Board of Directors Agenda

December 18, 2025

Click link to access the meeting:

https://www.zoomgov.com/j/1602805839

Zoom Meeting ID

Ways to Join

Computer: Click the link above. You will be prompted to run the Zoom browser or Zoom application. Once signed on to the meeting, you will have the option to join using your computer audio system or phone.

Webinar Features:

Raise Hand	▶	Use the **raise hand** feature every time you wish to make a public comment.
CC	▶	Participants can enable **closed captioning** by clicking the CC icon. You may also view the full transcript and change the font size by clicking 'subtitle settings'. These features are not available via phone.
	▶	This symbol shows you are **muted**, click this icon to unmute your microphone.
	▶	This symbol shows you are currently **unmuted**, click this button to mute your microphone.
	▶	The chat feature should be used by panelists and attendees solely for "housekeeping" matters as comments made through this feature will not be retained as part of the meeting record. See the **Live Verbal Public Comment** for instructions on how to make a public comment.

Smartphone or Tablet: Download the Zoom app and join the meeting by clicking the link or using the webinar ID (found in the link).

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1. If you are joining the meeting audio by phone and viewing the meeting on a device, dial the number provided in the 'join audio' phone call tab of the initial pop-up, and enter the Meeting ID (found in the link).
2. If you are joining by phone only, dial: **+1-669-900-9128** or **+1-253-215-8782** and type the meeting ID found in the link, press #. You will have access to the meeting audio, **but will NOT be able to view the PowerPoint presentations.**

Live Verbal Public Comments: Use the 'Raise Hand' icon every time you wish to make a public comment on an item. Raise your hand once the agenda item you wish to comment on has been called. In person public comments will be taken first, virtual attendees will be taken in the order in which they raise their hand. Requests to speak will not be taken after the public comment period ends, unless under the Chair's discretion. General Public Comment, at the beginning of the Board of Directors meeting only, will be limited to five speakers. Additional speakers with general public comments will be heard at the end of the meeting. Two-minutes of time is allotted per speaker, unless otherwise directed by the Chair.

Public Comments Made Via Zoom

1. Click the link found at the top of this instruction page
2. Click the raise hand icon located in the bottom center of the platform
3. The Clerk will announce your name when it is your turn to speak
4. Unmute yourself to speak

Public Comments Made by Phone Only

1. Dial **+1-669-900-9128**
2. Type in the zoom meeting ID found in the link and press #
3. Dial *9 to raise your hand via phone
4. The Clerk will call out the last 4 digits of your phone number to announce you are next to speak
5. Dial *6 to unmute yourself

Written Public Comments (before the meeting): Written public comments will be recorded in the public record and will be provided to MTS Board Members in advance of the meeting. Comments must be emailed or mailed to the Clerk of the Board* by 4:00pm the day prior to the meeting.

Translation Services: Requests for translation services can be made by contacting the Clerk of the Board* at least four working days in advance of the meeting.

In-Person Participation: In-person public comments will be heard first. Following in-person public comments, virtual attendees will be heard in the order in which they raise their hand via the Zoom platform. Speaking time will be limited to two minutes per person, unless specified by the Chairperson. Requests to speak will not be taken after the public comment period ends, unless under the Chair's discretion.

Instructions for providing in-person public comments:

1. Fill out a speaker slip located at the entrance of the Board Room;
2. Submit speaker slip to MTS staff seated at the entrance of the Board Room;
3. When your name is announced, please approach the podium located on the right side of the dais to make your public comments.

Members of the public are permitted to make general public comment at the beginning of the agenda or specific comments referencing items on the agenda during the public comment period. General Public Comment, at the beginning of the Board of Directors meeting only, will be limited to five speakers. Additional speakers with general public comments will be heard at the end of the meeting.

Assistive Listening Devices (ALDs): ALDs are available from the Clerk of the Board* prior to the meeting and are to be returned at the end of the meeting.

Reasonable Accommodations: As required by the Americans with Disabilities Act (ADA), requests for agenda information in an alternative format or to request reasonable accommodations to facilitate meeting participation, please contact the Clerk of the Board* at least two working days prior to the meeting.

***Contact Information:** Contact the Clerk of the Board via email at ClerkoftheBoard@sdmts.com, phone at **(619) 398-9561** or by mail at **1255 Imperial Ave. Suite 1000, San Diego CA 92101.**

Agenda de la Junta de Directores

December 18, 2025

Haga clic en el enlace para acceder a la reunión:

https://www.zoomgov.com/j/1602805839

ID de la reunión en Zoom

Formas de Participar

Computadora: Haga clic en el enlace más arriba. Recibirá instrucciones para operar el navegador de Zoom o la aplicación de Zoom. Una vez que haya iniciado sesión en la reunión, tendrá la opción de participar usando el sistema de audio de su computadora o teléfono.

Funciones del Seminario En Línea:

Levantar la mano	▶	Use la herramienta de **levantar la mano** cada vez que desee hacer un comentario público.
CC	▶	Los participantes pueden habilitar **el subtitulado** haciendo clic en el ícono CC. También puede ver la transcripción completa y cambiar el tamaño de letra haciendo clic en “configuración de subtítulos”. Estas herramientas no están disponibles por teléfono.
	▶	Este símbolo indica que usted se encuentra en **silencio**, haga clic en este ícono para quitar el silenciador de su micrófono.
	▶	Este símbolo indica que su micrófono se encuentra **encendido**. Haga clic en este símbolo para silenciar su micrófono.
	▶	La herramienta de chat deben usarla los panelistas y asistentes únicamente para asuntos “pertinentes a la reunión”, ya que comentarios realizados a través de esta herramienta no se conservarán como parte del registro de la reunión. Consulte el **Comentario público verbal** en vivo para obtener instrucciones sobre cómo hacer un comentario público.

Teléfono Inteligente o Tableta: Descargue la aplicación de Zoom y participe en la reunión haciendo clic en el enlace o usando el ID del seminario web (que se encuentra en el enlace).

Descarga en el App Store

Obténla en Google Play

Teléfono:

1. Si está participando en la reunión mediante audio de su teléfono y viendo la reunión en un dispositivo, marque el número indicado en la pestaña de llamada telefónica “unirse por audio” en la ventana emergente inicial e ingrese el ID de la reunión (que se encuentra en el enlace).
2. Si está participando solo por teléfono, marque: **+1-669-900-9128** o **+1-253-215-8782** e ingrese el ID de la reunión que se encuentra en el enlace, pulse #. Tendrá acceso al audio de la reunión, **pero NO podrá ver las presentaciones en PowerPoint.**

Comentarios Públicos Verbales en Vivo: Use la herramienta “levantar la mano” cada vez que desee hacer un comentario público sobre alguno de los artículos. Levante la mano una vez que el artículo de la agenda sobre el que desea comentar haya sido convocado. Los comentarios públicos en persona se escucharán primero, se escuchará a los asistentes virtuales en el orden en el que levanten la mano. No se aceptarán solicitudes para hablar después de que termine el periodo para hacer comentarios públicos, a menos de que el presidente determine de otra forma a su discreción. Comentarios públicos generales, únicamente al inicio de la reunión de la Junta de Directores, se limitarán a cinco personas que deseen hablar. Las personas adicionales que deseen aportar comentarios públicos generales podrán hacerlo al final de la reunión. Se otorga dos minutos de tiempo por persona que desee hablar, a menos de que el presidente instruya de otra forma. (*Consulte la página 2 para obtener instrucciones sobre cómo hacer un comentario público.*)

Comentarios Públicos a Través de Zoom

1. Haga clic en el enlace que se encuentra en la parte superior de esta página de instrucciones
2. Haga clic en el ícono de levantar la mano en el centro inferior de la plataforma
3. El secretario anunciará su nombre cuando sea su turno de hablar
4. Desactive el silenciador para que pueda hablar

Comentarios Públicos Realizados Únicamente por Teléfono

1. Marque el **+1-669-900-9128**
2. Ingrese el ID de la reunión en Zoom que se encuentra en el enlace y pulse #
3. Marque *9 para levantar la mano por teléfono
4. El secretario indicará los últimos 4 dígitos de su número de teléfono para anunciar que usted será el siguiente en hablar
5. Marque *6 para desactivar el silenciador



Comentarios Públicos por Escrito (Antes de la Reunión): Los comentarios públicos por escrito se registrarán en el registro público y se entregarán a los miembros de la Junta de MTS antes de la reunión. Los comentarios deben enviarse por correo electrónico o postal al secretario de la Junta* antes de las 4:00 p.m. el día anterior a la reunión.



Servicios de Traducción: Pueden solicitarse servicios de traducción comunicándose con el secretario de la Junta* por lo menos cuatro días hábiles antes de la reunión.



Participación en Persona: Los comentarios públicos en persona se escucharán primero. Después de los comentarios públicos en persona, se escuchará a los asistentes virtuales en el orden en el que levanten la mano a través de la plataforma de Zoom. El tiempo para hablar se limitará a dos minutos por persona, a menos de que el presidente especifique de otra forma. No se recibirán solicitudes para hablar después de que termine el periodo para hacer comentarios públicos, a menos de que el presidente determine de otra forma a su discreción.

Instrucciones para brindar comentarios públicos en persona:

1. Llene la boleta para personas que desean hablar que se encuentran en la entrada de la Sala de la Junta.
2. Entregue la boleta para personas que desean hablar al personal de MTS que se encuentra sentado en la entrada de la Sala de la Junta.
3. Cuando anuncien su nombre, por favor, acérquese al podio ubicado en el lado derecho de la tarima para hacer sus comentarios públicos.

Los miembros del público pueden hacer comentarios públicos generales al inicio de la agenda o comentarios específicos que hagan referencia a los puntos de la agenda durante el periodo de comentarios públicos. Los comentarios públicos generales únicamente al inicio de la reunión de la Junta de Directores, se limitarán a cinco personas que deseen hablar. Las personas adicionales que deseen aportar comentarios públicos generales podrán hacerlo al final de la reunión.



Dispositivos de Asistencia Auditiva (ALD, por sus siglas en inglés): Los ALD están disponibles con el secretario de la Junta* antes de la reunión y estos deberán ser devueltos al final de la reunión.



Facilidades Razonables: Según lo requerido por la Ley de Estadounidenses con Discapacidades (ADA, por sus siglas en inglés), para presentar solicitudes de información de la agenda en un formato alternativo o solicitar facilidades razonables para facilitar su participación en la reunión, por favor, comuníquese con el secretario de la Junta* por lo menos dos días hábiles antes de la reunión.



***Información de Contacto:** Comuníquese con el secretario de la Junta por correo electrónico en ClerkoftheBoard@sdmts.com, por teléfono al **(619) 398-9561** o por correo postal en **1255 Imperial Ave. Suite 1000, San Diego CA 92101.**

Metropolitan Transit System

Board of Directors

Agenda

December 18, 2025 at 9:00 a.m.

In-Person Participation: James R. Mills Building, 1255 Imperial Avenue, 10th Floor Board Room, San Diego CA 92101

Teleconference Participation: (669) 254-5252; Webinar ID: 160 280 5839, https://www.zoomgov.com/j/1602805839

NO.	ITEM SUBJECT AND DESCRIPTION	ACTION
1.	**Roll Call**	
2.	**Public Comments** This item is limited to five speakers with two minutes per speaker. Others will be heard after Board Discussion items. If you have a report to present, please give your copies to the Clerk of the Board.	
	CONSENT ITEMS	
3.	**Approval of Minutes** Action would approve the November 20, 2025 Board of Directors meeting minutes.	Approve
4.	**CEO Report**	Informational
5.	**Fire Extinguisher Maintenance and As-Needed Repairs – Contract Award** Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWG450.0-26, to Fire Smart Fire Protection, for the provision of fire extinguisher maintenance and as-needed repair services for a period of five (5) years in the amount of $206,496.85.	Approve
6.	**Wheel Truing Machines Removal and Construction – Contract Award** Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL448.0-26, with All Source Company Building Group (All Source), for the full removal and disposal of two (2) damaged wheel truing machines full replacement of associated track sections, infill and modifications to in-ground pits, and construction of a trolley bogey storage rack in the amount of $615,760.00.	Approve
7.	**On-Call Job Order Contracting (JOC) General Building and Facilities Construction – Contract Award** Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWG441.0-25, with ABC General Contractor, Inc. (ABCGC), for on-call general building and facilities construction services, to not exceed the statutory	Approve

JOC limits under Public Contract Code Section 20128.5, calculated to be in the amount of $6,561,000.00, for one (1) year beginning January 1, 2026.

8. **Carpet Replacement at Imperial Avenue Division (IAD) Bus Maintenance Facility – Work Order Agreement** — Approve

Action would authorize the Chief Executive Officer (CEO) to execute Work Order Agreement MTSJOC324-36 under Job Order Contract (JOC) MTS Doc. No. PWG324.0-21 with ABC General Contracting, Inc. (ABCGC), in the amount of $199,999.48, for carpet removal and replacement for the north side of the IAD bus maintenance facility.

9. **Rail Noise Suppression Lubricant - Contract Award** — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. L1702.0-25, with Kano Laboratories LLC - Super Lube (Kano), for Rail Noise Suppression Lubricant for five (5) years in the amount of $1,156,200.60 (including 7.75% CA Sales Tax).

10. **Operations Budget Status Report for October 2025** — Informational

11. **Imperial Avenue Division (IAD) Generator Upgrades – Change Order** — Approve

Action would authorize the Chief Executive Officer (CEO) to: 1) Ratify MTS Doc. No. PWB371.3-23, with Global Power Group, Inc., for IAD Generator Upgrades in the amount of $40,019.29 for Contract Change Order (CCO) 03 for temporary battery backup power to the Annex building server room for power outages required during construction; 2) Ratify MTS Doc. No. PWB371.4-23, in the amount of $23,769.41 for CCOs 01 and 02 for adding camlocks to all generators and to construct concrete pad modifications to the 275kW generator pad; and 3) Authorize the CEO to approve MTS Doc. No. PWB371.5-23 (CCO 4), in the amount of $48,179.07 to provide new electrical conduit and concrete pad for the new 150 kW emergency backup generator at the Service Lanes building.

DISCUSSION ITEMS

12. **2026 State and Federal Legislative Program (Julia Tuer, Mark Watts, Peter Peyser)** — Approve

Action would approve the 2026 State and Federal Legislative Program.

13. **Fare Change Study Update (Mark Olson, MTS and Tim Garrett, SANDAG)** — Informational

14. **Fiscal Year 2025 Annual Operating Reports (Brian Riley and Devin Braun)** — Informational

15. **Grants Administration Report (Julia Tuer and Kena Teon)** — Informational

OTHER ITEMS

16. **Chair, Board Member and Chief Executive Officer's (CEO's) Communications**

17. Remainder of Public Comments Not on The Agenda

This item is a continuation of item No. 2 (Public Comment), in the event all speakers who request to comment on item No. 2 are not called. If all Public Comment is accepted during item No. 2, no additional public comment will be accepted under this item.

CLOSED SESSION

18. Public Comment for Closed Session

19. Closed Session – Conference with Legal Counsel – Existing Litigation Pursuant to California Government Code Section 54956.9(d)(1) Possible Action

Angela McGaff, et al. vs. San Diego Metropolitan Transit System, et al.
San Diego Superior Court Case No. 37-2022-00049144-CU-PO-CTL

ADJOURNMENT

20. Next Meeting Date

The next Board of Director's meeting is scheduled for January 15, 2026 at 9:00am.

21. Adjournment

From: James Shannon
To: MTS Clerk of the Board
Subject: Comment regarding autonomous vehicles for next board meeting
Date: Wednesday, December 10, 2025 10:04:54 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hello,

Please submit the following comment to the record and provide to the board members for the next meeting.

