses to be purchased through in-state dealers will not apply to purchases of vehicles supported with federal assistance appropriated or made available for 49 U.S.C. chapter 53, as provided in 49 U.S.C. § 5325(i).

Organizational Conflicts of Interest.

The Recipient agrees that it will not enter into a procurement that involves a real or apparent organizational conflict of interest described as follows: (1) When It Occurs. An organizational conflict of interest occurs when the Project work, without appropriate restrictions on certain future activities, results in an unfair competitive advantage: (a) To that Third Party Participant or another Third Party Participant performing the Project work, and (b) That impairs that Third Party Participant's objectivity in performing the Project work, or (2) Other. An organizational

conflict of interest may involve other situations resulting in fundamentally unfair competitive conditions, (3) Disclosure Requirements. Consistent with FTA policies, the Recipient must disclose to FTA, and each of its Subrecipients must disclose to the Recipient: (a) Any instances of organizational conflict of interest, or (b) Violations of federal criminal law, involving fraud, bribery, or gratuity violations potentially affecting the federal award, and (4) Failure to Disclose. Failure to make required disclosures can result in remedies for noncompliance, including debarment or suspension.

Project Labor Agreements.

As a condition of a third party contract award, the Recipient may require the Third Party Contractor or Subcontractor to have an affiliation with a labor organization, such as a Project Labor Agreement, consistent with Executive Order No. 13502, "Use of Project Labor Agreements for Federal Construction Projects," February 6, 2009 (74 Fed. Reg. 6985).

Force Account.

The Recipient agrees that FTA may determine the extent to which Federal assistance may be used to participate in force account costs.

FTA Technical Review.

The Recipient agrees that FTA may review and approve the Recipient's technical specifications and requirements to the extent FTA believes necessary to ensure proper administration of the Underlying Agreement.

Relationship of the Award to Third Party Contract Approval.

The Recipient agrees that the terms of the Underlying Agreement do not, by themselves, constitute approval of any non- competitive third party contract associated with the Award, unless FTA indicates otherwise in writing.

Federal Single Audit Requirements for State Administered Federally Aid Funded Projects Only.

Non Federal entities that expend \$750,000 or more in a year in Federal awards from all sources are required to comply with the Federal OMB Title 2 CFR Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards" effective December 26, 2014 as applicable. Non Federal entities that expend Federal awards from a single source may provide a program specific audit, as defined in the Uniform Guidance. Non Federal entities that expend less than the amount above in a year in Federal awards from all sources are exempt from Federal audit requirements for that year, except as noted, whereby records must be available for review or audit by appropriate officials of the cognizant Federal agency and the U.S. Governmental Accountability Office (GAO). Non Federal entities are required to submit a copy of all audits, as described above, within 30 days of issuance of audit report, but no later than 9 months after the end of the entity's fiscal year, to the Florida Department of Transportation. Unless a time extension has been granted by the cognizant Federal Agency and has been filed with the Florida Department of Transportation's Contract Audit Bureau, failure to comply with the requirements of the Uniform Guidance may result in suspension or termination of Federal award payments.

Veterans Preference.

As provided by 49 U.S.C. § 5325(k), to the extent practicable, the Recipient agrees and assures that each of its Subrecipients: (1) Will give a hiring preference to veterans, as defined in 5 U.S.C. § 2108, who have the skills and abilities required to perform construction work required under a third party contract in connection with a Capital Project supported with federal assistance appropriated or made available for 49 U.S.C. chapter 53, and (2) Will not require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

Safe Operation of Motor Vehicles.

The Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company rented vehicles, or personally operated vehicles. The terms "company owned" and "company-leased" refer to vehicles owned or leased either by the Contractor or XXX.

The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contractor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this agreement.

Catalog of Federal Domestic Assistance (CFDA) Identification Number.

The municipal project sponsor is required to identify in its accounts all Federal awards received and expended, and the Federal programs under which they were received. Federal program and award identification shall include, as applicable, the CFDA title and number, award number and year, name of the Federal agency, and name of the pass through entity.

CFDA number for the Federal Transportation Administration.

Non-urbanized Area Formula (Section 5311) is 20.509. A Recipient covered by the Single Audit Act Amendments of 1996 and OMB Title 2 CFR Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards" (commonly known as Uniform Guidance) agrees to separately identify the expenditures for Federal awards on the Schedule of Expenditures of Federal Awards (SEFA) and the Data Collection Form (SF-SAC) required by OMB Uniform Guidance.

45-2526-001
PROYECTO DE MEJORAS AL TERMINAL DE ITURREGUI
REQUISICIÓN 20853

V. ANEJOS



CERTIFICATION OF COMPLIANCE

(EO 1991-24)

The CONTRACTOR certifies and assures the AUTHORITY that upon contract signing income taxes have been filed for the five (5) years previous to this CONTRACT and that no income tax is due to the Commonwealth of Puerto Rico, or that a payment plan is being complied with in all its terms and conditions. This is an essential condition of the present CONTRACT, and if not correct in all or part of the above certified, this shall be sufficient cause for the AUTHORITY to terminate same and the CONTRACTOR must return to the AUTHORITY any and all compensation received under this CONTRACT, in accordance with EXECUTIVE ORDER NUMBER 1991-24.

Signature

Date

Name of Company

CERTIFICATION OF RESTRICTIONS ON LOBBYING

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard -LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, US Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 for each such failure.

Signature

Date

Title

Firm

BUY AMERICA PROVISION

This procurement is subject to the Federal Transit Administration Buy America Requirements in 49 CFR 661.

A Buy America Certificate, as per attached format, must be completed and submitted with the bid. A bid, which does not include the certificate, will be considered non-responsive.

A waiver from the Buy America Provision may be sought by (Recipient) if grounds for the waiver exist.

BUY AMERICA CERTIFICATE **FOR STEEL OR MANUFACTURED PRODUCTS**

The bidder hereby certifies that it will comply with the requirements of Section 165A of the Intermodal Surface Transportation Efficiency Act of 1991 and the regulations at 49 CFR661.

Signature

Date

Title

Company Name

or

(sign one of the two)

The bidder hereby certifies that it cannot comply with the requirements of Section 165a of the Intermodal Surface Transportation Efficiency Act of 1991, but it may qualify for an exception to the requirements pursuant to Section 165 (b) or (b) (4) of the Intermodal Surface Transportation Efficiency Act of 1991 and regulations at 49 CFR 661.7.

Signature

Date

Title

Company Name

LABOR PROVISION

Bidder certifies as to compliance with statutory requirement of 40 United States Code 329 and Regulations set forth at 29 Code Federal Regulations, Part 5.

DATE _____

SIGNATURE _____

TITLE _____

The Following Certification of Integrity must be signed and included in all contracts
between \$50,000-250,000

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary
Exclusion-Lower Tier Covered Transactions**

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from participation on this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Signature

Date

Name

Title

Company



OMB APPROVAL NO:
2105-0510
Expiration Date: 10/31/2021

Appendix F

UNIFORM CERTIFICATION APPLICATION
DISADVANTAGED BUSINESS ENTERPRISE (DBE) /
AIRPORT CONCESSION DISADVANTAGED BUSINESS ENTERPRISE (ACDBE)
49 C.F.R. Parts 23 and 26

Roadmap for Applicants

1. Should I apply?

You may be eligible to participate in the DBE/ACDBE program if:

- The firm is a for-profit business that performs or seeks to perform transportation related work (or a concession activity) for a recipient of Federal Transit Administration, Federal Highway Administration, or Federal Aviation Administration funds.
- The firm is at least 51% owned by a socially and economically disadvantaged individual(s) who also controls it.
- The firm's disadvantaged owners are U.S. citizens or lawfully admitted permanent residents of the U.S.
- The firm meets the Small Business Administration's size standard and does not exceed \$23.98 million in gross annual receipts for DBE (\$56.42 million for ACDBEs). (Other size standards apply for ACDBE that are banks/financial institutions, car rental companies, pay telephone firms, and automobile dealers.)

2. How do I apply?

First time applicants for DBE certification must complete and submit this certification application and related material to the certifying agency in your home state and participate in an on-site interview conducted by that agency. The attached document checklist can help you locate the items you need to submit to the agency with your completed application. If you fail to submit the required documents, your application may be delayed and/or denied. Firms already certified as a DBE do not have to complete this form, but may be asked by certifying agencies outside of your home state to provide a copy of your initial application form, supporting documents, and any other information you submitted to your home state to obtain certification or to any other state related to your certification.

3. Where can I send my application? [INSERT UCP PARTICIPATING MEMBER CONTACT INFORMATION]

4. Who will contact me about my application and what are the eligibility standards? A transportation agency in your state that performs certification functions will contact you. The agency is a member of a statewide Unified Certification Program (UCP), which is required by the U.S. Department of Transportation. The UCP is a one-stop certification program that eliminates the need for your firm to obtain certification from multiple certifying agencies within your state. The UCP is responsible for certifying firms and maintaining a database of certified DBEs and ACDBEs, pursuant to the eligibility standards found in 49 C.F.R. Parts 23 and 26.

5. Where can I find more information?

U.S. DOT—<https://www.transportation.gov/civil-rights> (This site provides useful links to the rules and regulations governing the DBE/ACDBE program, questions and answers, and other pertinent information)

SBA—Small Business Size Standards matched to the North American Industry Classification System (NAICS):
<http://www.census.gov/eos/www/naics/> and <http://www.sba.gov/content/table-small-business-size-standards>.

In collecting the information requested by this form, the Department of Transportation (Department) complies with the provisions of the Federal Freedom of Information and Privacy Acts (5 U.S.C. 552 and 552a). The Privacy Act provides comprehensive protections for your personal information. This includes how information is collected, used, disclosed, stored, and discarded. Your information will not be disclosed to third parties without your consent. The information collected will be used solely to determine your firm's eligibility to participate in the Department's Disadvantaged Business Enterprise Program as defined in 49 C.F.R. §26.5 and the Airport Concession Disadvantaged Business Enterprise Program as defined in 49 C.F.R. §23.3. You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477).

Under 49 C.F.R. §26.107, dated February 2, 1999 and January 28, 2011, if at any time, the Department or a recipient has reason to believe that any person or firm has willfully and knowingly provided incorrect information or made false statements, the Department may initiate suspension or debarment proceedings against the person or firm under 2 C.F.R. Parts 180 and 1200, No procurement Suspension and Department, take enforcement action under 49 C.F.R. Part 31, Program Fraud and Civil Remedies, and/or refer the matter to the Department of Justice for criminal prosecution under 18 U.S.C. 1001, which prohibits false statements in Federal programs.



**INSTRUCTIONS FOR COMPLETING THE
DISADVANTAGED BUSINESS ENTERPRISE (DBE)
AIRPORT CONCESSIONS DISADVANTAGED BUSINESS ENTERPRISE (ACDBE)
UNIFORM CERTIFICATION APPLICATION**

NOTE: All participating firms must be for-profit enterprises. If your firm is not for profit, then you do NOT qualify for the DBE/ACDBE program and should not complete this application. If you require additional space for any question in this application, please attach additional sheets or copies as needed, taking care to indicate on each attached sheet/copy the section and number of this application to which it refers.

Section 1: CERTIFICATION INFORMATION

A. Basic Contact Information

- (1) Enter the contact name and title of the person completing this application and the person who will serve as your firm's contact for this application.
- (2) Enter the legal name of your firm, as indicated in your firm's Articles of Incorporation or charter.
- (3) Enter the primary phone number of your firm.
- (4) Enter a secondary phone number, if any.
- (5) Enter your firm's fax number, if any.
- (6) Enter the contact person's email address.
- (7) Enter your firm's website addresses, if any.
- (8) Enter the street address of the firm where its offices are physically located (not a P.O. Box).
- (9) Enter the mailing address of your firm, if it is different from your firm's street address.

B. Prior/Other Certifications and Applications

- (10) Check the appropriate box indicating whether your firm is currently certified in the DBE/ACDBE programs, and provide the name of the certifying agency that certified your firm. List the dates of any site visits conducted by your home state and any other states or UCP members. Also provide the names of state/UCP members that conducted the review.
- (11) Indicate whether your firm or any firms owned by the persons listed has ever been denied certification as a DBE/ACDBE, 8(a), or Small Disadvantaged Business (SDB) firm, or state and local MBE/WBE firm. Indicate if the firm has ever been decertified from one of these programs. Indicate if the application was withdrawn or whether the firm was debarred, suspended, or otherwise had its bidding privileges denied or restricted by any state or local agency, or Federal entity. If your answer is yes, identify the name of the agency, and explain fully the nature of the action in the space provided. Indicate if you have ever appealed this decision to the Department and if so, attach a copy of USDOT's final agency decision(s).

Section 2: GENERAL INFORMATION

A. Business profile:

- (1) Give a concise description of the firm's primary activities, the product(s) or services the company provides, or type of construction. If your company offers more than one product/service, list primary product or service first (attach additional sheets if necessary). This description may be used in our UCP online directory if you are certified as a DBE.

- (2) If you know the appropriate NAICS Code for the line(s) of work you identified in your business profile, enter the codes in the space provided.
- (3) State the date on which your firm was established as stated in your firm's Articles of Incorporation or charter.
- (4) State the date each person became a firm owner.
- (5) Check the appropriate box describing the manner in which you and each other owner acquired ownership of your firm. If you checked "Other," explain in the space provided.
- (6) Check the appropriate box that indicates whether your firm is "for profit." If you checked "No," then you do NOT qualify for the DBE/ACDBE program and should not complete this application. All participating firms must be for-profit enterprises. Provide the Federal Tax ID number as stated on your firm's Federal tax return.
- (7) Check the appropriate box that describes the type of legal business structure of your firm, as indicated in your firm's Articles of Incorporation or similar document. If you checked "Other," briefly explain in the space provided.
- (8) Indicate in the spaces provided how many employees your firm has, specifying the number of employees who work on a full-time, part-time, and seasonal basis. Attach a list of employees, their job titles, and dates of employment, to your application.
- (9) Specify the firm's gross receipts for each of the past three years, as stated in your firm's filed Federal tax returns. You must submit complete copies of the firm's Federal tax returns for each year. If there are any affiliates or subsidiaries of the applicant firm or owners, you must provide these firms' gross receipts and submit complete copies of these firm(s) Federal tax returns. Affiliation is defined in 49 C.F.R. §26.5 and 13 C.F.R. Part 121.

B. Relationships and Dealings with Other Businesses

- (1) Check the appropriate box that indicates whether your firm is co-located at any of its business locations, or whether your firm shares a telephone number(s), a post office box, any office space, a yard, warehouse, other facilities, any equipment, financing, or any office staff and/or employees with any other business, organization or entity of any kind. If you answered "Yes," then specify the name of the other firm(s) and fully explain the nature of your relationship with these other businesses by identifying the business or person with whom you have any formal, informal, written, or oral



agreement. Provide an explanation of any items shared with other firms in the space provided.

- (2) Check the appropriate box indicating whether any other firm currently has or had an ownership interest in your firm at present or at any time in the past. If you checked yes, please explain.
- (3) Check the appropriate box that indicates whether at present or at any time in the past your firm:
 - (a) ever existed under different ownership, a different type of ownership, or a different name;
 - (b) existed as a subsidiary of any other firm;
 - (c) existed as a partnership in which one or more of the partners are/were other firms;
 - (d) owned any percentage of any other firm; and
 - (e) had any subsidiaries of its own.
- (f) served as a subcontractor with another firm constituting more than 25% of your firm's receipts.

If you answered "Yes" to any of the questions in (3)(a-f), you may be asked to explain the arrangement in detail.

Section 3: MAJORITY OWNER INFORMATION

Identify all individuals or holding companies with any ownership interest in your firm, providing the information requested below (if your firm has more than one owner, provide completed copies of this section for each owner):

A. Identify the majority owner of the firm holding 51% or more ownership interest

- (1) Enter the full name of the owner.
- (2) Enter his/her title or position within your firm.
- (3) Give his/her home phone number.
- (4) Enter his/her home (street) address.
- (5) Indicate this owner's gender.
- (6) Identify the owner's ethnic group membership. If you checked "Other," specify this owner's ethnic group/identity not otherwise listed.
- (7) Check the appropriate box to indicate whether this owner is a U.S. citizen or a lawfully admitted permanent resident. If this owner is neither a U.S. citizen nor a lawfully admitted permanent resident of the U.S., then this owner is NOT eligible for certification as a DBE owner.
- (8) Enter the number of years during which this owner has been an owner of your firm.
- (9) Indicate the percentage of the total ownership this person holds and the date acquired, including (if appropriate), the class of stock owned.
- (10) Indicate the dollar value of this owner's initial investment to acquire an ownership interest in your firm, broken down by cash, real estate, equipment, and/or other investment. Describe how you acquired your business and attach documentation substantiating this investment.