Thanks.

Dear Chair and Members of the MTS Board of Directors,

I am writing to express my strong support for the deployment and expansion of autonomous vehicle services, including Waymo robotaxis, within San Diego. I disagree with Mr. Elo-Rivera's recent comments [1] and believe embracing this technology is critical for advancing our region's goals related to safety, accessibility, sustainability, and technological leadership.

Our Community's Need for Advanced Transit

1. **Enhanced Public Safety is Paramount:** Autonomous vehicles, by eliminating human errors like distraction and impairment, offer the clearest path to a significant reduction in traffic accidents and fatalities. Autonomous vehicles -- despite some very public gaffes -- are, or soon will be, demonstrably safer than human-driven vehicles. If public safety is the primary concern, the Board should be encouraging the adoption of the safest possible technology, not restricting it.
2. **Improving Mobility and Accessibility:** Robotaxis are an essential tool for providing reliable, on-demand, and accessible first-mile/last-mile connections. They seamlessly fill gaps in our existing transit network, making our excellent bus and trolley systems viable for a much wider range of San Diegans.

Direct Rebuttal to Mr. Elo-Rivera's Arguments

Mr. Elo-Rivera was quoted as saying that San Diegans deserve the right to decide. I am a San Diegan, and I firmly believe that the arguments recently put forth by the Councilmember Elo-Rivera should be rejected by the full Board:

- **Rejecting Protectionism and Stifling Competition:** The argument that autonomous vehicles threaten existing driver livelihoods means that Mr. Elo-Rivera believes they will provide a **cheaper and/or better service** to the public. Restricting their deployment is an act of **protectionism** that forces every resident and tourist in San Diego to pay more and receive inferior service to protect a small slice of incumbent workers. The Board's duty is to the broader public good, which is best served by fostering competition and technological advancement that lowers costs and improves safety.

- **The Precedent of Rideshare:** Not long ago, many cities, including San Diego, attempted to protect taxi medallion holders from competition by Uber, Lyft, and other rideshare services. While the rise of rideshare hurt some incumbents, it was an overwhelming positive for the vast majority of San Diegans, tourists, and the economy, providing more reliable, convenient, and affordable transportation options. Restricting AVs today is repeating the same mistake of protectionism over progress.
- **The "Local Control" Argument Undermines Progress:** The rigorous regulatory and testing framework established by the State of California is sufficient and appropriate. Imposing a patchwork of local regulations across California would only serve to stifle innovation and delay safety improvements. I desire driverless vehicles in my community and believe the current state rules are adequate.
- **Airport Restriction & Public Safety:** The proposed prohibition of driverless vehicles at San Diego International Airport based on public safety is a **red herring**. It is clear that Mr. Elo-Rivera realizes this is the one area that The City has clear control over. Autonomous vehicles are designed to operate safely in all controlled environments. If anything, the slower, more controlled speeds at the airport would make AV operations *safer* than on high-speed city streets. Further, as I mentioned, if driverless vehicles aren't already safer than human drivers then they will be soon. By Mr. Elo-Rivera's own argument, if he's focused on public safety, he should be putting plans in place to prohibit human-driven taxis in order to allow only autonomous vehicles. I look forward to that day.

Thank you for your time and consideration of this critical matter.

Sincerely,

James Shannon

Pacific Beach, CA

[1] https://timesofsandiego.com/business/2025/11/19/transit-panel-slams-brakes-waymo-local-input/

Joint Petition to MTS Board

Submitted by:

Holiday Gardens HOA

724 G St, Unit A

Chula Vista, CA 91910

javierharos@gmail.com

(619) 746-5615

Date: November 19, 2025

PETITION TO THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM (MTS) BOARD

REQUEST TO CLOSE PEDESTRIAN ACCESS POINT AT THE 400 BLOCK OF COLORADO AVE

On behalf of the Holiday Gardens HOA Board and the residents of the Colorado Avenue community, we hereby submit this formal request for the closure of the pedestrian access point connecting Colorado Avenue to the MTS parking lot.

Background:

This access point was historically closed but reopened at the request of the HOA during a period of significantly lower crime.

Safety Incidents:

• Gunshots striking a living room wall

• Drug use and narcotics activity

• Homeless encampments

• Trespassing and vandalism

• Destruction of electrical and water infrastructure

• Burglaries

• Vehicle thefts and break-ins

• Indecent exposure incidents

• Fires

• Individuals with weapons

• Trash

• Violence / Assaults

Request:

We request that MTS close or otherwise secure this pedestrian access point to protect residents and restore safety.

Please review Safety Incidents packet included as an attached packet.

Please review attached pictures of current pedestrian access and the new proposed permanent detour.



Javier Haros (President)

Companion Letter to City of Chula Vista

On behalf of the Holiday Gardens HOA Board and community residents, we request the City of Chula Vista's support in addressing the severe safety issues caused by the open pedestrian access point at Colorado Avenue.

We ask the City to support closure, coordinate with MTS, and help restore neighborhood safety.

Sincerely,

Javier Haros (President)

Companion Letter to CVPD

On behalf of the Holiday Gardens HOA Board and the residents of Colorado Avenue, we request CVPD's support regarding safety incidents related to the access point.

We ask for increased patrols and assistance supporting closure efforts.

Sincerely,

Javier Haros (President)

Colorado Access Closure Safety Incidents Packet








one
Two
3hree
FOUR
Five








PRIVATE
PROPERTY
NO
SOLICITING
LOITERING
TRESPASSING
VIOLATORS WILL
BE PROSECUTED






Earn 6%






*BILS


*BILS
SBIK












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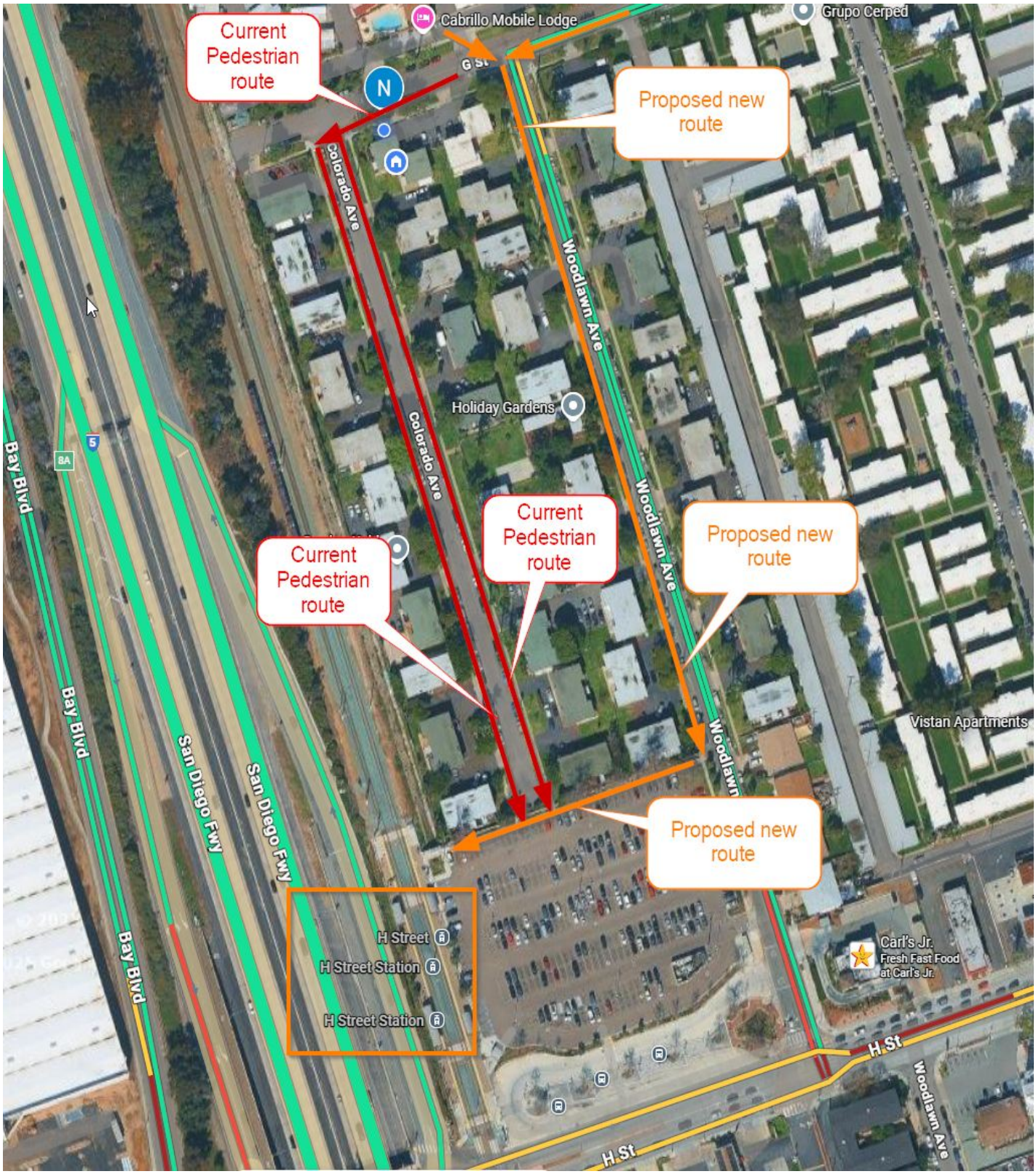




Holiday Gardens Residents

Colorado Access Closure Current & Proposed Route Photos




Current Pedestrian route
Cabrillo Mobile Lodge
Grupo Cerped
G St
Proposed new route
Colorado Ave
Woodlawn Ave
Holiday Gardens
Colorado Ave
Current Pedestrian route
Current Pedestrian route
Proposed new route
Bay Blvd
Bay Blvd
San Diego Fwy
San Diego Fwy
Vistan Apartments
Woodlawn
Proposed new route
H Street
H Street Station
H Street Station
Carl's Jr.
Fresh Fast Food
at Carl's Jr.
H St
Woodlawn Ave
H St

MINUTES

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM

BOARD OF DIRECTORS

November 20, 2025

[Clerk's note: Except where noted, public, staff and board member comments are paraphrased. The full comment can be heard by reviewing the recording at the MTS website.]

1. Roll Call

Chair Whitburn called the Board meeting to order at 9:06 a.m. A roll call sheet listing Board member attendance is attached as Attachment A.

Chair Whitburn opened the meeting by honoring four MTS Light Rail Vehicle (LRV) maintenance team members, Joshua Mavez, Dan Medllin, Jesse Warford, and Andrew Meisenholder, for their heroic actions. He recounted how, during a recent incident near the Green Line at 12th and Imperial, a driver experienced a medical emergency, crashed, and was trapped in a burning vehicle. The MTS crew acted immediately, using fire extinguishers to suppress the flames and rescue the woman before first responders arrived. He praised their courage and quick response, noting that their efforts saved a life, avoided damage to MTS property, and exemplified outstanding public service. He expressed the Board's deep gratitude and invited the team to the podium for commendation. He concluded by saying it was the best way to start a meeting.

2. Public Comment

Lorenzo Pimentel – Provided a verbal statement to the Board during the meeting. Lorenzo expressed concern about being dropped off at an incorrect address rather than at his home. He emphasized the serious health and safety challenges this causes, particularly given his visual impairment and recent experiences such as navigating back from an eye appointment with dilated pupils. Lorenzo highlighted the danger of navigating along a busy street and expressed frustration that their home is considered outside the service area, making safe travel difficult. He asked for a reconsideration of this service limitation to ensure his safety.

Jeanne Ames – Provided a verbal statement to the Board during the meeting. Jeanne, the mother of Lorenzo Pimentel, spoke about her concerns regarding her son's safety during transit pickups. She emphasized the serious health risks he faces due to a heart condition and past incidents where he was left waiting in the hot sun. She described the unsafe conditions of their neighborhood, including poor sidewalk maintenance, weeds, uneven surfaces, and high-speed traffic on their street. Jeanne noted that MTS vehicles often drive past their home but still require her son to be picked up at a more distant and less safe location. She urged MTS to consider allowing pickup directly from their residence to ensure her son's safety.

Jacqueline Romero – Provided a verbal statement to the Board during the meeting. Jacqueline, case manager and teacher at Transition Resources for Adult Community Education (TRACE) School, spoke on behalf of her student, Lorenzo Pimentel. She emphasized Lorenzo's serious medical conditions including a heart condition, collapsed lung, and partial blindness and the dangers he faces when navigating 0.3 miles to reach his designated MTS Access pickup location. Jacqueline noted that other students with similar needs receive true door-to-door service and urged the Board to grant Lorenzo an exception to allow home pickup and drop-off. She invited Board Members to accompany them one day to witness firsthand the challenges he faces and stressed that this is a matter of safety and potential life-threatening risk.

Nate Fairman – Representing International Brotherhood of Electrical Workers IBEW made a verbal statement to the Board during the meeting. Nate urged the Board to strengthen its

partnership to enhance the mechanic training program in preparation for future technologies, especially as Battery Electric Buses (BEB) expand across the system. He emphasized the need for continued evolution through collaboration with the Clean Technology Training Trust. Nate highlighted the benefits of joining this national initiative, including access to state and federal funding, the opportunity to help shape a national apprenticeship model, and the ability for MTS to appoint a trustee to guide training design. He stressed that this strategic partnership would position MTS as an industry leader and invited Board Members to attend an upcoming Zoom meeting on December 1st for more information.

Javier Haros – Representing the Holiday Gardens Homeowners Association (HOA) made a verbal statement to the Board during the meeting. Javier raised concerns about a pedestrian access path connecting their community to an MTS parking lot. He noted that the path has become a safety issue due to a significant increase in local crime over recent years. Javier acknowledged that the access was originally opened at the HOA's request but now @requested that the Board consider either closing or controlling access to it in light of changing conditions.

David Jentz – Representing Holiday Gardens HOA made a verbal statement to the Board during the meeting. David supported the earlier comments made by Javier Haros. He reiterated the HOA's request to reclose a pedestrian walkway connecting their community to the MTS H Street Trolley Station parking lot. David explained that the area has a low traffic cul-de-sac, and restricting access would redirect foot traffic to more well-lit and safer streets. He emphasized that the HOA is willing to cover the costs of closing the walkway and noted that it had historically been closed in the past.

Chair Whitburn expressed gratitude to the speakers from Chula Vista and others who participated in public comment, including Nate Fairman, Lorenzo Pimentel, and his advocates. He acknowledged and appreciated the time and effort each individual took to speak before the Board and share their concerns.

CONSENT ITEMS:

3. Approval of Minutes

Action would approve the October 16, 2025 Board of Directors meeting minutes.

4. CEO Report

5. State Lobbying Services – Contract Award

Action would authorize the Chief Executive Officer (CEO) to: 1) Execute MTS Doc. No. G3098.0-25 with Mark Watts Advocacy, LLC (Mark Watts Advocacy) for State Lobbying Service for a three (3) year base period with two (2) 1-year options, for a total of five (5) years in the amount of $184,200.00 ; and 2) Exercise the option years at the CEO's discretion

6. Investment Report – Quarter Ending September 30, 2025

7. Temporary Staffing Services – Multiple Contract Awards

Action would authorize the Chief Executive Officer (CEO) to: 1) Execute MTS Doc No. G3147.0-26 with Alois, LLC for the provision of Temporary Staffing Services (General Staffing On-Call List) for a period of five (5) years; 2) Execute MTS Doc. No. G3148.0-26 with CPM Ltd Inc. dba Manpower of San Diego for the provision of Temporary Staffing Services (General Staffing and IT Staffing On-Call Lists) for a period of five (5) years; 3)

Execute MTS Doc. No. G3149.0-26 with Genesis Global Recruiting for the provision of Temporary Staffing Services (General Staffing and IT Staffing On-Call Lists) for a period of five (5) years; 4) Execute MTS Doc. No. G3150.0-26 with Infojini Inc. for the provision of Temporary Staffing Services (General Staffing and IT Staffing On-Call Lists) for a period of five (5) years; 5) Execute MTS Doc. No. G3151.0-26 with Nasscomm for the provision of Temporary Staffing Services (General Staffing and IT Staffing On-Call Lists) for a period of five (5) years; and 6) Execute MTS Doc. No. G3152.0-26 with TeleSolv Consulting for the provision of Temporary Staffing Services (IT Staffing On-Call List) for a period of five (5) years.