B. Additional Owner Information

- (1) Describe the familial relationship of this owner to each other owner of your firm and employees.
- (2) Indicate whether this owner performs a management or supervisory function for any other business. If you checked "Yes," state the name of the other business and this owner's function/title held in that business.

- (3) (a) Check the appropriate box that indicates whether this owner owns or works for any other firm(s) that has any relationship with your firm. If you checked "Yes," identify the name of the other business, the nature of the business relationship, and the owner's function at the firm.

(b) If the owner works for any other firm, non-profit organization, or is engaged in any other activity more than 10 hours per week, please identify this activity.

- (4) (a) Provide the personal net worth of the owner applying for certification in the space provided. Complete and attach the accompanying "Personal Net Worth Statement for DBE/ACDBE Program Eligibility" with your application. Note, complete this section and accompanying statement only for each owner applying for DBE qualification (i.e., for each owner claiming to be socially and economically disadvantaged).
- (b) Check the appropriate box that indicates whether any trust has been created for the benefit of the disadvantaged owner(s). If you answered "Yes," you may be asked to provide a copy of the trust instrument.
- (5) Check the appropriate to indicate whether any of your immediate family members, managers, or employees, own, manage, or are associated with another company. Immediate family member is defined in 49 C.F.R. §26.5. If you answered "Yes," provide the name of each person, your relationship to them, the name of the company, the type of business, and whether they own or manage the company.

Section 4: CONTROL

A. Identify the firm's Officers and Board of Directors

- (1) In the space provided, state the name, title, date of appointment, ethnicity, and gender of each officer.
- (2) In the space provided, state the name, title, date of appointment, ethnicity, and gender of each individual serving on your firm's Board of Directors.
- (3) Check the appropriate box to indicate whether any of your firm's officers and/or directors listed above performs a management or supervisory function for any other business. If you answered "Yes," identify each person by name, his/her title, the name of the other business in which s/he is involved, and his/her function performed in that other business.
- (4) Check the appropriate box that indicates whether any of your firm's officers and/or directors listed above own or work for any other firm(s) that has a relationship with your firm. (e.g., ownership interest, shared office space, financial investments, equipment leases, personnel sharing, etc.) If you answered "Yes," identify the name of the firm, the individual's name, and the nature of his/her business relationship with that other firm.

B. Duties of Owners, Officers, Directors, Managers and Key Personnel

- (1), (2) Specify the roles of the majority and minority owners, directors, officers, and managers, and key personnel who are responsible for the functions listed for the firm. Submit résumés for each owner and non-owner identified below. State the name of the individual, title, race



and gender and percentage ownership if any. Circle the frequency of each person's involvement as follows: "always, frequently, seldom, or never" in each area.

Indicate whether any of the persons listed in this section perform a management or supervisory function for any other business. Identify the person, business, and their title/function. Identify if any of the persons listed above own or work for any other firm(s) that has a relationship with this firm (e.g. ownership interest, shared office space, financial investment, equipment, leases, personnel sharing, etc.) If you answered "Yes," describe the nature of his/her business relationship with that other firm.

C. Inventory: Indicate firm inventory in these categories:

(1) Equipment and Vehicles

State the make and model, and current dollar value of each piece of equipment and motor vehicle held and/or used by your firm. Indicate whether each piece is either owned or leased by your firm or owner, whether it is used as collateral, and where this item is stored.

(2) Office Space

State the street address of each office space held and/or used by your firm. Indicate whether your firm or owner owns or leases the office space and the current dollar value of that property or its lease.

(3) Storage Space

State the street address of each storage space held and/or used by your firm. Indicate whether your firm or owner owns or leases the storage space and the current dollar value of that property or its lease. Provide a signed lease agreement for each property.

D. Does your firm rely on any other firm for management functions or employee payroll?

Check the appropriate box that indicates whether your firm relies on any other firm for management functions or for employee payroll. If you answered "Yes," you may be asked to explain the nature of that reliance and the extent to which the other firm carries out such functions.

E. Financial / Banking Information

State the name, City and State of your firm's bank. Identify the persons able to sign checks on this account. Provide bank authorization and signature cards.

Bonding Information. State your firm's bonding limits both aggregate and project limits.

F. Sources, amounts, and purposes of money loaned to your firm, including the names of persons or firms guaranteeing the loan.

State the name and address of each source, the name of person securing the loan, original dollar amount and the current balance of each loan, and the purpose for which each

loan was made to your firm. Provide copies of signed loan agreements and security agreements

G. Contributions or transfers of assets to/from your firm and to/from any of its owners or another individual over the past two years:

Indicate in the spaces provided, the type of contribution or asset that was transferred, its current dollar value, the person or firm from whom it was transferred, the person or firm to whom it was transferred, the relationship between the two persons and/or firms, and the date of the transfer.

H. Current licenses/permits held by any owner or employee of your firm.

List the name of each person in your firm who holds a professional license or permit, the type of permit or license, the expiration date of the permit or license, and issuing State of the license or permit. Attach copies of licenses, license renewal forms, permits, and haul authority forms.

I. Largest contracts completed by your firm in the past three years, if any.

List the name of each owner or contractor for each contract, the name and location of the projects under each contract, the type of work performed on each contract, and the dollar value of each contract.

J. Largest active jobs on which your firm is currently working.

For each active job listed, state the name of the prime contractor and the project number, the location, the type of work performed, the project start date, the anticipated completion date, and the dollar value of the contract.

Section 5: AIRPORT CONCESSION (ACDBE) APPLICANTS

Complete the entries in this section if you are applying for ACDBE certification. Indicate in Section A if you operate a concession at the airport, and/or supply a good or service to an airport concessionaire. Indicate in Section B whether the applicant firm owns or operates any off-airport locations, providing the type of business, lease information, address/location, and annual gross receipts generated. Provide similar information in section C for any airport concession locations the firm currently owns or operates. If the applicant firm has any affiliates, provide the requested information in Section D. Indicate whether the ACDBE firm is participating in any joint ventures, and if so, include the original and any amended joint venture agreements.

AFFIDAVIT & SIGNATURE

The Affidavit of Certification must accompany your application. Carefully read the attached affidavit in its entirety. Fill in the required information for each blank space, and sign and date the affidavit in the presence of a Notary Public, who must then notarize the form.

Section 1: CERTIFICATION INFORMATION



A. Basic Contact Information

I am applying for certification as ☐ DBE ☐ ACDBE

(1) Contact person and Title: _____

(2) Legal name of firm: _____

(3) Phone #: () - - (4) Other Phone #: () - - (5) Fax #: () - -

(6) E-mail: _____ (7) Firm Websites: _____

(8) Street address of firm (No P.O. Box): City: County/Parish: State: Zip: -

(9) Mailing address of firm (if different): City: County/Parish: State: Zip: -

B. Prior/Other Certifications and Applications

(10) Is your firm currently certified for any of the following U.S. DOT programs?

☐ DBE ☐ ACDBE Names of certifying agencies: _____

⊗ If you are certified in your home state as a DBE/ACDBE, you do not have to complete this application for other states. Ask your state UCP about the interstate certification process.

List the dates of any site visits conducted by your home state and any other states or UCP members:

Date ___/___/___ State/UCP Member: _____ Date ___/___/___ State/UCP Member: _____

(11) Indicate whether the firm or any persons listed in this application have ever been:

(a) Denied certification or decertified as a DBE, ACDBE, 8(a), SDB, MBE/WBE firm? ☐ Yes ☐ No

(b) Withdrawn an application for these programs, or debarred or suspended or otherwise had bidding privileges denied or restricted by any state or local agency, or Federal entity? ☐ Yes ☐ No

If yes, explain the nature of the action. (If you appealed the decision to DOT or another agency, attach a copy of the decision, _____)

Section 2: GENERAL INFORMATION

A. Business Profile: (1) Give a concise description of the firm's primary activities and the product(s) or service(s) it provides. If your company offers more than one product/service, list the primary product or service first. Please use additional paper if necessary. This description may be used in our database and the UCP online directory if you are certified as a DBE or ACDBE.

(2) Applicable NAICS Codes for this line of work include: _____

(3) This firm was established on ___/___/___ (4) I/We have owned this firm since: ___/___/___



(5) Method of acquisition (Check all that apply):

- ☐ Started new business ☐ Bought existing business ☐ Inherited business ☐ Gifted
☐ Merger or consolidation ☐ Other (explain) _____

(6) Is your firm "for profit"? ☐ Yes
Federal Tax ID# _____

No → **STOP!** If your firm is NOT for-profit, then you do NOT qualify for this program and should not fill out this application.

(7) Type of Legal Business Structure: (check all that apply):

- ☐ Sole Proprietorship
☐ Limited Liability Partnership
☐ Partnership ☐ Corporation
☐ Limited Liability Company ☐ Other, Describe _____

(8) Number of employees: Full-time _____ Part-time _____ Seasonal _____ Total _____
(Provide a list of employees, their job titles, and dates of employment, to your application).

(9) Specify the firm's gross receipts for the last 3 years. (Submit complete copies of the firm's Federal tax returns for each year. If there are affiliates or subsidiaries of the applicant firm or owners, you must submit complete copies of these firms' Federal tax returns).

Year _____	Gross Receipts of Applicant Firm \$ _____	Gross Receipts of Affiliate Firms \$ _____
Year _____	Gross Receipts of Applicant Firm \$ _____	Gross Receipts of Affiliate Firms \$ _____
Year _____	Gross Receipts of Applicant Firm \$ _____	Gross Receipts of Affiliate Firms \$ _____

B. Relationships and Dealings with Other Businesses

(1) Is your firm co-located at any of its business locations, or does it share a telephone number, P.O. Box, office or storage space, yard, warehouse, facilities, equipment, inventory, financing, office staff, and/or employees with any other business, organization, or entity? ☐ Yes ☐ No

If Yes, explain the nature of your relationship with these other businesses by identifying the business or person with whom you have any formal, informal, written, or oral agreement. Also detail the items shared

(2) Has any other firm had an ownership interest in your firm at present or at any time in the past?

☐ Yes ☐ No If Yes, explain _____

(3) At present, or at any time in the past, has your firm:

- (a) Ever existed under different ownership, a different type of ownership, or a different name? ☐ Yes ☐ No
(b) Existed as a subsidiary of any other firm? ☐ Yes ☐ No
(c) Existed as a partnership in which one or more of the partners are/were other firms? ☐ Yes ☐ No
(d) Owned any percentage of any other firm? ☐ Yes ☐ No
(e) Had any subsidiaries? ☐ Yes ☐ No

(f) Served as a subcontractor with another firm constituting more than 25% of your firm's receipts? ☐ Yes ☐ No

(If you answered "Yes" to any of the questions in (2) and/or (3)(a)-(f), you may be asked to provide further details and explain whether the arrangement continues).

Section 3: MAJORITY OWNER INFORMATION



A. Identify the majority owner of the firm holding 51% or more ownership interest.

(1) Full Name: _____ (2) Title: _____ (3) Home Phone #: _____
() - _____

(4) Home Address (Street and Number): _____ City: _____ State: _____ Zip: _____
_____ - _____

(5) Gender: ☐ Male ☐ Female

(6) Ethnic group membership (Check all that apply):

- ☐ Black
☐ Hispanic
☐ Asian Pacific
☐ Native American
☐ Subcontinent Asian
☐ Other (specify) _____

(7) U.S. Citizenship: ☐ U.S. Citizen
☐ Lawfully Admitted Permanent Resident

(8) Number of years as owner: _____
(9) Percentage owned: _____ %
Class of stock owned: _____ Date acquired _____

(10) Initial investment to acquire ownership interest in firm:	Type	Dollar Value
	Cash	\$ _____
	Real Estate	\$ _____
	Equipment	\$ _____
	Other	\$ _____

Describe how you acquired your business:

- ☐ Started business myself.
☐ It was a gift from: _____
☐ I bought it from: _____
☐ I inherited it from: _____
☐ Other _____

(Attach documentation substantiating your investment)

B. Additional Owner Information

(1) Describe familial relationship to other owners and employees:

(2) Does this owner perform a management or supervisory function for any other business? ☐ Yes ☐ No
If Yes, identify: Name of Business: _____ Function/Title: _____

(3)(a) Does this owner own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.) ☐ Yes ☐ No
Identify the name of the business, and the nature of the relationship, and the owner's function at the firm:

(b) Does this owner work for any other firm, non-profit organization, or engage in any other activity more than 10 hours per week? If yes, identify this activity: _____

(4)(a) What is the personal net worth of this disadvantaged owner applying for certification? \$ _____

(b) Has any trust been created for the benefit of this disadvantaged owner(s)? ☐ Yes ☐ No
(If Yes, you may be asked to provide a copy of the trust instrument).

(5) Do any of your immediate family members, managers, or employees own, manage, or are associated with another company? ☐ Yes ☐ No If Yes, provide their name, relationship, company, type of business, and indicate whether they own or manage the company: (Please attach extra sheets, if needed): _____

Section 3: OWNER INFORMATION, Cont'd.



A. Identify all individuals, firms, or holding companies that hold LESS THAN 51% ownership interest in the firm (*Attach separate sheets for each additional owner*)

(1) Full Name: _____ (2) Title: _____ (3) Home Phone #: _____
() - _____

(4) Home Address (*Street and Number*): _____ City: _____ State: _____ Zip: _____
_____ - _____

(5) Gender: ☐ Male ☐ Female

(6) Ethnic group membership (*Check all that apply*)

- ☐ Black
- ☐ Hispanic
- ☐ Asian Pacific
- ☐ Native American
- ☐ Subcontinent Asian
- ☐ Other (*specify*) _____

(7) U.S. Citizenship:

- ☐ U.S. Citizen
- ☐ Lawfully Admitted Permanent Resident

(8) Number of years as owner: _____

(9) Percentage owned: _____ %

Class of stock owned: _____ Date acquired _____

(10) Initial investment

to acquire ownership interest in firm:	Type	Dollar Value
	Cash	\$ _____
	Real Estate	\$ _____
	Equipment	\$ _____
	Other	\$ _____

Describe how you acquired your business:

- ☐ Started business myself.
- ☐ It was a gift from: _____
- ☐ I bought it from: _____
- ☐ I inherited it from: _____
- ☐ Other _____

(*Attach documentation substantiating your investment*)

B. Additional Owner Information

(1) Describe familial relationship to other owners and employees:

(2) Does this owner perform a management or supervisory function for any other business? ☐ Yes ☐ No

If Yes, identify: Name of Business: _____ Function/Title: _____

(3)(a) Does this owner own or work for any other firm(s) that has a relationship with this firm? (*e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.*) ☐ Yes ☐ No

Identify the name of the business, and the nature of the relationship, and the owner's function at the firm:

(b) Does this owner work for any other firm, non-profit organization, or is engaged in any other activity more than 10 hours per week? If yes, identify this activity: _____

(4)(a) What is the personal net worth of this disadvantaged owner applying for certification? \$ _____

(b) Has any trust been created for the benefit of this disadvantaged owner(s)? ☐ Yes ☐ No

(*If Yes, you may be asked to provide a copy of the trust instrument.*)

(5) Do any of your immediate family members, managers, or employees own, manage, or are associated with another company? ☐ Yes ☐ No If Yes, provide their name, relationship, company, type of business, and indicate whether they own or manage: (*Please attach extra sheets, if needed*): _____

Section 4: CONTROL



A. Identify your firm's Officers and Board of Directors (If additional space is required, attach a separate sheet):

	Name	Title	Date Appointed	Ethnicity	Gender
(1) Officers of the Company	(a)				
	(b)				
	(c)				
	(d)				
(2) Board of Directors	(a)				
	(b)				
	(c)				
	(d)				

(3) Do any of the persons listed above perform a management or supervisory function for any other business?

☐ Yes ☐ No If Yes, identify for each:

Person: _____ Title: _____
 Business: _____ Function: _____

Person: _____ Title: _____
 Business: _____ Function: _____

(4) Do any of the persons listed in section A above own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.)

☐ Yes ☐ No

If Yes, identify for each:

Firm Name: _____ Person: _____
 Nature of Business Relationship: _____

B. Duties of Owners, Officers, Directors, Managers, and Key Personnel

1. Complete for all Owners who are responsible for the following functions of the firm (Attach separate sheets as needed).

A = Always F = Frequently	S = Seldom N = Never	Majority Owner (51% or more)				Minority Owner (49% or less)			
		Name: _____	Title: _____	Percent Owned: _____		Name: _____	Title: _____	Percent Owned: _____	
Sets policy for company direction/scope of operations		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Bidding and estimating		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Major purchasing decisions		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Marketing and sales		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Supervises field operations		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Attend bid opening and lettings		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Perform office management (billing, accounts receivable/payable, etc.)		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Hires and fires management staff		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Hire and fire field staff or crew		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Designates profits spending or investment		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Obligates business by contract/credit		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Purchase equipment		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Signs business checks		A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐



2. Complete for all Officers, Directors, Managers, and Key Personnel who are responsible for the following functions of the firm. (Attach separate sheets as needed).