8. Adoption of the 2026 San Diego Metropolitan Transit System (MTS) Executive Committee and Board of Directors Meeting Schedule

Action would adopt the 2026 Executive Committee and Board of Directors meeting schedule.

9. Fiscal Year (FY) 2025-2026 Federal Transit Administration (FTA) Section 5304 Strategic Partnerships - Transit grants via the California Department of Transportation (Caltrans) Sustainable Transportation Planning Grant – Grant Award

Action would approve Resolution No. 25-14 to authorize the Chief Executive Officer (CEO) to: 1) Accept the FY 2025-2026 FTA Section 5304 Strategic Partnership - Transit grants via the Caltrans Sustainable Transportation Planning Grant in the amount of $442,650 for MTS's Otay Mesa East Transit Planning Study; and 2) Authorize $57,350 in local matching funds to fully fund the Otay Mesa East Transit Planning Study.

10. CrowdStrike Software Subscription 3 Year Renewal – Contract Award

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G3121.0-26, with Nth Generation Computing, Inc. (Nth), for a CrowdStrike software subscription renewal for three (3) years in the amount of $389,132.46

11. Purchase of Hardwood Railroad Ties – Contract Award

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. L1706.0-26, with Gemini Forest Products (Gemini), for the purchase of hardwood railroad ties in the amount of $191,922.00, inclusive of 7.75% CA Sales Tax and 1% CA Lumber Products Assessment Fee.

12. Grantville Elevator Modernization – Contract Award

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc No. PWL449.0-26, with Kone Inc., (Kone), in the amount of $873,577.00 for the modernization of two (2) elevators at the Grantville Station.

13. Downtown Parallel Feeder Cable & Street Trackage Replacement Design – Work Order Agreement

Action would authorize the Chief Executive Officer (CEO) to execute Work Order MTS Doc. No. WOA354-AE-59, under MTS Doc No. PWL354.0-22, with Mott MacDonald, LLC (MM), in the amount of $1,766,534.25 for design services for the Downtown Parallel Feeder Cable and Street Trackage Replacement Project.

14. Orange Line Improvement Project (OLIP) Phase 1 and 2 Design Services – Work Order Amendment

Action would 1) Authorize the Chief Executive Officer (CEO) to execute Work Order

Amendment No. WOA356-AE-06.09 under MTS Doc No. PWL356.0-22 with Pacific Rail Enterprises, Inc. (PRE), a Women-Owned Business Enterprise (WBE), in the amount of $32,855.71 to add signal enclosure door intrusion alarm support to the Phase 1 Centralized Train Control (CTC) system; and
2) Authorize the CEO to execute Work Order Amendment WOA356-AE-06.10, under MTS Doc No. PWL356.0-22, with PRE, in the amount of $4,794,043.51, to provide Design Services During Construction (DSDC), signaling system software development, California Public Utilities Commission (CPUC) grade crossing compliance, CTC system changes, and construction contract safety certification for Phase 2 of the OLIP.

15. Operations Budget Status Report for September 2025

Public Comment:

There were no Public Comments.

Board Comment for Agenda Item No. 9

Board Member Moreno moved the consent agenda and noted she had comments on Agenda Item No. 9 but did not wish to pull it. She expressed strong support for Agenda Item No. 9, the FY 2025–26 FTA Section 5304 transit grant for the Otay Mesa East transit planning study. She said the study was long overdue, as Otay Mesa was rapidly growing but lacked adequate transit service. She highlighted the area's economic significance over $60 billion in commerce and shared that residents had made it clear that poor transit limited access to opportunities. She had pushed MTS for years to focus on the area and believed the study would finally provide needed data on routes, infrastructure, and resources like buses and staffing. Board Member Moreno also praised staff, saying they delivered on their promise to bring the project forward through a grant after it was pulled from a budget item. She closed by thanking staff for their work and expressing pride in supporting the study.

Board Member Moreno moved to approve Consent Agenda Item Nos. 3 to 15. Board Member Hall seconded the motion, and the vote was 13 to 0 in favor with Board Member Bush and Board Member Vaus absent.

DISCUSSION ITEMS:

16. Appointment of Ad Hoc Nominating Committee for Recommending Appointments to MTS Committees for 2026 (Sharon Cooney)

Chair Whitburn explained that this item was an annual process. He stated that a few volunteers would join the Ad Hoc Committee to determine who was interested in serving on various standing committees for the upcoming year. He noted that the Ad Hoc Committee planned to meet next month and would present its recommendation to the Board in January.

Public Comment

There were no Public Comments.

Board Comment

Board Member Heredia expressed interest in sitting on the Ad Hoc Committee.

Karen Landers, MTS General Counsel, stated that it was ultimately up to the Board to decide who served on the Ad Hoc Committee. She explained that, generally, committee appointments

were given to primary Board members so they could report back to the Board and contribute to discussions effectively. However, she acknowledged that there was precedent specifically on the Public Security Committee where an alternate Board member had also served on a committee.

Board Member Moreno pointed out that she had previously served as the Mayor of San Diego's alternate while also holding the role of budget chair. She emphasized that appointments were ultimately at the discretion of the Board and stated that she wanted to advocate on the matter.

Action Taken

Chair Whitburn solicited volunteers to serve on the Ad Hoc Nominating Committee. Board Member Elo-Rivera, Board Member Moreno, Vice Chair Goble, Board Member Hall, Board Member Montgomery Steppe, Board Member McCann and Chair Whitburn volunteered to serve on the Committee. The Board voted 13 to 0 in favor with Board Member Bush and Board Member Vaus absent.

17. Audit Results and Draft of Fiscal Year (FY) 2025 Annual Comprehensive Financial Report (ACFR) (Erin Dunn and Jennifer Pentoney with Suzette Reyes of The Pun Group)

Suzette Reyes of The Pun Group presented on Audit Results and Draft of Fiscal Year (FY) 2025 Annual Comprehensive Financial Report (ACFR). She provided details on: Managements and Auditors Responsibilities, Overview of the Financial Statements, Key Pension and Other Post-Employment Benefits (OPEB) Information, and Audit Results.

Public Comment

There were no Public Comments.

Board Comment

Vice Chair Goble asked a series of questions related to the audit process. He directed the following questions to the auditor: During the audit, were you given full access to any employee that you needed to talk to for the purposes of preparing the audit? Ms. Reyes responded yes, the auditors were provided full access to anyone that they asked to speak to. He asked: Did you ever ask for access to an employee that felt necessary to complete your audit and were denied access to that employee? Ms. Reyes responded that did not occur. He asked: Were you given full access to any documents including ledgers and financial statements and financial documents for the purpose of preparing your audit? Ms. Reyes responded yes, and MTS also provided read-only access to the accounting system. He asked: Did you find any financial practices being used by staff or executives to not be consistent with the best practices of accounting? Ms. Reyes responded no. He asked: What is your overall assessment of the quality of the accounting internal controls and the competency of staff? Ms. Reyes responded that, overall, MTS had done a very good job in designing and implementing internal controls over financial reporting and compliance. She reported that, during the 2025 audit, no audit adjusting journal entries were recorded. He asked: How did you maintain independence during the course of the audit? Ms. Reyes responded that the audit team maintained objectivity and professionalism throughout the audit and remained independent from MTS. She confirmed that no non-audit services were performed, no management decisions were made, and no financial or employment interests existed at the employee or firm level. To prevent familiarity threats, the audit team was changed for 2025, and a separate quality control reviewer independent of the audit team was assigned to review the audit and all issued reports. He asked: Were there any accounting issues on which you sought the advice of other audit firms or regulatory bodies? Ms.

Reyes responded that there were none. He asked: Is it your opinion that this audit and MTS's financial record keeping deserves an unmodified opinion? Ms. Reyes responded yes. He asked: What is the alternative to an unmodified opinion? Ms. Reyes responded that, alternatively, the audit could have resulted in a qualified opinion, indicating the financial statements were fairly presented except for specific material issues. She added that an adverse opinion could have been issued if the statements were not materially fairly stated, or a disclaimer of opinion could have been given if auditors were unable to form an opinion due to scope limitations or insufficient evidence. He asked how many years has their company been conducting finance audits for MTS? Ms. Reyes responded since 2012. He asked: Have you ever found an MTS audit that you did not ultimately conclude that it would be an unmodified opinion? Ms. Reyes responded no. He asked: Are there any new pronouncements and/or risks affecting future financial statements which the Board should be aware of? Ms. Reyes responded that both GASB 103 (Financial Reporting Model Improvements) and Statement 104 (Disclosures of Certain Capital Assets), referenced in Note 1R of the 2025 ACFR, would take effect in fiscal year 2026. She added that these changes were expected to have only a minor impact on MTS's financial statements.

Vice Chair Goble thanked the team for the presentation, praised their good work, and congratulated Mr. Marinesi and his team for receiving an unmodified opinion.

Board Member Downey thanked the staff and acknowledged their work. She stated it was always impressive when no corrections were needed and commended the entire team for their efforts and time. She offered congratulations on a job well done.

Chair Whitburn echoed the congratulations to the financial team for achieving a clean audit.

Action Taken

No action taken. Informational item only.

18. Fiscal Year (FY) 2025 Final Operating Budget Results (Gordon Meyer)

Gordon Meyer, MTS Manager of Financial Planning, presented on Fiscal Year (FY) 2025 Final Operating Budget Results. He provided details on: Total operating revenues, total operating expenses, total operating activities, subsidy revenue category descriptions, total non-operating revenues and expenses, total revenues less expenses, contingency reserve balance and recommendation.

Public Comment

There were no Public Comments.

Board Comment

There were no Board Comments.

Action Taken

Chair Whitburn moved to approve the allocation of $2.9M in excess revenues over expenses in FY25 to the contingency reserve. Board Member Downey seconded the motion, and the vote was 13 to 0 in favor with Board Member McCann and Board Member Vaus absent.

19. MTS Financial Sustainability (Mike Thompson)

Mike Thomspson, MTS Deputy Chief Financial Officer (CFO), presented on MTS Financial Sustainability. He presented on: strategic direction, Board direction – February 13, historical

non-fare revenues, current five-year projection, fiscal cliff responses at other agencies, revenue measure, Capital Improvement Projects (CIP), potential CIP impacts, potential CIP impacts – State of Good Repair (SGR), operating budget, external funding, service and fares direction, Board Policy No. 42, major changes vs. minor changes, and staff's recommendation.

Public Comment

Nate Fairman – Representing IBEW made a verbal statement to the Board during the meeting. Nate expressed support for the staff's current budget proposal, including the shift of funds from capital investments to operations. Drawing on his decade of contract negotiations with MTS, he emphasized the need for bold action to ensure long-term transit sustainability. Nate acknowledged uncertainty around the timing of a potential ballot initiative, agreeing that waiting until 2028 might be prudent. He urged collaboration on securing additional state and federal funding and pledged union support. However, he voiced clear opposition to ongoing insourcing efforts at MTS, warning they could lead to avoidable labor disputes.

Board Comment

Board Member Moreno thanked the staff for the presentation and then directed attention to slide nine (9). She stated that the slide presented a five-year projection and requested confirmation that it was a forward-looking analysis. Upon receiving confirmation, she proceeded to ask about the existing amount of funding currently available for CIP. Mr. Thompson responded that they had funded $163 million in fiscal year 2026. He explained that the overall available funding for CIP amounted to a few hundred million dollars. Board Member Moreno recalled that the last time she reviewed the CIP related to the Zero Emission Bus (ZEB) program, there was approximately $350 million allocated. Mr. Thompson responded it was about $200 million for both infrastructure and BEB. Board Member Moreno emphasized that it was important for the Board to see the full list of CIP and their line items, especially since the current action involved a request to move $50 million from CIP to Operations. Mr. Thompson pointed out that the current action involved a request to move $50 million from the CIP to operations, not from already funded projects, but from future CIP funds.

Board Member Moreno clarified that while she personally trusted staff, the Board did not have enough information in front of them to assess the request fully. She referenced a similar transfer that occurred the previous year, involving $35 million, and clarified that while she did not disagree with the transfer itself, the lack of accompanying project details remained an issue. She expressed concern that many projects, particularly the ZEB program, seemed vague and undefined, and stated that in her seven (7) years on the Board, the program had often felt conceptual rather than concrete. She requested a full overview of the CIP to ensure transparency and clarity. Board Member Moreno also stated she agreed with the strategy but voiced disappointment that the organization was targeting 2028 for a ballot measure instead of being prepared for 2026. She noted that she had previously urged the Board to consider a 2026 measure, but it now appeared that they were too late and found this particularly unfortunate in light of the budget shortfall highlighted in a prior agenda item, which showed they were around $100 million in deficit. Despite her criticism, she expressed willingness to support the staff's recommendation and offered to make the motion. She concluded by stressing the importance of transparency and the need for the Board to have a clear view of how CIP funds were being allocated.

Sharon Cooney, MTS CEO, clarified that detailed reporting on the CIP is provided annually, including the ZEB Transition Plan, which the Board approves each year. She explained that the current discussion was not intended to define the CIP, but rather to gain support for the

overarching strategy. She noted that the full CIP, including all relevant details, would be presented in February or March, at which point the Board could still decide not to allocate the $50 million. She added that CIP details are also included in the approved annual budget and noted that if there were other action points, it could be challenging to bring all related information to the Board at this stage, as the current focus was solely on securing support for the overarching strategy.

Board Member Moreno clarified that while she supported the motion, she wanted to state for the record that she had never seen a detailed CIP line item, encumbered or unencumbered, only total amounts, such as those shown for the ZEB program. She argued that more detailed information should be standard, especially in five-year outlooks. She suggested the CIP process be revised to include greater detail and transparency, emphasizing that such detail was essential given the current $50 million request under consideration.

Vice Chair Goble directed staff to slide seven (7) and highlighted the scenario where the Board might move an MTS ballot measure forward and raised a key uncertainty: the possibility of a community or citizens' initiative. He noted the difference in vote thresholds a Board initiative requiring two-thirds support, while a citizens' initiative would only need 50% plus one. He asked what coordination or communication the Board would be allowed or not allowed to engage in if such a citizens' initiative were to take place. Karen Landers, MTS General Counsel, responded that the topic was sensitive and clarified that MTS could not lead a citizens' initiative, such efforts must be entirely citizen driven. She explained that while MTS could provide information to citizen groups, such as how funds might be spent, there were strict limits on communication to avoid the perception of MTS improperly influencing the process. She emphasized the need for clear initiative language to ensure MTS could implement it appropriately if passed and confirmed that while MTS could answer public interest questions, the agency had to remain strictly neutral to avoid legal challenges. Vice Chair Goble clarified that his understanding was education was allowed, but advocacy was not. Ms. Landers confirmed that this interpretation was correct.

Board Member Bush thanked staff for the presentation and agreed with Vice Chair Goble's earlier point, expressing that he also would have preferred to see a 2026 timeline. He voiced concern about the risks associated with the 2028 cycle, noting that multiple competing initiatives could reduce the chances of success, especially given the two-thirds vote threshold required for Board-led measures. He thanked Nate Fairman for his public comments and acknowledged the potential advantage of a citizens' initiative, which would only require a 50% plus one vote. He expressed a lower appetite for pursuing a measure under the current two-thirds requirement and suggested focusing on working with groups like IBEW and business associations in 2026 to advocate for state legislation that would reduce the threshold to a more realistic 55%. He also noted interest in further discussion on insourcing and labor disputes, particularly regarding issues with Transdev and private contractors. He concluded by stating that exploring a citizens' initiative from an educational standpoint for 2026 could be a strong strategy.

Board Member Hall asked to return to slide six (6) and inquired whether the other agencies reporting attempts at ballot initiatives were similar in nature and if any comparisons had been made regarding what each was requesting. Mr. Thompson explained that other agencies have been working on their initiatives for several years and that those measures are often written to provide flexibility allowing funds to be used for whatever the agency deems necessary. Board Member Hall shared his interest in comparing how other ballot initiatives were written versus how they ultimately turned out, especially with the Board considering a 2028 measure. He referenced a past experience involving a fire department initiative that included payroll but was

ultimately defeated. He emphasized the importance of learning from such examples to ensure future measures are written with a stronger chance of passing, even if the Board is not directly writing the measure themselves. He suggested a comparative analysis to better understand effective and ineffective approaches.

Action Taken

Board Member Moreno moved to 1) Move target for revenue measure from November 2026 ballot to 2028. 2) During the development of FY2027-2030 CIP include shift of $50M per year to the Operating budget. 3) Goal of $10M in annual operational savings beginning with the FY2027 Operating budget (excludes service changes). 4) Continue pursuing additional funding from regional, state, and/or federal sources, including MTS to pursue legislation to expand transit revenue options through tourism, luxury vehicles or other options other than a sales tax. Board Member Montgomery Steppe seconded the motion, and the vote was 13 to 1 in favor with Board Member McCann voting no and Board Member Vaus absent.

CLOSED SESSION:

20. Public Comment for Closed Session

There were no public comments.

The Board convened to Closed Session at 10:43 a.m.

21. Closed Session – Conference with Legal Counsel – Existing Litigation Pursuant to California Government Code Section 54956.9(d)(1)
Angela McGaff, et al. vs. San Diego Metropolitan Transit System, et al.
San Diego Superior Court Case No. 37-2022-00049144-CU-PO-CTL

22. Closed Session - Conference with Labor Negotiators Pursuant to California Government Code Section 54957.6
Agency: San Diego Trolley, Inc. (“SDTI”)
Employee Organization: Transit Enforcement Officers Association (“TEOA”)
Agency- Designated Representative: Jeffrey M. Stumbo, Chief Human Resources Officer (EEO Officer)

Closed Session Reconvening

The Board reconvened to Open Session at 12:16 p.m.

Karen Landers, General Counsel, reported the following oral report of final actions taken in Closed Session:

21. The Board received a report from legal counsel and gave instructions.

22. The Board ratified a tentative agreement with the TEOA covering a period of October 1, 2025 to September 30, 2028 that was reached on October 20, 2025 by a yes vote of 13 members with Board Member Leyba-Gonzalez and Board Member Vaus absent.

OTHER ITEMS:

23. Chair, Board Member and Chief Executive Officer’s (CEO’s) Communications

Sharon Cooney announced that she had concluded her tenure as Chair of the California Transit Association (CTA) Executive Committee and looked forward to having more time to focus on

other responsibilities. She also informed the Board that she had sent a report earlier that day regarding an incident involving an LRV and a pedestrian, inviting Board members to reach out with any questions. Chair Whitburn thanked Ms. Cooney for her service as Chair of the CTA Executive Committee and congratulated her on a very productive tenure in that role.

Chair Whitburn reminded the Board that an Ad Hoc committee had been formed that morning to recommend committee appointments for the upcoming year. He encouraged any members not on the Ad Hoc committee but interested in serving on a particular committee to inform him or a current committee member, so their interest could be considered during the selection process.

24. Remainder of Public Comments Not on The Agenda

There were no public comments.

ADJOURNMENT

25. Next Meeting Date

The next regularly scheduled Board meeting is December 18, 2025 at 9:00 a.m.

26. Adjournment

The meeting was adjourned at 12:17 p.m.

Chairperson
San Diego Metropolitan Transit System

Filed by:

Clerk of the Board
San Diego Metropolitan Transit System

Approved as to form:

General Counsel
San Diego Metropolitan Transit System

Attachment: A. Roll Call Sheet

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS
ROLL CALL

MEETING OF (DATE):	11/20/2025	CALL TO ORDER (TIME):	09:06 a.m.
RECESS:		RECONVENE:	
CLOSED SESSION:	10:43 a.m.	RECONVENE:	12:15 p.m.
PUBLIC HEARING:		RECONVENE:	
ORDINANCES ADOPTED:		ADJOURN:	12:17 p.m.

JURISDICTION	BOARD MEMBER		ALTERNATE		PRESENT (TIME ARRIVED)	ABSENT (TIME LEFT)
City of Chula Vista	Cesar Fernandez	☒	Jose Preciado	☐	09:06 a.m.	12:17 p.m.
City of Chula Vista	John McCann	☒	Jose Preciado	☐	09:06 a.m.	12:17 p.m.
City of Coronado	Carrie Downey	☒	Mark Fleming	☐	09:06 a.m.	12:17 p.m.
County of San Diego	Monica Montgomery Steppe	☒	Paloma Aguirre	☐	09:12 a.m.	12:17 p.m.
City of El Cajon	Steve Goble (Vice-Chair)	☒	Phil Ortiz	☐	09:06 a.m.	12:17 p.m.
City of Imperial Beach	Matthew Leyba-Gonzalez	☒	Mitch McKay	☐	09:06 a.m.	12:17 p.m.
City of La Mesa	Patricia Dillard	☒	Mark Arapostathis	☐	09:06 a.m.	12:17 p.m.
City of Lemon Grove	Jennifer Mendoza	☐	Jessyka Heredia	☒	09:06 a.m.	12:17 p.m.
City of National City	Marcus Bush	☒	Jose Rodriguez	☐	09:37 a.m.	12:17 p.m.
City of Poway	Steve Vaus	☐	Peter De Hoff	☐	ABSENT	ABSENT
City of San Diego	Vivian Moreno	☒	Jennifer Campbell	☐	09:09 a.m.	12:17 p.m.
City of San Diego	Sean Elo-Rivera	☒	Joe LaCava	☐	09:10 a.m.	12:17 p.m.
City of San Diego	Todd Gloria	☐	Henry Foster	☒	09:06 a.m.	12:17 p.m.
City of San Diego	Stephen Whitburn (Chair)	☒	Kent Lee	☐	09:06 a.m.	12:17 p.m.
City of Santee	Ronn Hall	☒	Laura Koval John Minto	☐ ☐	09:06 a.m.	12:17 p.m.

SIGNED BY THE CLERK OF THE BOARD: /s/ Lucia Mansour

Metropolitan Transit System

Agenda Item No. 4

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Chief Executive Officer's (CEO) Report

INFORMATIONAL

In accordance with Board Policy No. 52, "Procurement of Goods and Services", attached are listings of contracts, purchase orders, and work orders that have been approved within the CEO's authority (up to and including $150,000) for the period November 13, 2025 – December 10, 2025.

CEO TRAVEL REPORT (since last Board meeting)

N/A

BOARD MEMBER TRAVEL REPORT (since last Board meeting)

N/A

Attachments: A. Purchase Orders
B. Expense and Revenue Contracts

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500071845	11/13/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 28.66	$ -	$ -
4400003611	11/13/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 71.86	$ -	$ -
4400003615	11/13/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 90.30	$ -	$ -
4500071848	11/13/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 100.10	$ -	$ -
4400003612	11/13/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 207.47	$ -	$ -
4500071865	11/13/2025	U.S. Train Products LLC		R120-RAIL/LRV CAR BODY	$ 263.45	$ -	$ -
4500071850	11/13/2025	Transit Holdings Inc		B130-BUS BODY	$ 264.46	$ -	$ 87,205.59
4500071855	11/13/2025	Signal Hill Auto Enterprises, Inc.		G180-JANITORIAL SUPPLIES	$ 603.19	$ -	$ -
4500071866	11/13/2025	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	$ 613.83	$ -	$ -
4400003617	11/13/2025	ODP Business Solutions, LLC		G250-NOVELTIES & AWARDS	$ 625.18	$ -	$ -
4400003616	11/13/2025	ODP Business Solutions, LLC		G250-NOVELTIES & AWARDS	$ 774.63	$ -	$ -
4500071863	11/13/2025	Home Depot USA Inc		G200-OFFICE SUPPLIES	$ 905.10	$ -	$ -
4500071854	11/13/2025	Transit Holdings Inc		B130-BUS BODY	$ 906.97	$ -	$ -
4400003614	11/13/2025	W.W. Grainger Inc		G130-SHOP TOOLS	$ 1,025.19	$ -	$ -
4500071847	11/13/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 1,096.47	$ -	$ -
4400003613	11/13/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 1,131.40	$ -	$ -
4500071857	11/13/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 1,289.65	$ -	$ -
4500071862	11/13/2025	Muncie Reclamation and Supply Co		B130-BUS BODY	$ 1,308.72	$ -	$ -
4500071868	11/13/2025	R.S. Hughes Co Inc		G140-SHOP SUPPLIES	$ 1,491.78	$ -	$ -
4500071859	11/13/2025	Vehicle Maintenance Program, Inc.	Woman Owned Business	B140-BUS CHASSIS	$ 1,925.88	$ -	$ -
4500071870	11/13/2025	Graybar Electric Co Inc		I110-INFORMATION TECH	$ 2,164.11	$ -	$ -
4500071852	11/13/2025	The Gordian Group, Inc.		C110-GENERAL CONTRACTORS	$ 2,298.32	$ -	$ -
4500071867	11/13/2025	San Diego Friction Products, Inc.		B250-BUS REPAIR PARTS	$ 2,319.71	$ -	$ -
4500071864	11/13/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 2,628.83	$ -	$ -
4500071846	11/13/2025	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	$ 3,228.72	$ -	$ -
4500071869	11/13/2025	Gillig LLC		B130-BUS BODY	$ 3,657.25	$ -	$ -
4500071853	11/13/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 3,881.16	$ -	$ -
4500071856	11/13/2025	SC Commercial, LLC		G170-LUBRICANTS	$ 4,263.61	$ -	$ -
4500071849	11/13/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 6,807.74	$ -	$ -
4500071860	11/13/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 10,374.69	$ -	$ -
4500071861	11/13/2025	TK Services Inc		B250-BUS REPAIR PARTS	$ 13,346.13	$ -	$ -
4500071851	11/13/2025	ABC General Contractor, Inc.		C110-GENERAL CONTRACTORS	$ 130,586.39	$ -	$ -
4500071886	11/14/2025	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	$ 40.54	$ -	$ -
4500071871	11/14/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 45.15	$ -	$ -
4500071888	11/14/2025	Dunn-Edwards Corporation		F110-SHOP/BLDG MACHINERY	$ 83.04	$ -	$ -
4500071872	11/14/2025	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	$ 105.99	$ -	$ -
4500071896	11/14/2025	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	$ 133.16	$ -	$ -
4500071895	11/14/2025	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	$ 160.39	$ -	$ -
4500071877	11/14/2025	Gillig LLC		B120-BUS MECHANICAL PARTS	$ 174.12	$ -	$ -
4500071885	11/14/2025	OneSource Distributors, LLC		M180-STATION ELECTRICAL	$ 180.33	$ -	$ -
4500071890	11/14/2025	Gillig LLC		B250-BUS REPAIR PARTS	$ 190.74	$ -	$ -
4500071873	11/14/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 268.30	$ -	$ -
4500071902	11/14/2025	Init Innovations in Transportation		P130-EQUIP MAINT REPR SVC	$ 269.38	$ -	$ -
4500071876	11/14/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 287.99	$ -	$ -
4500071879	11/14/2025	Reg-A-Car Inc		B250-BUS REPAIR PARTS	$ 292.00	$ -	$ -
4500071898	11/14/2025	Shilpark Paint Corporation		G160-PAINTS & CHEMICALS	$ 301.79	$ -	$ -
4500071894	11/14/2025	Cummins Inc		B250-BUS REPAIR PARTS	$ 506.63	$ -	$ -
4500071892	11/14/2025	Robcar Corporation	Woman Owned Business	F180-BUILDING MATERIALS	$ 525.67	$ -	$ -
4500071897	11/14/2025	Home Depot USA Inc		F110-SHOP/BLDG MACHINERY	$ 620.56	$ -	$ -
4500071882	11/14/2025	RJ International LLC	DBE	G140-SHOP SUPPLIES	$ 678.83	$ -	$ -
4500071891	11/14/2025	Chingon Custom Metal		M180-STATION ELECTRICAL	$ 851.72	$ -	$ -
4500071880	11/14/2025	San Diego Friction Products, Inc.		G140-SHOP SUPPLIES	$ 1,268.81	$ -	$ -
4500071901	11/14/2025	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	$ 1,455.71	$ -	$ -
4500071899	11/14/2025	Gillig LLC		B130-BUS BODY	$ 1,755.30	$ -	$ -
4500071881	11/14/2025	Prudential Overall Supply		G140-SHOP SUPPLIES	$ 2,032.59	$ -	$ -
4500071887	11/14/2025	Graybar Electric Co Inc		M180-STATION ELECTRICAL	$ 2,417.11	$ -	$ -
4500071889	11/14/2025	Waxie's Enterprises, LLC		G140-SHOP SUPPLIES	$ 2,460.79	$ -	$ -
4500071883	11/14/2025	Siemens Mobility, Inc.		R230-RAIL/LRV MECHANICAL	$ 2,802.58	$ -	$ -
4500071893	11/14/2025	Radwell International LLC		M110-SUB STATION	$ 3,025.25	$ -	$ -
4500071874	11/14/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 3,223.59	$ -	$ -
4500071884	11/14/2025	Tennant Sales & Serv Co		F110-SHOP/BLDG MACHINERY	$ 4,379.87	$ -	$ -
4500071875	11/14/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 4,426.37	$ -	$ -
4500071878	11/14/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 14,191.57	$ -	$ -
4500071900	11/14/2025	Transit Innovations LLC		M120-OVRHEAD CATENARY SYS	$ 18,015.80	$ -	$ -
4500071904	11/17/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 11.86	$ -	$ -
4500071905	11/17/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 53.40	$ -	$ -
4500071909	11/17/2025	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	$ 84.07	$ -	$ -
4500071908	11/17/2025	Freeby Signs		B250-BUS REPAIR PARTS	$ 209.84	$ -	$ -
4500071919	11/17/2025	The Sherwin-Williams Company		B130-BUS BODY	$ 245.76	$ -	$ -
4500071926	11/17/2025	Freeby Signs		B130-BUS BODY	$ 260.65	$ -	$ -