	Officer/Director/Manager/Key Personnel				Officer/Director/Manager/Key Personnel			
A = Always F = Frequently S = Seldom N = Never	Name: _____	Title: _____	Race and Gender: _____	Percent Owned: _____	Name: _____	Title: _____	Race and Gender: _____	Percent Owned: _____
Sets policy for company direction/scope of operations	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Bidding and estimating	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Major purchasing decisions	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Marketing and sales	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Supervises field operations	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Attend bid opening and lettings	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Perform office management (billing, accounts receivable/payable, etc.)	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Hires and fires management staff	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Hire and fire field staff or crew	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Designates profits spending or investment	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Obligates business by contract/credit	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Purchase equipment	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐
Signs business checks	A ☐	F ☐	S ☐	N ☐	A ☐	F ☐	S ☐	N ☐

Do any of the persons listed in B1 or B2 perform a management or supervisory function for any other business? If Yes, identify the person, the business, and their title/function: _____

Do any of the persons listed above own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.) If Yes, describe the nature of the business relationship: _____

C. Inventory: Indicate your firm's inventory in the following categories (Please attach additional sheets if needed):=

1. Equipment and Vehicles

Make and Model	Current Value	Owned or Leased by Firm or Owner?	Used as collateral?	Where is item stored?
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				

2. Office Space

Street Address Owned or Leased by Firm or Owner? Current Value of Property or Lease

3. Storage Space (Provide signed lease agreements for the properties listed)



Street Address

Owned or Leased by
Firm or Owner?

Current Value of Property or Lease

D. Does your firm rely on any other firm for management functions or employee payroll? ☐ Yes ☐ No

E. Financial/Banking Information (Provide bank authorization and signature cards)

Name of bank: _____ City and State: _____

The following individuals are able to sign checks on this account: _____

Name of bank: _____ City and State: _____

The following individuals are able to sign checks on this account: _____

Bonding Information: If you have bonding capacity, identify the firm's bonding aggregate and project limits:
Aggregate limit \$ _____ Project limit \$ _____

F. Identify all sources, amounts, and purposes of money loaned to your firm including from financial institutions. Identify whether you the owner and any other person or firm loaned money to the applicant DBE/ACDBE. Include the names of any persons or firms guaranteeing the loan, if other than the listed owner. (Provide copies of signed loan agreements and security agreements).

Name of Source	Address of Source	Name of Person Guaranteeing the Loan	Original Amount	Current Balance	Purpose of Loan
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____

G. List all contributions or transfers of assets to/from your firm and to/from any of its owners or another individual over the past two years (Attach additional sheets if needed):

Contribution/Asset	Dollar Value	From Whom Transferred	To Whom Transferred	Relationship	Date of Transfer
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____

H. List current licenses/permits held by any owner and/or employee of your firm (e.g. contractor, engineer, architect, etc.) (Attach additional sheets if needed):

Name of License/Permit Holder	Type of License/Permit	Expiration Date	State
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____



I. List the three largest contracts completed by your firm in the past three years, if any:

Name of Owner/Contractor	Name/Location of Project	Type of Work Performed	Dollar Value of Contract
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

J. List the three largest active jobs on which your firm is currently working:

Name of Prime Contractor and Project Number	Location of Project	Type of Work	Project Start Date	Anticipated Completion Date	Dollar Value of Contract
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____

Additional Information:



SECTION 5 - AIRPORT CONCESSION

(ACDBE APPLICANTS ONLY)

A. I am applying for ACDBE certification to: *(check all that apply)*

☐ Operate a concession at an airport ☐ Supply a good or service to an airport concessionaire

B. Does the applicant firm own/operate any off-airport locations? ☐ Yes ☐ No *If Yes, identify the following*

Type of Business (e.g., F&B, News & Gift, Retail, Duty Free, Advertising, etc.)	Lease Term (years)	Lease Start Date	Address / Location	Annual Gross Receipts Generated

C. Does the applicant firm currently own/operate any airport concession locations? ☐ Yes ☐ No *If Yes, supply the following information:*

Airport Name	Concession Type (e.g., F&B, News & Gift, Retail, Duty Free, Advertising, etc.)	Number of Leases	Number of Locations	Annual Gross Receipts Generated	Lease Type (e.g. Direct Lease, Subcontract Management Agreement, etc. enter all that apply to the leases listed)

D. Does the applicant firm have any affiliates? ☐ Yes ☐ No *If Yes, provide the following information concerning any locations owned/operated by affiliate firms.*

Airport Name	Concession Type (e.g., F&B, News & Gift, Retail, Duty Free, Advertising, etc.)	Number of Leases	Number of Locations	Annual Gross Receipts Generated	Lease Type (e.g. Direct Lease, Subcontract Management Agreement, etc. enter all that apply to the leases listed)

E. Is the ACDBE applicant firm a participant in any joint ventures? ☐ Yes ☐ No *If Yes, attach all original and any amended Joint Venture Agreements and any amendments to the agreements.*



AFFIDAVIT OF CERTIFICATION

This form must be signed and notarized for each owner upon which disadvantaged status is relied.

A MATERIAL OR FALSE STATEMENT OR OMISSION MADE IN CONNECTION WITH THIS APPLICATION IS SUFFICIENT CAUSE FOR DENIAL OF CERTIFICATION, REVOCATION OF A PRIOR APPROVAL, INITIATION OF SUSPENSION OR DEBARMENT PROCEEDINGS, AND MAY SUBJECT THE PERSON AND/OR ENTITY MAKING THE FALSE STATEMENT TO ANY AND ALL CIVIL AND CRIMINAL PENALTIES AVAILABLE PURSUANT TO APPLICABLE FEDERAL AND STATE LAW.

I _____ (full name printed),
swear or affirm under penalty of law that I am

_____ (title) of the applicant firm
_____ and that I

have read and understood all of the questions in this application and that all of the foregoing information and statements submitted in this application and its attachments and supporting documents are true and correct to the best of my knowledge, and that all responses to the questions are full and complete, omitting no material information. The responses include all material information necessary to fully and accurately identify and explain the operations, capabilities and pertinent history of the named firm as well as the ownership, control, and affiliations thereof.

I recognize that the information submitted in this application is for the purpose of inducing certification approval by a government agency. I understand that a government agency may, by means it deems appropriate, determine the accuracy and truth of the statements in the application, and I authorize such agency to contact any entity named in the application, and the named firm's bonding companies, banking institutions, credit agencies, contractors, clients, and other certifying agencies for the purpose of verifying the information supplied and determining the named firm's eligibility.

I agree to submit to government audit, examination and review of books, records, documents and files, in whatever form they exist, of the named firm and its affiliates, inspection of its places(s) of business and equipment, and to permit interviews of its principals, agents, and employees. I understand that refusal to permit such inquiries shall be grounds for denial of certification.

If awarded a contract, subcontract, concession lease or sublease, I agree to promptly and directly provide the prime contractor, if any, and the Department, recipient agency, or federal funding agency on an ongoing basis, current, complete and accurate information regarding (1) work performed on the project; (2) payments; and (3) proposed changes, if any, to the foregoing arrangements.

I agree to provide written notice to the recipient agency or Unified Certification Program of any material change in the information contained in the original application within 30 calendar days of such change (e.g., ownership changes, address/telephone number, personal net worth exceeding \$1.32 million, etc.).

I acknowledge and agree that any misrepresentations in this application or in records pertaining to a contract or subcontract will be grounds for terminating any contract or subcontract which may be awarded; denial or revocation of certification; suspension and debarment; and for initiating action under federal and/or state law concerning false statement, fraud or other applicable offenses.

I certify that I am a socially and economically disadvantaged individual who is an owner of the above-referenced firm seeking certification as a Disadvantaged Business Enterprise or Airport Concession Disadvantaged Business Enterprise. In support of my application, I certify that I am a member of one or more of the following groups, and that I have held myself out as a member of the group(s): (Check all that apply):

☐ Female ☐ Black American ☐ Hispanic American
☐ Native American ☐ Asian-Pacific American
☐ Subcontinent Asian American ☐ Other (specify) _____

I certify that I am socially disadvantaged because I have been subjected to racial or ethnic prejudice or cultural bias, or have suffered the effects of discrimination, because of my identity as a member of one or more of the groups identified above, without regard to my individual qualities.