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500071925	11/17/2025	Fastenal Company		G140-SHOP SUPPLIES	$ 308.11	$ -	$ -
4500071921	11/17/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 373.17	$ -	$ -
4500071911	11/17/2025	Blue Angel International LLC	Small Business	G190-SAFETY/MED SUPPLIES	$ 413.01	$ -	$ -
4500071913	11/17/2025	AirSuppply Tools, LLC		G130-SHOP TOOLS	$ 468.60	$ -	$ -
4500071931	11/17/2025	W.W. Grainger Inc		G130-SHOP TOOLS	$ 598.83	$ -	$ -
4500071918	11/17/2025	RJ International LLC	DBE	G190-SAFETY/MED SUPPLIES	$ 713.73	$ -	$ -
4500071914	11/17/2025	Bonsall Petroleum Construction Inc		F110-SHOP/BLDG MACHINERY	$ 1,077.50	$ -	$ -
4500071915	11/17/2025	All The King's Flags		M200-YARD FACILITIES	$ 1,144.31	$ -	$ -
4500071922	11/17/2025	Crane Payment Innovations Inc		G290-FARE REVENUE EQUIP	$ 1,323.89	$ -	$ -
4500071910	11/17/2025	Airgas Inc		G190-SAFETY/MED SUPPLIES	$ 1,380.10	$ -	$ -
4500071929	11/17/2025	Init Innovations in Transportation		G290-FARE REVENUE EQUIP	$ 1,708.86	$ -	$ -
4500071907	11/17/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 1,801.01	$ -	$ -
4500071912	11/17/2025	Cembre Inc		G130-SHOP TOOLS	$ 2,548.59	$ -	$ -
4500071930	11/17/2025	Jamaica Bearings Co Inc		R220-RAIL/LRV TRUCKS	$ 2,980.04	$ -	$ -
4500071903	11/17/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 3,071.46	$ -	$ -
4500071927	11/17/2025	Gillig LLC		B130-BUS BODY	$ 3,643.96	$ -	$ -
4500071916	11/17/2025	American Battery Corporation	Small Business	P280-GENERAL SVC AGRMNTS	$ 4,776.56	$ -	$ -
4500071928	11/17/2025	Harbor Diesel & Equipment, Inc		G170-LUBRICANTS	$ 6,775.57	$ -	$ -
4500071906	11/17/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 8,210.23	$ -	$ -
4500071923	11/17/2025	Supreme Oil Co.		A120-AUTO/TRUCK GASOLINE	$ 12,137.36	$ -	$ -
4500071920	11/17/2025	Canada Ticket Inc.		G280-FARE MATERIALS	$ 15,317.59	$ -	$ -
4500071917	11/17/2025	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	$ 76,910.71	$ -	$ -
4400003619	11/18/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 7.48	$ -	$ -
4500071932	11/18/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 51.61	$ -	$ -
4400003618	11/18/2025	Mcmaster-Carr Supply Co		G150-FASTENERS	$ 94.70	$ -	$ -
4500071944	11/18/2025	R.S. Hughes Co Inc		G130-SHOP TOOLS	$ 123.10	$ -	$ -
4500071948	11/18/2025	Winzer Franchise Company		G270-ELECTRICAL/LIGHTING	$ 142.23	$ -	$ -
4500071942	11/18/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 284.80	$ -	$ -
4500071935	11/18/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 413.46	$ -	$ -
4500071939	11/18/2025	Magaldi & Magaldi Inc		B160-BUS ELECTRICAL	$ 430.40	$ -	$ -
4500071941	11/18/2025	Uline Inc		G210-OFFICE FURNITURE	$ 534.45	$ -	$ -
4500071934	11/18/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 543.23	$ -	$ -
4500071940	11/18/2025	Motion Industries, Inc.		G140-SHOP SUPPLIES	$ 619.78	$ -	$ -
4500071938	11/18/2025	Kurt Morgan		G200-OFFICE SUPPLIES	$ 757.17	$ -	$ -
4500071945	11/18/2025	RJ International LLC	DBE	G140-SHOP SUPPLIES	$ 805.54	$ -	$ -
4500071943	11/18/2025	Professional Contractors Supplies		G190-SAFETY/MED SUPPLIES	$ 957.39	$ -	$ -
4500071933	11/18/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 1,308.25	$ -	$ -
4500071949	11/18/2025	Harbor Diesel & Equipment, Inc		B250-BUS REPAIR PARTS	$ 1,861.00	$ -	$ -
4500071937	11/18/2025	Jamison Professional Services, LLC	DBE	G170-LUBRICANTS	$ 2,479.71	$ -	$ -
4500071947	11/18/2025	Team One Repair Inc		G290-FARE REVENUE EQUIP	$ 3,204.81	$ -	$ -
4500071946	11/18/2025	Schunk Carbon Technology LLC		G170-LUBRICANTS	$ 3,410.24	$ -	$ -
4500071936	11/18/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 3,515.04	$ -	$ -
4500071950	11/18/2025	Southern Counties Lubricants LLC		G170-LUBRICANTS	$ 9,244.95	$ -	$ -
4400003621	11/19/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 4.41	$ -	$ -
4500071965	11/19/2025	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	$ 5.74	$ -	$ -
4500071955	11/19/2025	Transit Holdings Inc		G140-SHOP SUPPLIES	$ 53.27	$ -	$ -
4500071953	11/19/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 129.62	$ -	$ -
4400003623	11/19/2025	W.W. Grainger Inc		G130-SHOP TOOLS	$ 143.09	$ -	$ -
4500071958	11/19/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 145.47	$ -	$ -
4400003622	11/19/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 147.51	$ -	$ -
4500071960	11/19/2025	W.W. Grainger Inc		G140-SHOP SUPPLIES	$ 166.01	$ -	$ -
4400003620	11/19/2025	W.W. Grainger Inc		R170-RAIL/LRV HVAC	$ 188.67	$ -	$ -
4500071966	11/19/2025	Home Depot USA Inc		F110-SHOP/BLDG MACHINERY	$ 226.96	$ -	$ -
4500071951	11/19/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 249.89	$ -	$ -
4500071959	11/19/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 776.12	$ -	$ -
4500071956	11/19/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 836.78	$ -	$ -
4500071954	11/19/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 1,082.36	$ -	$ -
4500071962	11/19/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 2,081.21	$ -	$ -
4500071969	11/19/2025	SC Commercial, LLC		A120-AUTO/TRUCK GASOLINE	$ 2,163.64	$ -	$ -
4500071952	11/19/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 2,705.62	$ -	$ -
4500071968	11/19/2025	W.W. Grainger Inc		G140-SHOP SUPPLIES	$ 2,841.86	$ -	$ -
4500071963	11/19/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 3,223.27	$ -	$ -
4500071971	11/19/2025	Airgas Inc		R160-RAIL/LRV ELECTRICAL	$ 3,922.44	$ -	$ -
4500071957	11/19/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 3,929.08	$ -	$ -
4500071961	11/19/2025	The Sherwin-Williams Company		F120-BUS/LRV PAINT BOOTHS	$ 4,607.36	$ -	$ -
4500071964	11/19/2025	Reid and Clark Screen Arts Co		R120-RAIL/LRV CAR BODY	$ 8,111.97	$ -	$ -
4500071970	11/19/2025	Hi-Tec Enterprises		R160-RAIL/LRV ELECTRICAL	$ 8,215.94	$ -	$ -
4400003624	11/20/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 29.96	$ -	$ -
4500072006	11/20/2025	SC Commercial, LLC		G170-LUBRICANTS	$ 95.46	$ -	$ -
4400003626	11/20/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 105.59	$ -	$ -

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500071991	11/20/2025	Freeby Signs		B130-BUS BODY	$ 122.67	$ -	$ -
4500072013	11/20/2025	Willy's Electronic Supply Co Inc		G140-SHOP SUPPLIES	$ 143.85	$ -	$ -
4500071974	11/20/2025	GDN Southwest LLC	Small Business	P130-EQUIP MAINT REPR SVC	$ 163.30	$ -	$ -
4500071999	11/20/2025	Home Depot USA Inc		G140-SHOP SUPPLIES	$ 193.76	$ -	$ -
4500071998	11/20/2025	The Gordian Group, Inc.		C130-CONSTRUCTION SVCS	$ 240.13	$ -	$ -
4400003625	11/20/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 250.39	$ -	$ -
4500071972	11/20/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 263.83	$ -	$ -
4500072010	11/20/2025	Mcmaster-Carr Supply Co		G150-FASTENERS	$ 362.94	$ -	$ -
4500071988	11/20/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 411.90	$ -	$ -
4500071977	11/20/2025	The Gordian Group, Inc.		C110-GENERAL CONTRACTORS	$ 438.56	$ -	$ -
4500072008	11/20/2025	Motion Industries, Inc.		B200-BUS PWR TRAIN EQUIP	$ 576.45	$ -	$ -
4500072012	11/20/2025	Prudential Overall Supply		G140-SHOP SUPPLIES	$ 581.85	$ -	$ -
4500071996	11/20/2025	W.W. Grainger Inc		B120-BUS MECHANICAL PARTS	$ 614.23	$ -	$ -
4500071980	11/20/2025	Signal Hill Auto Enterprises, Inc.		G180-JANITORIAL SUPPLIES	$ 784.14	$ -	$ -
4500072001	11/20/2025	Professional Contractors Supplies		G270-ELECTRICAL/LIGHTING	$ 801.34	$ -	$ -
4500071981	11/20/2025	Home Depot USA Inc		G130-SHOP TOOLS	$ 802.74	$ -	$ -
4500071986	11/20/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 917.96	$ -	$ -
4500072004	11/20/2025	KLI Midco LLC		G170-LUBRICANTS	$ 966.65	$ -	$ -
4500071995	11/20/2025	Network Industries, Inc.		F110-SHOP/BLDG MACHINERY	$ 1,194.47	$ -	$ -
4500072014	11/20/2025	Vern Rose Inc		G140-SHOP SUPPLIES	$ 1,285.07	$ -	$ -
4500071989	11/20/2025	Powerstride Battery Co. Inc.		F110-SHOP/BLDG MACHINERY	$ 1,331.38	$ -	$ -
4500071990	11/20/2025	Fastenal Company		R220-RAIL/LRV TRUCKS	$ 1,493.22	$ -	$ -
4500071973	11/20/2025	Home Depot USA Inc		G130-SHOP TOOLS	$ 1,532.58	$ -	$ -
4500072003	11/20/2025	Vehicle Maintenance Program, Inc.	Woman Owned Business	B250-BUS REPAIR PARTS	$ 1,540.23	$ -	$ -
4500072000	11/20/2025	Prochem Specialty Products Inc	Small Business	G180-JANITORIAL SUPPLIES	$ 1,863.22	$ -	$ -
4500071985	11/20/2025	Staples Contract & Commercial LLC		G200-OFFICE SUPPLIES	$ 1,867.09	$ -	$ -
4500072011	11/20/2025	Southern Counties Lubricants LLC		G170-LUBRICANTS	$ 2,311.24	$ -	$ -
4500071992	11/20/2025	Genfare, LLC		B190-BUS FARE EQUIP	$ 2,322.52	$ -	$ -
4500071984	11/20/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 2,583.15	$ -	$ -
4500071983	11/20/2025	Gillig LLC		B130-BUS BODY	$ 2,585.18	$ -	$ -
4500071979	11/20/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 2,730.97	$ -	$ -
4500071993	11/20/2025	Jamison Professional Services, LLC	DBE	G170-LUBRICANTS	$ 2,752.40	$ -	$ -
4500071978	11/20/2025	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	$ 2,964.65	$ -	$ -
4500071994	11/20/2025	Team One Repair Inc		G290-FARE REVENUE EQUIP	$ 3,003.42	$ -	$ -
4500072005	11/20/2025	Virginia Electronic & Lighting LLC		M140-WAYSIDE SIGNALS	$ 3,232.50	$ -	$ -
4500072009	11/20/2025	Harbor Diesel & Equipment, Inc		G170-LUBRICANTS	$ 3,288.48	$ -	$ -
4500072015	11/20/2025	TK Services Inc		B250-BUS REPAIR PARTS	$ 3,337.02	$ -	$ -
4500072002	11/20/2025	San Diego Friction Products, Inc.		B120-BUS MECHANICAL PARTS	$ 3,637.35	$ -	$ -
4500071975	11/20/2025	Transit Holdings Inc		B130-BUS BODY	$ 3,897.50	$ -	$ 13,500.72
4500072007	11/20/2025	San Diego Seal, Inc.	Small Business	M120-OVRHEAD CATENARY SYS	$ 4,083.55	$ -	$ -
4500071982	11/20/2025	Muncie Reclamation and Supply Co		B250-BUS REPAIR PARTS	$ 4,175.88	$ -	$ -
4500071987	11/20/2025	Waxie's Enterprises, LLC		G140-SHOP SUPPLIES	$ 4,646.69	$ -	$ -
4500071997	11/20/2025	ABC General Contractor, Inc.		C110-GENERAL CONTRACTORS	$ 13,643.23	$ -	$ -
4500071976	11/20/2025	ABC General Contractor, Inc.		C110-GENERAL CONTRACTORS	$ 24,918.28	$ -	$ -
4500072017	11/21/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 37.76	$ -	$ -
4400003627	11/21/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 108.67	$ -	$ -
4500072032	11/21/2025	Quadient, Inc.		P420-MAIL SERVICES	$ 245.00	$ -	$ -
4500072028	11/21/2025	VCA Animal Hospitals, Inc.		G120-SECURITY	$ 373.12	$ -	$ -
4500072027	11/21/2025	Home Depot USA Inc		G200-OFFICE SUPPLIES	$ 499.45	$ -	$ -
4500072022	11/21/2025	Simmons-Boardman Books, Inc.		P540-MAINTENANCE TRAINING	$ 501.14	$ -	$ -
4500072033	11/21/2025	ezCater, Inc		P440-CATERING SERVICES	$ 589.39	$ -	$ -
4500072016	11/21/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 785.89	$ -	$ -
4500072030	11/21/2025	Gillig LLC		B250-BUS REPAIR PARTS	$ 813.54	$ -	$ -
4500072020	11/21/2025	OneSource Distributors, LLC		M190-SDSU ELECTRICAL	$ 1,780.10	$ -	$ -
4500072018	11/21/2025	Transit Holdings Inc		B130-BUS BODY	$ 2,082.95	$ -	$ -
4500072029	11/21/2025	Dimensional Silk Screen Inc		G230-PRINTED MATERIALS	$ 2,127.15	$ -	$ -
4500072021	11/21/2025	Beverly Christensen	DBE	T110-TRACK, RAIL	$ 2,241.02	$ -	$ -
4500072023	11/21/2025	Neyenesch Printers Inc	Small Business	G230-PRINTED MATERIALS	$ 3,134.43	$ -	$ -
4500072019	11/21/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 4,783.67	$ -	$ -
4500072026	11/21/2025	Chestnut Ridge Foam, Inc.		R200-RAIL/LRV SEATING	$ 5,200.00	$ -	$ -
4500072031	11/21/2025	CG Visual Solutions Corporation		G230-PRINTED MATERIALS	$ 7,084.58	$ -	$ -
4500072024	11/21/2025	OneSource Distributors, LLC		R180-RAIL/LRV LIGHTING	$ 7,890.77	$ -	$ -
4500072034	11/21/2025	Morbern LLC		R200-RAIL/LRV SEATING	$ 34,222.07	$ -	$ -
4500072025	11/21/2025	Saitech Inc	Minority Owned Business	I110-INFORMATION TECH	$ 50,496.03	$ -	$ -
4500072037	11/23/2025	W.W. Grainger Inc		M180-STATION ELECTRICAL	$ 1,504.60	$ -	$ -
4500072035	11/23/2025	Transit Holdings Inc		B110-BUS HVAC SYSTEMS	$ 2,439.67	$ -	$ -
4500072038	11/23/2025	Muncie Reclamation and Supply Co		B250-BUS REPAIR PARTS	$ 2,507.57	$ -	$ -
4500072039	11/23/2025	Staples Contract & Commercial LLC		G200-OFFICE SUPPLIES	$ 2,753.16	$ -	$ -
4500072036	11/23/2025	Gillig LLC		B250-BUS REPAIR PARTS	$ 4,075.95	$ -	$ -
4500072075	11/24/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 30.92	$ -	$ -