I further certify that my personal net worth does not exceed \$1.32 million, and that I am economically disadvantaged because my ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same or similar line of business who are not socially and economically disadvantaged.

I declare under penalty of perjury that the information provided in this application and supporting documents is true and correct.

Signature _____ (DBE/ACDBE Applicant) _____ (Date)

NOTARY CERTIFICATE

UNIFORM CERTIFICATION APPLICATION SUPPORTING DOCUMENTS CHECKLIST



In order to complete your application for DBE or ACDBE certification, you must attach copies of all of the following **REQUIRED** documents. A failure to supply any information requested by the UCP may result in your firm denied DBE/ACDBE certification.

Required Documents for All Applicants

- ☐ Résumés (that include places of employment with corresponding dates), for all owners, officers, and key personnel of the applicant firm
- ☐ Personal Net Worth Statement for each socially and economically disadvantaged owners who the applicant firm relies upon to satisfy the Regulation's 51% ownership requirement.
- ☐ Personal Federal tax returns for the past 3 years, if applicable, for each disadvantaged owner
- ☐ Federal tax returns (and requests for extensions) filed by the firm and its affiliates with related schedules, for the past 3 years.
- ☐ Documented proof of contributions used to acquire ownership for each owner (e.g., both sides of cancelled checks)
- ☐ Signed loan and security agreements, and bonding forms
- ☐ List of equipment and/or vehicles owned and leased including VIN numbers, copy of titles, proof of ownership, insurance cards for each vehicle.
- ☐ Title(s), registration certificate(s), and U.S. DOT numbers for each truck owned or operated by your firm
- ☐ Licenses, license renewal forms, permits, and haul authority forms
- ☐ Descriptions of all real estate (including office/storage space, etc.) owned/leased by your firm and documented proof of ownership/signed leases
- ☐ Documented proof of any transfers of assets to/from your firm and/or to/from any of its owners over the past 2 years
- ☐ DBE/ACDBE and SBA 8(a), SDB, MBE/WBE certifications, denials, and/or decertification's, if applicable; and any U.S. DOT appeal decisions on these actions.
- ☐ Bank authorization and signatory cards
- ☐ Schedule of salaries (or other remuneration) paid to all officers, managers, owners, and/or directors of the firm
- ☐ List of all employees, job titles, and dates of employment.
- ☐ Proof of warehouse/storage facility ownership or lease arrangements

Partnership or Joint Venture

- ☐ Original and any amended Partnership or Joint Venture Agreements

Corporation or LLC

- ☐ Official Articles of Incorporation (signed by the state official)
- ☐ Both sides of all corporate stock certificates and your firm's stock transfer ledger
- ☐ Shareholders' Agreement(s)
- ☐ Minutes of all stockholders and board of director's meetings

- ☐ Corporate by-laws and any amendments
- ☐ Corporate bank resolution and bank signature cards
- ☐ Official Certificate of Formation and Operating Agreement with any amendments (for LLCs)

Optional Documents to Be Provided on Request

The certifying agency to which you are applying may require the submission of the following documents. If requested to provide these document, you must supply them with your application or at the on-site visit.

- ☐ Proof of citizenship
- ☐ Insurance agreements for each truck owned or operated by your firm
- ☐ Audited financial statements (if available)
- ☐ Trust agreements held by any owner claiming disadvantaged status
- ☐ Year-end balance sheets and income statements for the past 3 years (or life of firm, if less than three years)

Suppliers

- ☐ List of product lines carried and list of distribution equipment owned and/or leased



Anejo A

Firma Autorizada

Fecha: _____

Nombre Compañía / No. Licitador

[] Negocio privado [] Corporación, o [] Asociación por la presente somete su oferta.

Seguro Social Patronal: _____

Hacemos constar que hemos leído todas las instrucciones, términos, condiciones y cláusulas del pliego de subastas.

La dirección sometida con esta oferta es la dirección donde recibimos nuestra correspondencia.

Yo, el firmante, CERTIFICO que estoy autorizado a firmar esta oferta y mi nombre y firma constan registradas en el Registro de Licitadores.

Nombre en letra de molde

Firma

Puesto o cargo que ocupa

Dirección Postal:

Dirección Física:

No. Teléfono y Fax:

Corporación Foránea

Nombre del Agente Residente

Dirección

Teléfonos / Fax

Y PARA QUE ASÍ CONSTE, juro y firmo la presente declaración en _____ a _____ de _____ de 20____.

DECLARANTE

Testimonio Número: _____

JURADO Y SUSCRITO ante mí por _____, de las circunstancias personales anteriormente mencionadas y a quien identifiqué mediante _____, en _____, hoy _____ de _____ de 20____.

NOTARIO PÚBLICO



Anejo B

AUTORIZACIÓN DE DUEÑO O SOCIO PRINCIPAL DE NEGOCIO NO INCORPORADO

ESTE FORMULARIO LO CUMPLIMENTARÁN LOS DUEÑOS DE NEGOCIOS NO REGISTRADOS O PARA CAMBIARLA PERSONA AUTORIZADA EN EL REGISTRO ÚNICO DE LICITADORES A FIRMAR OFERTAS

YO, _____ mayor de edad, _____, vecino de _____, Puerto Rico con Seguro Social Patronal _____ - _____ y dueño/socio principal de la empresa _____ que no es una corporación, por la presente AUTORIZO a comparecer en mi representación y la del negocio en las subastas del gobierno del Estado Libre Asociado de Puerto Rico, y me comprometo a honrar los precios ofrecidos por él en estas subastas.

Dado hoy ____ de _____ de 20____, en _____, Puerto Rico.

Nombre en letra de molde

Firma

Jurada y suscrita ante mí, la "Autorización para Comparecer en Subastas del gobierno del Estado Libre Asociado de Puerto Rico", expedida por el declarante cuyas señas han sido mencionadas y a quien doy fe de conocer () personalmente () por dichos, y lo he identificado mediante _____.

En _____, Puerto Rico, a _____ de _____ de 20____.

Abogado-Notario



Anejo C

RESOLUCIÓN CORPORATIVA

Yo _____, mayor de edad, (estado civil) _____, (profesión) _____, y vecino de _____, en calidad de Secretario de la Corporación _____, certifico:

Que la Junta de Directores se reunió en sesión ordinaria celebrada el día _____ de _____ de 20____, a la cual asistió el quórum reglamentario y resolvió autorizar a los oficiales nombrados a continuación, para que cualquiera de ellos, a nombre y en representación de esta corporación, puedan comparecer a los procesos de compra de bienes y servicios no profesionales realizados por las agencias de la Rama Ejecutiva del Estado Libre Asociado de Puerto Rico, corporaciones públicas y municipios, así como firmar ofertas y suscribir todo tipo de descuento requerido como parte de dicha comparecencia, por lo que sus firmas, las cuales se hacen constar en este documento, obligan a esta Corporación.

Nombre, firma y posición de persona autorizada a firmar ofertas

Nombre, firma y posición de persona autorizada a firmar ofertas

Nombre, firma y posición de persona autorizada a firmar ofertas

Y PARA QUE ASÍ CONSTE, firmo y sello esta Certificación con el sello de la Corporación, en San Juan, Puerto Rico, hoy _____ de _____ de 20____.

Secretario de la Corporación

Testimonio Número: _____

JURADA Y SUSCRITA ante mí por _____, mayor de edad, _____ y vecino(a) de _____, en su carácter de Secretario de la Corporación y a quien identifiqué mediante _____ en _____, Puerto Rico, hoy _____ de _____ de 20____.