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500072060	11/24/2025	Genuine Parts Company Inc		G170-LUBRICANTS	$ 69.69	$ -	$ -
4500072053	11/24/2025	OneSource Distributors, LLC		G180-JANITORIAL SUPPLIES	$ 115.07	$ -	$ -
4500072049	11/24/2025	Staples Contract & Commercial LLC		P280-GENERAL SVC AGRMNTS	$ 188.42	$ -	$ -
4500072055	11/24/2025	B and H Photo and Electronics		P540-MAINTENANCE TRAINING	$ 331.31	$ -	$ -
4500072042	11/24/2025	Gillig LLC		G140-SHOP SUPPLIES	$ 340.06	$ -	$ -
4500072048	11/24/2025	San Diego Compressed Air Power LLC		F110-SHOP/BLDG MACHINERY	$ 349.44	$ -	$ -
4500072056	11/24/2025	Home Depot USA Inc		F110-SHOP/BLDG MACHINERY	$ 379.24	$ -	$ -
4500072052	11/24/2025	Home Depot USA Inc		F110-SHOP/BLDG MACHINERY	$ 383.91	$ -	$ -
4500072066	11/24/2025	White Cap, LP		M180-STATION ELECTRICAL	$ 468.34	$ -	$ -
4500072059	11/24/2025	Blue Angel International LLC	Small Business	G190-SAFETY/MED SUPPLIES	$ 552.82	$ -	$ -
4500072070	11/24/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 568.37	$ -	$ -
4500072054	11/24/2025	Cummins Inc		B250-BUS REPAIR PARTS	$ 622.25	$ -	$ -
4500072074	11/24/2025	Naumann Hobbs Material Handling		F170-MATL HANDLING EQUIP	$ 634.36	$ -	$ -
4500072058	11/24/2025	White Cap, LP		F180-BUILDING MATERIALS	$ 804.92	$ -	$ -
4500072051	11/24/2025	Home Depot USA Inc		G210-OFFICE FURNITURE	$ 981.28	$ -	$ -
4500072043	11/24/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 1,058.38	$ -	$ -
4500072046	11/24/2025	Home Depot USA Inc		G210-OFFICE FURNITURE	$ 1,929.04	$ -	$ -
4500072050	11/24/2025	IAT International Inc		T140-TRACK, TURNOUTS	$ 2,075.50	$ -	$ -
4500072041	11/24/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 2,171.38	$ -	$ -
4500072068	11/24/2025	Advanced Healthstyles Fitness Equip		G200-OFFICE SUPPLIES	$ 2,345.09	$ -	$ -
4500072045	11/24/2025	Cummins Inc		B250-BUS REPAIR PARTS	$ 2,422.01	$ -	$ -
4500072071	11/24/2025	Merrimac Petroleum Inc	Woman Owned Business	A120-AUTO/TRUCK GASOLINE	$ 2,610.62	$ -	$ -
4500072061	11/24/2025	Hitachi Rail STS USA, Inc.		M130-CROSSING MECHANISM	$ 2,618.33	$ -	$ -
4500072069	11/24/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 3,225.68	$ -	$ -
4500072062	11/24/2025	Marco's Canopies Inc		G140-SHOP SUPPLIES	$ 3,238.55	$ -	$ -
4500072040	11/24/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 3,512.12	$ -	$ -
4500072057	11/24/2025	Dellner Inc		R130-RAIL/LRV COUPLER	$ 3,555.75	$ -	$ -
4500072064	11/24/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 3,668.89	$ -	$ -
4500072063	11/24/2025	Digi-Key Corporation		R160-RAIL/LRV ELECTRICAL	$ 3,836.62	$ -	$ -
4500072067	11/24/2025	ISC Applied Systems Corp		R150-RAIL/LRV COMM EQUIP	$ 4,310.00	$ -	$ -
4500072047	11/24/2025	Siemens Mobility, Inc.		M140-WAYSIDE SIGNALS	$ 5,311.39	$ -	$ -
4500072073	11/24/2025	Cummins Inc		B250-BUS REPAIR PARTS	$ 7,099.54	$ -	$ -
4500072044	11/24/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 7,627.92	$ -	$ -
4500072072	11/24/2025	Supreme Oil Co.		A120-AUTO/TRUCK GASOLINE	$ 11,295.84	$ -	$ -
4500072065	11/24/2025	Esri, Inc		I110-INFORMATION TECH	$ 37,095.00	$ -	$ -
4500072078	11/25/2025	Siemens Mobility, Inc.		G150-FASTENERS	$ -	$ -	$ -
4500072092	11/25/2025	W.W. Grainger Inc		G140-SHOP SUPPLIES	$ 90.34	$ -	$ -
4500072082	11/25/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 108.52	$ -	$ -
4500072080	11/25/2025	Pacific Star Corporation		G180-JANITORIAL SUPPLIES	$ 116.93	$ -	$ -
4500072087	11/25/2025	Ace Uniforms LLC	Small Business	C120-SPECIALTY CONTRACTOR	$ 182.64	$ -	$ -
4500072079	11/25/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 305.15	$ -	$ -
4500072083	11/25/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 311.55	$ -	$ -
4500072084	11/25/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 383.38	$ -	$ -
4500072093	11/25/2025	W.W. Grainger Inc		P280-GENERAL SVC AGRMNTS	$ 418.34	$ -	$ -
4500072086	11/25/2025	Gillig LLC		B250-BUS REPAIR PARTS	$ 590.64	$ -	$ -
4500072090	11/25/2025	Home Depot USA Inc		G160-PAINTS & CHEMICALS	$ 926.65	$ -	$ -
4500072076	11/25/2025	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	$ 943.89	$ -	$ -
4500072094	11/25/2025	Rush Truck Centers of California		B200-BUS PWR TRAIN EQUIP	$ 1,508.50	$ -	$ -
4500072085	11/25/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 1,990.80	$ -	$ -
4500072081	11/25/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 2,375.98	$ -	$ -
4500072077	11/25/2025	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	$ 7,079.18	$ -	$ -
4500072097	11/26/2025	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	$ 42.76	$ -	$ -
4500072103	11/26/2025	Cummins Inc		B250-BUS REPAIR PARTS	$ 76.81	$ -	$ -
4500072101	11/26/2025	Ace Uniforms LLC	Small Business	C120-SPECIALTY CONTRACTOR	$ 94.79	$ -	$ -
4400003628	11/26/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 110.50	$ -	$ -
4500072100	11/26/2025	VCA Animal Hospitals, Inc.		G120-SECURITY	$ 135.68	$ -	$ -
4500072096	11/26/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 453.07	$ -	$ -
4500072099	11/26/2025	Transit Holdings Inc		B130-BUS BODY	$ 751.58	$ -	$ -
4500072095	11/26/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 3,104.61	$ -	$ -
4500072098	11/26/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 4,566.36	$ -	$ -
4500072102	11/26/2025	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	$ 104,402.52	$ -	$ -
4500072105	11/28/2025	Muncie Reclamation and Supply Co		B200-BUS PWR TRAIN EQUIP	$ 17.45	$ -	$ -
4500072109	11/28/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 28.00	$ -	$ -
4500072106	11/28/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 206.73	$ -	$ -
4500072104	11/28/2025	Matheson Tri-Gas Inc		P160-EQUIPMENT RENTALS	$ 248.46	$ -	$ -
4500072112	11/28/2025	Siemens Mobility, Inc.		R230-RAIL/LRV MECHANICAL	$ 264.74	$ -	$ -
4500072110	11/28/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 267.09	$ -	$ -
4500072123	11/28/2025	AirSuppply Tools, LLC		G140-SHOP SUPPLIES	$ 328.26	$ -	$ -
4500072124	11/28/2025	Home Depot USA Inc		F110-SHOP/BLDG MACHINERY	$ 335.71	$ -	$ -
4500072111	11/28/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 355.70	$ -	$ -

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500072121	11/28/2025	W.W. Grainger Inc		G140-SHOP SUPPLIES	$ 422.89	$ -	$ -
4500072107	11/28/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 456.65	$ -	$ -
4500072116	11/28/2025	Blue Angel International LLC	Small Business	G190-SAFETY/MED SUPPLIES	$ 703.51	$ -	$ -
4500072114	11/28/2025	Clarran Inc.	DBE	G140-SHOP SUPPLIES	$ 764.41	$ -	$ -
4500072125	11/28/2025	Kurt Morgan		G200-OFFICE SUPPLIES	$ 932.72	$ -	$ -
4500072117	11/28/2025	Fastenal Company		R220-RAIL/LRV TRUCKS	$ 971.05	$ -	$ -
4500072120	11/28/2025	Vern Rose Inc		G160-PAINTS & CHEMICALS	$ 995.40	$ -	$ -
4500072128	11/28/2025	Prochem Specialty Products Inc	Small Business	G180-JANITORIAL SUPPLIES	$ 1,397.41	$ -	$ -
4500072130	11/28/2025	R.S. Hughes Co Inc		G160-PAINTS & CHEMICALS	$ 1,400.35	$ -	$ -
4500072126	11/28/2025	Mohawk Mfg & Supply Co		B110-BUS HVAC SYSTEMS	$ 1,492.90	$ -	$ -
4500072118	11/28/2025	RJ International LLC	DBE	G140-SHOP SUPPLIES	$ 1,632.42	$ -	$ -
4500072131	11/28/2025	Annex Warehouse Company, Inc		F120-BUS/LRV PAINT BOOTHS	$ 1,695.08	$ -	$ -
4500072119	11/28/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 1,751.79	$ -	$ -
4500072132	11/28/2025	Home Depot USA Inc		F140-SHELVING AND RACK	$ 2,108.70	$ -	$ -
4500072127	11/28/2025	Muncie Reclamation and Supply Co		B120-BUS MECHANICAL PARTS	$ 2,768.79	$ -	$ -
4500072129	11/28/2025	Team One Repair Inc		G290-FARE REVENUE EQUIP	$ 3,065.81	$ -	$ -
4500072122	11/28/2025	Waxie's Enterprises, LLC		G140-SHOP SUPPLIES	$ 3,980.30	$ -	$ -
4500072108	11/28/2025	Transit Holdings Inc		B130-BUS BODY	$ 4,458.00	$ -	$ -
4500072115	11/28/2025	Cummins Inc		B130-BUS BODY	$ 4,735.66	$ -	$ -
4500072113	11/28/2025	Out-Fit A California Corporation		G220-OFFICE EQUIPMENT	$ 8,271.31	$ -	$ -
4500072134	11/30/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 367.64	$ -	$ -
4500072135	11/30/2025	Gillig LLC		B130-BUS BODY	$ 461.70	$ -	$ -
4500072133	11/30/2025	Cummins Inc		B250-BUS REPAIR PARTS	$ 634.38	$ -	$ -
4500072136	11/30/2025	Professional Contractors Supplies		G140-SHOP SUPPLIES	$ 1,534.21	$ -	$ -
4500072161	12/1/2025	Freeby Signs		B130-BUS BODY	$ 17.84	$ -	$ -
4500072162	12/1/2025	Mcmaster-Carr Supply Co		G140-SHOP SUPPLIES	$ 47.96	$ -	$ -
4500072157	12/1/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 99.11	$ -	$ -
4500072147	12/1/2025	W.W. Grainger Inc		G190-SAFETY/MED SUPPLIES	$ 124.35	$ -	$ -
4500072145	12/1/2025	Home Depot USA Inc		G130-SHOP TOOLS	$ 149.25	$ -	$ -
4500072156	12/1/2025	Charter Industrial Supply Inc	Small Business	B120-BUS MECHANICAL PARTS	$ 160.01	$ -	$ -
4500072137	12/1/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 179.41	$ -	$ -
4500072143	12/1/2025	Freeby Signs		B250-BUS REPAIR PARTS	$ 215.50	$ -	$ -
4500072160	12/1/2025	Facility Solutions Group, Inc.		M180-STATION ELECTRICAL	$ 229.51	$ -	$ -
4500072142	12/1/2025	Delaware Electro Industries, Inc.	Small Business	G140-SHOP SUPPLIES	$ 230.59	$ -	$ -
4500072138	12/1/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 254.72	$ -	$ -
4500072164	12/1/2025	Gillig LLC		B140-BUS CHASSIS	$ 262.26	$ -	$ -
4500072139	12/1/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 273.99	$ -	$ -
4400003631	12/1/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 368.65	$ -	$ -
4500072165	12/1/2025	Ace Uniforms LLC	Small Business	G240-UNIFORM PROCUREMENT	$ 540.76	$ -	$ -
4400003632	12/1/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 597.92	$ -	$ -
4400003629	12/1/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 660.52	$ -	$ -
4500072158	12/1/2025	W.W. Grainger Inc		F110-SHOP/BLDG MACHINERY	$ 859.63	$ -	$ -
4500072148	12/1/2025	Westech Metal Fabrication Inc		F110-SHOP/BLDG MACHINERY	$ 969.75	$ -	$ -
4500072141	12/1/2025	Transit Holdings Inc		B130-BUS BODY	$ 1,015.51	$ -	$ -
4500072155	12/1/2025	San Diego Friction Products, Inc.		B250-BUS REPAIR PARTS	$ 1,159.86	$ -	$ -
4500072163	12/1/2025	Digi-Key Corporation		R170-RAIL/LRV HVAC	$ 1,386.22	$ -	$ -
4500072150	12/1/2025	Vehicle Maintenance Program, Inc.	Woman Owned Business	B120-BUS MECHANICAL PARTS	$ 1,763.03	$ -	$ -
4400003630	12/1/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 1,813.55	$ -	$ -
4500072152	12/1/2025	Merrimac Petroleum Inc	Woman Owned Business	A120-AUTO/TRUCK GASOLINE	$ 2,417.97	$ -	$ -
4500072151	12/1/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 2,894.96	$ -	$ -
4500072166	12/1/2025	Global Display Solutions, Inc.		G110-BUS/TROLLEY SIGNAGE	$ 3,150.00	$ -	$ -
4500072154	12/1/2025	Gillig LLC		B140-BUS CHASSIS	$ 3,385.91	$ -	$ -
4500072140	12/1/2025	Transit Holdings Inc		B130-BUS BODY	$ 6,251.14	$ -	$ -
4500072144	12/1/2025	VGP Holdings LLC		B120-BUS MECHANICAL PARTS	$ 6,491.94	$ -	$ -
4500072146	12/1/2025	Penn Machine Company LLC		R220-RAIL/LRV TRUCKS	$ 10,990.50	$ -	$ -
4500072153	12/1/2025	Supreme Oil Co.		A120-AUTO/TRUCK GASOLINE	$ 11,133.99	$ -	$ -
4500072159	12/1/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 11,463.17	$ -	$ -
4500072149	12/1/2025	Merrimac Petroleum Inc	Woman Owned Business	A120-AUTO/TRUCK GASOLINE	$ 12,284.50	$ -	$ -
4500072171	12/2/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 16.17	$ -	$ -
4500072174	12/2/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 71.63	$ -	$ -
4500072179	12/2/2025	Home Depot USA Inc		G200-OFFICE SUPPLIES	$ 167.00	$ -	$ -
4500072176	12/2/2025	Winzer Franchise Company		G150-FASTENERS	$ 199.45	$ -	$ -
4500072170	12/2/2025	GDN Southwest LLC	Small Business	P130-EQUIP MAINT REPR SVC	$ 249.64	$ -	$ -
4500072167	12/2/2025	Muncie Reclamation and Supply Co		B200-BUS PWR TRAIN EQUIP	$ 401.04	$ -	$ -
4500072173	12/2/2025	Muncie Reclamation and Supply Co		B140-BUS CHASSIS	$ 429.83	$ -	$ -
4500072168	12/2/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 469.00	$ -	$ -
4500072178	12/2/2025	SC Commercial, LLC		A120-AUTO/TRUCK GASOLINE	$ 867.21	$ -	$ -
4400003634	12/2/2025	Mcmaster-Carr Supply Co		R170-RAIL/LRV HVAC	$ 879.55	$ -	$ -
4500072172	12/2/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 1,032.03	$ -	$ -
4500072175	12/2/2025	Transit Holdings Inc		B130-BUS BODY	$ 1,582.87	$ -	$ -