NOTARIO PÚBLICO



ANEJO D

CERTIFICACIÓN DE AUSENCIA DE CONFLICTO DE INTERÉS

Subasta Núm.: _____
PARA LA ADQUISICIÓN DE _____

Yo, _____, de edad legal, de estado civil (casado/soltero), y residente de _____, he sido designado como representante autorizado de _____ ("el proponente") para el proceso de subasta en referencia, de la Autoridad Metropolitana de Autobuses (AMA). En virtud del interés de participar en la subasta en referencia, y consciente de que la AMA está altamente comprometida con lograr una administración de excelencia y promover el uso efectivo de los recursos del gobierno en beneficio de Puerto Rico, y por consiguiente apoyar y cumplir con la Ley 2-2018, conocida como el Código Anti-Corrupción para el Nuevo Puerto Rico, según enmendada, incluyendo el Título III, Código de Ética para Contratistas, Suplidores y Solicitantes de Incentivos Económicos del Gobierno de Puerto Rico, certifico que:

1. Ningún servidor público o empleado de la AMA tiene un interés pecuniario con alguno de los Proponentes que participan en este Proceso de Adquisición, ni lo han tenido -directa o indirectamente- en los últimos cuatro (4) años.
2. Ningún servidor público o empleado de la AMA ha solicitado o aceptado, directa o indirectamente, por parte de cualquier persona o entidad con interés en este Proceso de Adquisición, incluyendo al Proponente, bienes de cualquier valor económico -incluyendo regalos, propinas, favores, servicios, donativos, préstamos y/o cualquier otra cosa de valor monetario- para sí y/o para algún miembro de su familia inmediata y/o familiares y/o para cualquier otra persona, como mecanismo de pago por llevar a cabo los deberes y responsabilidades de su posición relacionado a este Proceso de Adquisición.
3. Ningún servidor público o empleado de la AMA ha solicitado o aceptado, directa o indirectamente, por parte de cualquier persona o entidad, incluyendo al Proponente, bienes de cualquier valor económico -incluyendo regalos, propinas, favores, servicios, donativos, préstamos y/o cualquier otra cosa de valor monetario- para sí y/o para algún miembro de su familia inmediata y/o familiares

Iniciales del Proponente: _____

Página 1 / 2



y/o para cualquier otra persona, a cambio de que su actuación influya el resultado final de este Proceso de Adquisición.

4. No tengo una relación de parentesco dentro del cuarto (4to) grado de consanguinidad y/o segundo (2do) de afinidad, con algún servidor público o empleado de la AMA que participe o influencie -o tenga la capacidad para hacerlo- en las decisiones institucionales de la AMA.
5. En el caso de que el Proponente revele a la AMA un conflicto de intereses aparente, potencial o real, la AMA tomará las medidas apropiadas para abordar la divulgación tomando las siguientes medidas, que incluyen, entre otras, eliminar, mitigar o neutralizar el conflicto aparente, potencial o real, cuando corresponda, a través de medios tales como garantizar un equilibrio de puntos de vista, divulgación con los descargos de responsabilidad apropiados, restringiendo o modificando el trabajo a realizar para evitar o reducir el conflicto aparente, potencial o real.
6. Si el Proponente descubre un conflicto de intereses aparente, potencial o real después de que concluya el Proceso de Adquisición, hará una divulgación completa por escrito a la AMA. Esta divulgación incluirá una descripción de las acciones que el Proponente ha tomado o se propone tomar para evitar, mitigar o neutralizar el conflicto de intereses aparente, potencial o real.
7. El Proponente no tiene intereses presentes o actualmente planificados (financieros, contractuales, organizativos o de otro tipo) relacionados con el contrato o la orden de tarea que puedan resultar de este Proceso de Adquisición que crearía cualquier conflicto de intereses aparente, real o potencial (incluidos los conflictos de intereses para los miembros de la familia inmediata: cónyuges, padres, hijos) que afectaría su capacidad de ser imparcial, asistencia o asesoramiento técnicamente sólidos y objetivos, o que den lugar a que se le otorgue una ventaja competitiva desleal.
8. El Proponente ha ejercido, y continuará ejerciendo, la debida diligencia para evitar, identificar, eliminar o mitigar cualquier conflicto de intereses aparente, potencial o real a satisfacción de la AMA.
9. El proponente hace constar que su oferta es genuina y no colusoria o falsa; y que no ha conspirado, hecho contubernio, o acordado, directa o indirectamente, con ningún otro licitador o persona, presentar una oferta falsa, o abstenerse de licitar y no ha buscado en ningún asunto, directa o indirectamente, por acuerdo o contubernio, comunicación o conferencia, con cualquier persona, para fijar el precio de oferta del declarante o de cualquier otro licitador, o para fijar cualquier elemento general, de ganancia o costo de dicho precio de oferta, o del de cualquier otro postor, o para asegurar cualquier ventaja contra la AMA.

Iniciales del proponente: _____



En virtud de lo anterior, yo, el/la Representante Autorizado(a) del Proponente, también, certifico que:

Tengo el compromiso de cumplir con las disposiciones aplicables de la Ley 2-2018, conocida como el Código Anti-Corrupción para el Nuevo Puerto Rico, según enmendada, incluyendo el Título III, Código de Ética para Contratistas, Suplidores y Solicitantes de Incentivos Económicos del Gobierno de Puerto Rico y reconocemos que esta aceptación es una condición esencial e indispensable para que se puedan efectuar transacciones o que se establezcan acuerdos con la AMA.

Muy en especial, certificamos que la persona natural o jurídica, que aquí desea participar de la adjudicación de una subasta o en el otorgamiento de algún contrato, con la AMA, para la realización de servicios o la venta o entrega de bienes, que ni la persona natural o jurídica, o cualquier presidente, vicepresidente, director, director ejecutivo, o miembro de una junta de oficiales o junta de directores, o personas que desempeñen funciones equivalentes para la persona jurídica, ha sido convicta o se ha declarado culpable de cualquiera de los delitos enumerados en la Sección 6.8 de la [Ley 8-2017](#), según enmendada, conocida como "Ley Administración y Transformación de los Recursos Humanos en el Gobierno de Puerto Rico", o por cualquiera de los delitos contenidos en el referido Código.

En _____, Puerto Rico, hoy, _____.

Firma:

Nombre en letra de molde:

Número de seguro social:

Jurada y suscrita ante mí, la "Autorización para Comparecer en Subastas del gobierno del Estado Libre Asociado de Puerto Rico", expedida por el declarante cuyas señas han sido mencionadas y a quien doy fe de conocer () personalmente () por dichos, y lo he identificado mediante

En _____, Puerto Rico, a ____ de ____ de 20__.

Abogado-Notario

Iniciales del proponente: _____

Pág. 1 de 2





ANEJO E
CERTIFICACIÓN DE AUSENCIA DE CONFLICTO DE INTERÉS

SUBASTA INFORMAL 45-2526-001
PROYECTO DE MEJORAS AL TERMINAL DE ITURREGUI
REQUISICION 20853

Yo, _____, de edad legal, de estado civil (casado/soltero), y residente de _____, he sido designado como representante autorizado de _____ ("el proponente") para el proceso de subasta en referencia, de la Autoridad Metropolitana de Autobuses (AMA). En virtud del interés de participar en la subasta en referencia, y consciente de que la AMA está altamente comprometida con lograr una administración de excelencia y promover el uso efectivo de los recursos del gobierno en beneficio de Puerto Rico, y por consiguiente apoyar y cumplir con la Ley 2-2018, conocida como el Código Anti-Corrupción para el Nuevo Puerto Rico, según enmendada, incluyendo el Título III, Código de Ética para Contratistas, Suplidores y Solicitantes de Incentivos Económicos del Gobierno de Puerto Rico, certifico que:

1. Ningún servidor público o empleado de la AMA tiene un interés pecuniario con alguno de los Proponentes que participan en este Proceso de Adquisición, ni lo han tenido -directa o indirectamente- en los últimos cuatro (4) años.
2. Ningún servidor público o empleado de la AMA ha solicitado o aceptado, directa o indirectamente, por parte de cualquier persona o entidad con interés en este Proceso de Adquisición, incluyendo al Proponente, bienes de cualquier valor económico -incluyendo regalos, propinas, favores, servicios, donativos, préstamos y/o cualquier otra cosa de valor monetario- para sí y/o para algún miembro de su familia inmediata y/o familiares y/o para cualquier otra persona, como mecanismo de pago por llevar a cabo los deberes y responsabilidades de su posición relacionado a este Proceso de Adquisición.
3. Ningún servidor público o empleado de la AMA ha solicitado o aceptado, directa o indirectamente, por parte de cualquier persona o entidad, incluyendo al Proponente, bienes de cualquier valor económico -incluyendo regalos, propinas, favores, servicios, donativos, préstamos y/o cualquier otra cosa de valor monetario- para sí y/o para algún miembro de su familia inmediata y/o familiares y/o para cualquier otra persona, a cambio de que su actuación influya el resultado final de este Proceso de Adquisición.
4. No tengo una relación de parentesco dentro del cuarto (4to) grado de consanguinidad y/o segundo (2do) de afinidad, con algún servidor público o empleado de la AMA que participe o inflencie -o tenga la capacidad para hacerlo- en las decisiones institucionales de la AMA.