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500072169	12/2/2025	All Industrial Tool Supply		G140-SHOP SUPPLIES	$ 1,653.74	$ -	$ -
4400003633	12/2/2025	W.W. Grainger Inc		R170-RAIL/LRV HVAC	$ 3,279.65	$ -	$ -
4500072177	12/2/2025	Mike Farrar		B130-BUS BODY	$ 9,620.00	$ -	$ -
4500072185	12/3/2025	Grah Safe & Lock Inc	Small Business	G200-OFFICE SUPPLIES	$ 69.50	$ -	$ -
4400003635	12/3/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 120.57	$ -	$ -
4500072181	12/3/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 240.12	$ -	$ -
4500072182	12/3/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 1,530.01	$ -	$ -
4500072183	12/3/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 2,322.59	$ -	$ -
4500072180	12/3/2025	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	$ 2,767.47	$ -	$ -
4500072184	12/3/2025	Team One Repair Inc		G290-FARE REVENUE EQUIP	$ 16,560.84	$ -	$ -
4500072203	12/4/2025	Staples Contract & Commercial LLC		G200-OFFICE SUPPLIES	$ 48.97	$ -	$ -
4500072195	12/4/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 55.92	$ -	$ -
4500072188	12/4/2025	Muncie Reclamation and Supply Co		B200-BUS PWR TRAIN EQUIP	$ 107.16	$ -	$ -
4500072204	12/4/2025	American Seating Company	Small Business	R200-RAIL/LRV SEATING	$ 118.53	$ -	$ -
4500072189	12/4/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 388.92	$ -	$ -
4400003636	12/4/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 451.71	$ -	$ -
4500072187	12/4/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 498.43	$ -	$ -
4500072194	12/4/2025	Gillig LLC		B250-BUS REPAIR PARTS	$ 643.11	$ -	$ -
4500072202	12/4/2025	All Industrial Tool Supply		P130-EQUIP MAINT REPR SVC	$ 739.43	$ -	$ -
4500072205	12/4/2025	B and H Photo and Electronics		B150-BUS COMM EQUIP.	$ 888.81	$ -	$ -
4500072192	12/4/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 1,026.75	$ -	$ -
4500072196	12/4/2025	Magaldi & Magaldi Inc		B250-BUS REPAIR PARTS	$ 1,342.91	$ -	$ -
4500072193	12/4/2025	Ralphs Grocery Company		G250-NOVELTIES & AWARDS	$ 1,421.87	$ -	$ -
4500072198	12/4/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 1,608.10	$ -	$ -
4500072191	12/4/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 1,908.91	$ -	$ -
4500072201	12/4/2025	Simmons-Boardman Books, Inc.		P540-MAINTENANCE TRAINING	$ 1,984.00	$ -	$ -
4500072200	12/4/2025	Ascendancy Corp		R230-RAIL/LRV MECHANICAL	$ 2,576.49	$ -	$ -
4500072206	12/4/2025	Digi-Key Corporation		R160-RAIL/LRV ELECTRICAL	$ 2,698.81	$ -	$ -
4500072190	12/4/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 2,939.98	$ -	$ -
4500072186	12/4/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 4,426.37	$ -	$ -
4500072199	12/4/2025	Fastenal Company		G200-OFFICE SUPPLIES	$ 4,519.32	$ -	$ -
4500072197	12/4/2025	San Diego Hydraulics, Inc.		P210-NON-REV VEH REPAIRS	$ 4,935.28	$ -	$ -
4500072209	12/5/2025	Muncie Reclamation and Supply Co		B200-BUS PWR TRAIN EQUIP	$ 58.31	$ -	$ -
4400003640	12/5/2025	Mcmaster-Carr Supply Co		G150-FASTENERS	$ 74.46	$ -	$ -
4500072214	12/5/2025	Digi-Key Corporation		R160-RAIL/LRV ELECTRICAL	$ 135.33	$ -	$ -
4500072217	12/5/2025	Ascendancy Corp		F190-LANDSCAPING MAT'LS	$ 289.77	$ -	$ -
4400003639	12/5/2025	W.W. Grainger Inc		G130-SHOP TOOLS	$ 316.74	$ -	$ -
4400003637	12/5/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 409.12	$ -	$ -
4400003638	12/5/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 461.88	$ -	$ -
4500072215	12/5/2025	All In One Poster Company, Inc.		P480-EE MAINTENANCE	$ 823.04	$ -	$ -
4500072213	12/5/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 1,110.27	$ -	$ -
4500072216	12/5/2025	Ace Uniforms LLC	Small Business	G120-SECURITY	$ 1,203.29	$ -	$ -
4500072212	12/5/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 2,540.69	$ -	$ -
4500072211	12/5/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 2,833.74	$ -	$ -
4500072218	12/5/2025	CDW LLC		I110-INFORMATION TECH	$ 3,039.24	$ -	$ -
4500072208	12/5/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 4,069.62	$ -	$ -
4500072210	12/5/2025	Signal Hill Auto Enterprises, Inc.		G180-JANITORIAL SUPPLIES	$ 4,749.08	$ -	$ -
4500072207	12/5/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 8,516.14	$ -	$ -
4500072225	12/8/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 9.04	$ -	$ -
4500072220	12/8/2025	Mohawk Mfg & Supply Co		B140-BUS CHASSIS	$ 21.38	$ -	$ -
4500072234	12/8/2025	Shilpark Paint Corporation		G160-PAINTS & CHEMICALS	$ 46.65	$ -	$ -
4500072237	12/8/2025	Ascendancy Corp		F190-LANDSCAPING MAT'LS	$ 59.21	$ -	$ -
4500072222	12/8/2025	Signal Hill Auto Enterprises, Inc.		G180-JANITORIAL SUPPLIES	$ 69.50	$ -	$ -
4500072249	12/8/2025	Network Industries, Inc.		G130-SHOP TOOLS	$ 99.85	$ -	$ -
4400003645	12/8/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 114.11	$ -	$ -
4400003643	12/8/2025	W.W. Grainger Inc		M180-STATION ELECTRICAL	$ 136.30	$ -	$ -
4500072223	12/8/2025	Transit Holdings Inc		G140-SHOP SUPPLIES	$ 170.64	$ -	$ -
4400003641	12/8/2025	Mcmaster-Carr Supply Co		R230-RAIL/LRV MECHANICAL	$ 269.26	$ -	$ -
4500072245	12/8/2025	Office Solutions		G200-OFFICE SUPPLIES	$ 279.08	$ -	$ -
4500072240	12/8/2025	W.W. Grainger Inc		G140-SHOP SUPPLIES	$ 294.44	$ -	$ -
4400003644	12/8/2025	Mcmaster-Carr Supply Co		R150-RAIL/LRV COMM EQUIP	$ 306.30	$ -	$ -
4500072238	12/8/2025	Clarran Inc.	DBE	G150-FASTENERS	$ 377.23	$ -	$ -
4500072227	12/8/2025	San Diego Hydraulics, Inc.		P210-NON-REV VEH REPAIRS	$ 391.32	$ -	$ -
4500072232	12/8/2025	W.W. Grainger Inc		G140-SHOP SUPPLIES	$ 394.37	$ -	$ -
4400003646	12/8/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 397.80	$ -	$ -
4500072239	12/8/2025	W.W. Grainger Inc		P280-GENERAL SVC AGRMNTS	$ 461.51	$ -	$ -
4500072251	12/8/2025	Alpine Fence Inc.		F190-LANDSCAPING MAT'LS	$ 480.57	$ -	$ -
4500072247	12/8/2025	Network Industries, Inc.		F110-SHOP/BLDG MACHINERY	$ 558.25	$ -	$ -
4500072230	12/8/2025	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	$ 559.87	$ -	$ -
4400003642	12/8/2025	ODP Business Solutions, LLC		G250-NOVELTIES & AWARDS	$ 822.79	$ -	$ -

Purchase Orders							
Purchase Orders	**PO Date**	**Name**	**Prime Business Certification**	**Material Group**	**PO Value**	**DBE Subcontracted Amount**	**Non DBE Subcontracted Amount**
4500072254	12/8/2025	Haichris Inc		G200-OFFICE SUPPLIES	$ 869.48	$ -	$ -
4500072231	12/8/2025	Network Industries, Inc.		G140-SHOP SUPPLIES	$ 1,175.55	$ -	$ -
4500072248	12/8/2025	Seon Design (USA) Corp.		R150-RAIL/LRV COMM EQUIP	$ 1,249.10	$ -	$ -
4500072246	12/8/2025	Ralphs Grocery Company		P440-CATERING SERVICES	$ 1,421.87	$ -	$ -
4500072228	12/8/2025	Drake Integrations LLC	Small Business	P280-GENERAL SVC AGRMNTS	$ 1,640.00	$ -	$ -
4500072219	12/8/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 1,855.51	$ -	$ -
4500072224	12/8/2025	Cummins Inc		B140-BUS CHASSIS	$ 2,078.61	$ -	$ -
4500072244	12/8/2025	Southern Counties Oil Co, LP		A120-AUTO/TRUCK GASOLINE	$ 2,287.22	$ -	$ -
4500072221	12/8/2025	Transit Holdings Inc		B130-BUS BODY	$ 3,194.43	$ -	$ -
4500072235	12/8/2025	Graybar Electric Co Inc		I110-INFORMATION TECH	$ 4,071.27	$ -	$ -
4500072241	12/8/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 4,274.61	$ -	$ -
4500072236	12/8/2025	Gillig LLC		B150-BUS COMM EQUIP.	$ 4,296.35	$ -	$ -
4500072250	12/8/2025	HJR Equipment Rental, Inc.		F110-SHOP/BLDG MACHINERY	$ 4,487.80	$ -	$ -
4500072229	12/8/2025	Siemens Mobility, Inc.		R160-RAIL/LRV ELECTRICAL	$ 6,324.93	$ -	$ -
4500072243	12/8/2025	Supreme Oil Co.		A120-AUTO/TRUCK GASOLINE	$ 10,842.71	$ -	$ -
4500072233	12/8/2025	W. Baker Management Inc		R160-RAIL/LRV ELECTRICAL	$ 10,964.64	$ -	$ -
4500072253	12/8/2025	Brand Makers LLC		P310-ADVERTISING SERVICES	$ 14,341.57	$ -	$ -
4500072226	12/8/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 15,444.15	$ -	$ -
4500072252	12/8/2025	General Signals Inc		M130-CROSSING MECHANISM	$ 25,914.95	$ -	$ -
4500072268	12/9/2025	Staples Contract & Commercial LLC		G200-OFFICE SUPPLIES	$ 62.30	$ -	$ -
4400003647	12/9/2025	W.W. Grainger Inc		G130-SHOP TOOLS	$ 93.70	$ -	$ -
4400003649	12/9/2025	ODP Business Solutions, LLC		G200-OFFICE SUPPLIES	$ 112.36	$ -	$ -
4500072258	12/9/2025	Transit Holdings Inc		B120-BUS MECHANICAL PARTS	$ 133.11	$ -	$ -
4500072266	12/9/2025	Home Depot USA Inc		G290-FARE REVENUE EQUIP	$ 225.57	$ -	$ -
4500072259	12/9/2025	Waxie's Enterprises, LLC		G180-JANITORIAL SUPPLIES	$ 305.15	$ -	$ -
4500072257	12/9/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 413.56	$ -	$ -
4400003648	12/9/2025	ODP Business Solutions, LLC		G250-NOVELTIES & AWARDS	$ 635.18	$ -	$ -
4500072261	12/9/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 974.35	$ -	$ -
4500072262	12/9/2025	Home Depot USA Inc		R230-RAIL/LRV MECHANICAL	$ 1,029.08	$ -	$ -
4500072265	12/9/2025	Willy's Electronic Supply Co Inc		G270-ELECTRICAL/LIGHTING	$ 1,060.26	$ -	$ -
4500072256	12/9/2025	Westair Gases and Equipment Inc	Small Business	G140-SHOP SUPPLIES	$ 1,153.36	$ -	$ -
4500072269	12/9/2025	RA Automotive Software Solutions In		B250-BUS REPAIR PARTS	$ 1,200.00	$ -	$ -
4500072263	12/9/2025	Schunk Carbon Technology LLC		R190-RAIL/LRV PANTOGRAPH	$ 1,689.52	$ -	$ -
4500072260	12/9/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 2,078.22	$ -	$ -
4500072255	12/9/2025	Hanning & Kahl LP		M150-PWR SWITCHES/LOCKS	$ 2,816.36	$ -	$ -
4500072267	12/9/2025	Omega II Inc		G130-SHOP TOOLS	$ 4,262.93	$ -	$ -
4500072264	12/9/2025	Canada Ticket Inc.		G280-FARE MATERIALS	$ 12,583.67	$ -	$ -
4500072274	12/10/2025	Transit Holdings Inc		B250-BUS REPAIR PARTS	$ 97.96	$ -	$ -
4500072270	12/10/2025	Transit Holdings Inc		B160-BUS ELECTRICAL	$ 1,143.38	$ -	$ -
4500072271	12/10/2025	Siemens Mobility, Inc.		R130-RAIL/LRV COUPLER	$ 1,188.96	$ -	$ -
4500072273	12/10/2025	Kurt Morgan		G200-OFFICE SUPPLIES	$ 1,655.00	$ -	$ -
4500072276	12/10/2025	Transit Holdings Inc		B200-BUS PWR TRAIN EQUIP	$ 3,243.99	$ -	$ -
4500072279	12/10/2025	Transit Holdings Inc		B140-BUS CHASSIS	$ 3,413.31	$ -	$ -
4500072275	12/10/2025	Cummins Inc		B200-BUS PWR TRAIN EQUIP	$ 4,686.45	$ -	$ -
4500072278	12/10/2025	Vehicle Maintenance Program, Inc.	Woman Owned Business	B250-BUS REPAIR PARTS	$ 5,181.99	$ -	$ -
4500072277	12/10/2025	Teknoware Inc.		R180-RAIL/LRV LIGHTING	$ 10,409.13	$ -	$ -
4500072272	12/10/2025	Siemens Mobility, Inc.		R120-RAIL/LRV CAR BODY	$ 35,854.59	$ -	$ -

The U.S. Department of Transportation (USDOT) has issued an Interim Final Rule (IFR) that makes changes to the Disadvantaged Business Enterprise (DBE) program effective October 3, 2025. These changes affect how DBE firms become certified, how existing DBE firms maintain certification, and how recipients like MTS may count DBE participation. For any firms that are listed to have a DBE certification, the DBE certification is based on the old certification standards prior to October 3, 2025. MTS is currently reviewing the IFR and working with our funding agencies to identify what program and procedural changes may be necessary

EXPENSE CONTRACTS				
Doc #	**Organization**	**Subject**	**Amount**	**Day**
G2795.3-24	DAVRA	CRADLEPOINT & DVS SERVER SUPPORT	$22,400.00	11/17/2025
PWG347.0-22JOC347-43	ABCGC	EUCLID TC CONCRETE REPAIRS	$24,918.28	11/18/2025
G3082.1-25	TELEQO	REVISION TO SOW	$3,800.00	11/20/2025
PWG324.0-21JOC74.01	ABCGC	CCO 01 LEVELING	$8,129.84	11/20/2025
PWB371.3-23	GPG	SACPOWER CCO 3	$40,019.29	11/25/2025
PWB371.4-23	GPG	CCO 1 & 2	$23,769.41	11/25/2025
PWG324.0-21JOC63.02	ABCGC	CCO 02	$6,619.33	12/5/2025
PWL354.0-22WOAAE04.02	MM	ADD SVCS	$67,812.78	12/9/2025
G3098.0-25	MARK WATTS ADVOCACY	STATE LOBBYING SERVICES	$105,000.00	12/10/2025

REVENUE CONTRACTS AND MOUs				
Doc #	**Organization**	**Subject**	**Amount**	**Day**
G2653.0-23.12	BRICEHOUSE STATION LLC	MASTER CONCESSIONAIRE SERVICE AT GASLAMP	$7,000.00	11/19/2025
G2696.1-23	HMS CONSTRUCTION	LEASE AGREEMENT BALTIMORE DR	$149,125.00	11/24/2025
L6887.0-25	JACOBS PROJECT MANAGEMENT	JROE MID COAST CORRIDOR EMERGENCY SLOPE REPAIR	$750.00	11/25/2025
L6897.0-26	MCTC	GEOTECH INVESTIGATION TIEBACK INSTALLATION	$750.00	11/25/2025
L5873.0-26	CALTRANS	SLOPE PAVING OLD TOWN VIADUCT	$1,072.12	12/2/2025
L5876.0-26	SUSAN G. KOMEN BREAST CANCER FOUNDATION	JROE 2025 3 DAY RACE EVENT	$750.00	12/9/2025

Metropolitan Transit System

Agenda Item No. 05

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Fire Extinguisher Maintenance and As-Needed Repairs – Contract Award

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWG450.0-26 (in substantially the same format as Attachment A), to Fire Smart Fire Protection, for the provision of fire extinguisher maintenance and as-needed repair services for a period of five (5) years in the amount of $206,496.85.