5. En el caso de que el Proponente revele a la AMA un conflicto de intereses aparente, potencial o real, la AMA tomará las medidas apropiadas para abordar la divulgación tomando las siguientes medidas, que incluyen, entre otras, eliminar, mitigar o neutralizar el conflicto aparente, potencial o real, cuando corresponda, a través de medios tales como garantizar un equilibrio de puntos de vista, divulgación con los descargos de responsabilidad apropiados, restringiendo o modificando el trabajo a realizar para evitar o reducir el conflicto aparente, potencial o real.
6. Si el Proponente descubre un conflicto de intereses aparente, potencial o real después de que concluya el Proceso de Adquisición, hará una divulgación completa por escrito a la AMA. Esta divulgación incluirá una descripción de las acciones que el Proponente ha tomado o se propone tomar para evitar, mitigar o neutralizar el conflicto de intereses aparente, potencial o real.
7. El Proponente no tiene intereses presentes o actualmente planificados (financieros, contractuales, organizativos o de otro tipo) relacionados con el contrato o la orden de tarea que puedan resultar de este Proceso de Adquisición que crearía cualquier conflicto de intereses aparente, real o potencial (incluidos los conflictos de intereses para los miembros de la familia inmediata: cónyuges, padres, hijos) que afectaría su capacidad de ser imparcial, asistencia o asesoramiento técnicamente sólidos y objetivos, o que den lugar a que se le otorgue una ventaja competitiva desleal.
8. El Proponente ha ejercido, y continuará ejerciendo, la debida diligencia para evitar, identificar, eliminar o mitigar cualquier conflicto de intereses aparente, potencial o real a satisfacción de la AMA.
9. El proponente hace constar que su oferta es genuina y no colusoria o falsa; y que no ha conspirado, hecho contubernio, o acordado, directa o indirectamente, con ningún otro licitador o persona, presentar una oferta falsa, o abstenerse de licitar y no ha buscado en ningún asunto, directa o indirectamente, por acuerdo o contubernio, comunicación o conferencia, con cualquier persona, para fijar el precio de oferta del declarante o de cualquier otro licitador, o para fijar cualquier elemento general, de ganancia o costo de dicho precio de oferta, o del de cualquier otro postor, o para asegurar cualquier ventaja contra la AMA.

En virtud de lo anterior, yo, el/la Representante Autorizado(a) del Proponente, también, certifico que:

Tengo el compromiso de cumplir con las disposiciones aplicables de la Ley 2-2018, conocida como el Código Anti-Corrupción para el Nuevo Puerto Rico, según enmendada, incluyendo el Título III, Código de Ética para Contratistas, Suplidores y Solicitantes de Incentivos Económicos del Gobierno de Puerto Rico y reconocemos que esta aceptación es una condición esencial e indispensable para que se puedan efectuar transacciones o que se establezcan acuerdos con la AMA.

Muy en especial, certificamos que la persona natural o jurídica, que aquí desea participar de la adjudicación de una subasta o en el otorgamiento de algún contrato, con la AMA, para la realización de servicios o la venta o entrega de bienes, que ni la persona natural o jurídica, o cualquier presidente, vicepresidente, director, director ejecutivo, o miembro de una junta de oficiales o junta de directores, o personas que desempeñen funciones equivalentes para la persona jurídica, ha sido convicta o se ha declarado culpable de cualquiera de los delitos enumerados en la Sección 6.8 de la [Ley 8-2017](#), según enmendada, conocida como "Ley Administración y Transformación de los Recursos Humanos en el Gobierno de Puerto Rico", o por cualquiera de los delitos contenidos en el referido Código.

En _____, Puerto Rico, hoy, _____.

Firma:

Nombre en letra de molde:

Número de seguro social:

Jurada y suscrita ante mí, la "Autorización para Comparecer en Subastas del Gobierno del Estado Libre Asociado de Puerto Rico", expedida por el declarante cuyas señas han sido mencionadas y a quien doy fe de conocer () personalmente () por dichos, y lo he identificado mediante _____.

En _____, Puerto Rico, a _____ de _____ de 20__.

Abogado-Notario

VI. HOJA DE OFERTAS



AMA-01

HOJA DE OFERTAS

Subasta Informal Núm. 45-2526-001

Nombre de la Empresa:

Nombre del Representante Autorizado:

Dirección Postal:

Teléfono:

Correo Electrónico:

Número de Licitador (RUL)*:

EXTERIOR WORK					
PARTIDA	DESCRIPCIÓN	UNIDAD	CANTIDAD	COSTO UNITARIO	COSTO POR PARTIDA
1	Entrance sidewalk cleaning	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
2	Sidewalk repair	SF	310	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
3	Entrance Canopy	SF	88	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
4	Exit canopies canvas Rep.	SF	175	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
5	Bus parking repair	SF	120	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

6	Exterior Paint	SF	5000	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
INTERIOR WORK					
PARTIDA	DESCRIPCIÓN	UNIDAD	CANTIDAD	COSTO UNITARIO	COSTO POR PARTIDA
1	Bird screen @ ceiling	SF	664	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
2	Lighting fixtures led 24" x 24"	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
3	Bath exhaust fans	EA	7	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
4	Rolling grilles 19" -6"x8'	EA	3	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
5	Roll-up door 10'x8'	EA	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

6	Metal door (36"x80") w/hard	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
7	Alum doors (30"x80") w/hard	EA	9	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
8	Security windows 24"x19"	EA	8	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
9	Remove & rub peritext clg.	SF	1321	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
10	New fire hose cabinet	EA	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
11	Interior paint (all surfaces)	sf	5000	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

12	Repair wall finish (all)	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
13	Repair glaze tiles @ baths	SF	16	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
14. PLUMBING FIXTURES & ACC.					
PARTIDA	DESCRIPCIÓN	UNIDAD	CANTIDAD	COSTO UNITARIO	COSTO POR PARTIDA
a	Water closets	EA	9	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
b	Lavatories	EA	5	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
c	Vanities	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

d	Urinals	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
e	Toilets part. Cubicules	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
f	Urinal screen	EA	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
g	Mirrors 36" x 36"	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
h	Mirrors 24" x 12"	EA	5	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
i	Waste basket & napk. Disp.	EA	7	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
j	Soap dispenser	EA	7	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

k	Sand paper holder	EA	9	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
15	Electric outlets & switches	EA	30	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
16	GFI outlets	EA	2	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
17	Electric panel @ coffee shop	EA	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
18	Floor & wall cleaning	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
19	Floor & wall cleaning	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

a	Roof sealer @ concrete	SF	2,300	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
b	Repair lobby roof beams	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
c	Repair roof drains (lobby & MR)	EA	6	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
d	Repair Metal CLG. (lobby & MR)	SF	1168	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
e	Paint lobby beams	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
f	Clean ceilings metals	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				

OTHERS					
PARTIDA	DESCRIPCIÓN	UNIDAD	CANTIDAD	COSTO UNITARIO	COSTO POR PARTIDA
a	Water Tank System	LS	1	\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
b	General conditions & Insurance			\$	\$
	Especificaciones:				
	Términos y Condiciones:				
	Garantía:				
	Término de Entrega:				
Oferta				\$	
Precio Adjudicación \$					
Si opta por no someter oferta, indique la justificación si desea ser considerado en futuras ocasiones.					

Instrucciones:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Para cada partida, incluya una breve descripción del bien (incluyendo marca) o servicio solicitado por la
- Indique la unidad y la cantidad ofrecida, así como el costo unitario y el costo unitario en los respectivos
- Multiplique el costo unitario por la cantidad ofrecida y colóquelo en la columna de "costo por partida".
- En la línea de "Especificaciones", describa las características de forma, función o utilidad del bien ofrecido,
- En la Línea de "Términos y Condiciones", indique si acepta aquellos establecidos en las intrucciones de esta
- Coloque el término de cobertura de "Garantía". En la columna de unidad, indique si son meses o años, y
- En la línea de "Término de Entrega", exprese la unidad (horas, días, meses) y el número bajo la columna de
- Recuerde indicar si existe alguna información confidencial o que deba permanecer protegida.
- Al firmar este documento, y someterlo ante la consideración de la AMA, el representante autorizado de la
- Recuerde proveer certificación en caso de reclamar exclusividad de un bien o servicio no profesional.

Firma:



Indique si esta es una oferta que enmienda alguna otra sometida previamente.

* En caso de no poseer certificación del RUL, siga las instrucciones dispuestas en la Sección R de las instrucciones de la Subasta Informal.