Budget Impact

The total contract cost is estimated to be $206,496.85. The project will be funded by the Operating Budget accounts as follows:

Description	Operating Budget	Total Budget Amount
San Diego Trolley, Inc. (SDTI)	380016/536500	$144,547.80
San Diego Transit Corporation (SDTC)	331014/536600	$28,909.55
Bus Rapid Transit (BRT)	846012/571140	$33,039.50
	Total Amount	**$206,496.85**

DISCUSSION:

MTS collectively has approximately 1,600 rechargeable fire extinguishers, ranging from five (5) to twenty (20) lbs., distributed at various locations including bus maintenance facilities, administrative and operating facilities, substations, bus and trolley vehicle fleet, and stations. The fire extinguishers require testing, maintenance, and as-needed replacement.

This contract will provide full provision of labor, equipment, materials, and supplies for a comprehensive multi-year fire extinguisher maintenance and repair program, including monthly and annual testing, hydrostatic testing, and as-needed recharging, replacement and repair services.

The effects of fire extinguisher maintenance and repair activities will be to ensure all equipment functions properly and is maintained in accordance with California State Fire Marshal (CSFM)

and the National Fire Protection Association (NFPA) regulations. The existing contract for these services is due to expire on December 31, 2025.

On August 22, 2025, MTS issued an Invitation for Bids (IFB) for Fire Extinguisher Maintenance and As-Needed Repairs. MTS staff advertised in the San Diego Daily Transcript and posted the IFB solicitation on PlanetBids.

A total of three (3) bids were received by October 17th, 2025, from the following firms:

Company Name	Certification	Bid Amount
Fire Smart Fire Protection	Small Business (Micro) (SB)	$206,496.85
First Response Fire Protection Services	Disabled Veteran Business Enterprise (DVBE), Persons with Disabilities Business Enterprise (PDBE), SB (Micro)	$255,886.85
Majestic Fire, Inc.	N/A	$267,433.19

After reviewing all bids, Fire Smart Fire Protection was deemed the lowest responsive and responsible bidder. In comparison to the bids received and with MTS's Independent Cost Estimate (ICE) at $226,274.18, MTS staff determined Fire Smart Fire Protection bid price to be fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWG450.0-26 (in substantially the same format as Attachment A), to Fire Smart Fire Protection, for the provision of fire extinguisher maintenance and as-needed repair services for a period of five (5) years in the amount of $206,496.85.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, julia.tuer@sdmts.com

Attachments: A. Draft Agreement MTS Doc. No. PWG450.0-26
B. Scope of Work
C. Bid Form

Metropolitan Transit System

STANDARD CONSTRUCTION AGREEMENT

FOR

MTS DOC. NO. PWG450.0-26

FIRE EXTINGUISHER MAINTENANCE AND AS-NEEDED REPAIRS

THIS AGREEMENT is entered into this _____ day of _____, 2025 in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Fire Smart Fire Protection Address: 2526 Sarbonne Dr.

Oceanside CA 92054
City State Zip

Form of Business: Sole Proprietor
(Corporation, Partnership, Sole Proprietor, etc.)

Email: firesmart@verizon.com

Telephone: 949-294-5467

Authorized person to sign contracts Jeffrey Kraus Owner
Name Title

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in accordance with the Standard Agreement and General Conditions (Exhibit A), Scope of Work, Special Conditions and Attachments (Exhibit B), Bid Price Form (Exhibit C), Federal Requirements (Exhibit D), and Forms (Exhibit E).

SCOPE OF WORK.

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

FIRE EXTINGUISHER MAINTENANCE AND AS-NEEDED REPAIRS

DRAFT

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

The contract term is for up to (5) years effective January 1, 2026, through December 31, 2031.

CONTRACT PRICE.

MTS shall pay the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of two hundred six thousand four hundred ninety-six dollars and eighty-five cents ($206,496.85). Payment shall be made as set forth in the General Conditions.

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	FIRE SMART FIRE PROTECTION
By: _____ Sharon Cooney, Chief Executive Officer Approved as to form: By: _____ Karen Landers, General Counsel	By _____ Title: _____

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SCOPE OF WORK

MTS FIRE EXTINGUISHER SERVICES

2.1. INTRODUCTION

The San Diego Metropolitan Transit System (MTS) is seeking a qualified and licensed firm for testing and maintenance of rechargeable fire extinguishers and the purchase of new extinguishers as required at San Diego Transit Corporation (SDTC), San Diego Trolley, Inc. (SDTI), Land Management (LM), and Bus Rapid Transit (BRT) locations provided herein. All MTS owned rechargeable fire extinguishers must be inspected, serviced, and repaired in accordance with California State Fire Marshal (CSFM) and the National Fire Protection Association (NFPA) regulations.

2.2. DURATION OF AGREEMENT

The base contract term shall be for a period five (5) years.

2.3. MINIMUM QUALIFICATIONS

1. Contractor must be licensed by the Office of the State Fire Marshall (OFSM).
2. Contractor must possess a Type A, or Type B, C, or D license to service MTS fire extinguishers.
3. Bidders shall provide a minimum of three (3) references for which Bidder has performed similar work within the past five (5) years on the "Bidder's Financial Questionnaire Form" included in this solicitation.

2.4. EQUIPMENT LOCATIONS AND MTS CONTACTS

Locations of extinguishers are provided in the Bid Form (ATT1) attached separately in this solicitation. During the term of this agreement, MTS reserves the right to add or remove equipment locations.

Program	Contact Information
SDTC	Steve Shoemaker Maintenance Manager KMD MTS Bus Operations 4630 Ruffner Street San Diego Ca. 92111 (619) 238-0100 X6502 Email:Steve.Shoemaker@SDMTS.com
SDTI	Rolando Montes Director of Facilities - Rail Division San Diego Trolley Inc. Office: 619-595-4927 Cell: 619-454-7207 Email: Rolando.Montes@sdmts.com
BRT	J. Clarke Peters Supervisor of Passenger Facilities 100 16th St., San Diego, CA 92101 619.595.7037 clarke.peters@sdmts.com

2.5. REGULAR SERVICE HOURS

Monday through Friday, 8:00 a.m. to 5:00 p.m. (excluding

holidays) MTS Holidays (Subject to change during

contract)

1. New Year's Day	6. Independence Day
2. Martin Luther King Day	7. Labor Day
3. President's Day	8. Veterans Day
4. Cesar Chavez Day	9. Thanksgiving Day
5. Memorial Day	10. Christmas Day

Contractor shall notify the appropriate MTS contact four (4) hours before coming on-site to perform any work.

2.6. GENERAL REQUIREMENTS

1. Quantities may be increased or decreased depending on actual need during the contract term; however, no price adjustments shall be allowed as a result of a reduction in the quantity.

2. Contractor shall provide all labor, supplies, parts, supervision, tools, equipment, transportation, and all effort necessary to perform extinguisher servicing.

3. Contractor shall perform only those services specified in the Scope of Work/Technical Specifications. All work performed must be accepted by MTS, SDTI, SDTC staff.

4. Contractor shall assign a trained technician(s) to provide any service. This technician(s) shall be trained in providing fire extinguisher maintenance, servicing, testing, and recharging.

5. A Service Tag conforming to CSFM regulations must be securely attached to each fire extinguisher at the time of service.

2.7. SCOPE OF SERVICES

Contractor shall perform fire extinguisher services in accordance with the locations provided in ATT1, service requirements and schedules listed herein. All equipment shall be serviced as directed by NFPA and CSFM regulations. The latest edition of regulations or, where applicable, the edition as adopted by the local authority having jurisdiction shall apply. Contractor shall furnish all repair and replacement parts at no additional cost; this includes, but is not limited to, lock pins, nozzles, valves, seals, o-rings, nitrogen cylinders, extinguishing agents, hoses, and adapters. Those parts furnished shall be matched to the manufacturer's published requirements. Routine maintenance inspections shall be made during normal business hours.

2.7.1 Scheduled Service of Portable Fire Extinguishers

2.7.1.1 Monthly Testing and Maintenance

Each rechargeable fire extinguisher shall be externally inspected, serviced, tested, and/or repaired in accordance with NFPA, CSFM, and Occupational Safety and Health Administration (OSHA) regulations.

2.7.1.2 Annual Testing and Maintenance

Each rechargeable fire extinguisher shall be externally inspected, serviced, tested, and/or repaired in accordance with NFPA, CSFM, and Occupational Safety and Health Administration (OSHA) regulations.

2.7.1.3 Bus and Trolley Fleet Services

MTS shall be responsible for the removal of the fire extinguisher on bus and trolley vehicles the night before. Contractor shall service the fire extinguisher the next morning until the entire fleet is done. These services shall be done from 8am to 5pm. Annual service must be completed on a weekend for the SDTC locations.

2.7.2 As Needed Services

2.7.2.1 Hydrostatic Testing

Hydrostatic testing shall occur every five (5) years for extinguishers located on vehicles, and every six (6), or twelve (12) years for extinguishers not located on vehicles. Contractor shall have the ability to perform the hydrostatic -testing service to avoid delays of the extinguisher servicing.

2.7.2.2 As-Needed Recharging

Contractor shall respond within one (1) business day from MTS request for recharging. Recharging service shall include the following:

1. The extinguishing agent shall be completely discharged,
2. Valve assembly removed,
3. O-ring replaced or lubricated,
4. Threads and sealing surfaces cleaned,
5. Container emptied and filled with proper (free-flowing) agent, pressurized, sealed, and locked. Recharge date shall be marked on tag.

Testing shall be in accordance with ANSI/UL 77, SNSI/UL 299, and the latest revision of the NFPA 10.

A work order, inspection report, invoice, or other appropriate document shall be required.

2.7.3 Replacement of Fire Extinguishers

Contractor shall notify MTS when any unit needs total replacement; however, and as determined by MTS, it may also be requested that the Contractor provide total replacement of any units (e.g. if units are no longer serviceable or to supplement existing units where needed, etc.). All replacement extinguishers shall be new and unused and approved by the CSFM. Contractor must indicate new extinguisher costs on the bid sheet. Per unit pricing shall include all costs including delivery and mounting brackets.

Any deliveries of new extinguishers shall be Freight On board (F.O.B.) to MTS, SDTI, SDTC.

MTS shall have the right to purchase their own replacement units from any provider of their choosing at the project managers' discretion.

2.7.4 As Needed Repair Services

As-needed repair services are defined as services required due to vandalism or intentional misuse by anyone other than Contractor's employees, agents, or subcontractors.

Such repairs shall be responded to within twenty-four (24) hours of notification by MTS and shall be required to complete these services within three (3) business days. This includes, but is not limited to, picking up equipment requiring off-site service within forty- eight (48) hours. Equipment

must be serviced and returned within three (3) business days of pick up.

a. Contractor shall supply all labor materials necessary to provide as needed repair services on a Time and Materials basis.

b. Contractor shall be responsible for replacing fire extinguisher tags with vandal resistant / tamper resistant sealed tags on an as needed basis.

2.7.4.1 General Requirements

a. Contractor shall comply with all City, County, State, or Federal building laws, regulations, and code requirements in the performance of their work.

b. Contractor shall be responsible for diagnosing the problem and making the necessary repairs.

c. Contractor shall only perform work that is approved by MTS. Approval by the MTS Project Manager is required prior to any work being performed.

- Prior to performing any repair services, Contractor shall provide a quote for the services to be performed. The quote shall include at minimum the following information:
  - Estimated hour(s) and hourly rate
  - At cost part(s) amount
  - Part percentage mark up
  - Date the service is to be performed and completed
- Any work in excess of $5,000 requires approval from MTS Procurement prior to commencement of services.

d. Contractor shall perform and complete each work order in the agreed upon manner and time period.

e. In the event of accidental site damage by the Contractor, Contractor shall be responsible to return the site to its original condition at no cost to MTS.

f. Contractor shall remove all debris generated while making repairs, replacement, or installation and leave the work area clean, “broom swept” state.

g. Unless otherwise stated, Contractor shall remove all equipment, materials, etc. as directed by MTS.

h. Contractor is responsible for clarifying with the MTS Project Manager any questions regarding the work that is to be performed.

i. Contractor will be responsible for disposing any outdated or obsolete extinguishers that do not pass testing.

2.7.4.2 Hourly Rates:

i. As-Needed Repair Services shall be billed at the labor rates as set forth in ATT1.

a. Single Person Crew - Straight Time Hourly Rate

b. Single Person Crew - Outside of MTS Normal Business Hours (evenings, weekends and holidays) Hourly Rate.

ii. All estimated travel time to and from MTS property, and travel subsistence costs (i.e. mileage, fuel surcharge, etc.), projected to be utilized by the Contractor during the term of performance of any resultant Contract are to be absorbed, amortized, and incorporated into the Proposer's fully burdened unit per hour rates as set forth in the Cost Proposal Form.

2.8. REPLACEMENT PARTS

In the event that the Contractor needs to purchase replacement parts (not covered in the scope of the contract), materials and supplies shall be reimbursed by MTS based on actual cost plus the percent provided in the bidder's proposal. The maximum mark-up allowed is five (5) percent. No additional mark-ups will be allowed.

Contractor must attach supporting documentation that proves actual purchase price of parts with the invoice to show actual cost paid/final sale for parts or materials obtained from its suppliers.

2.9. LOANER EQUIPMENT

If, for whatever reason, loaner equipment is required, the Contractor shall leave a loaner of the same size and type. Loaner extinguishers supplied to the MTS, SDTI, and SDTC shall be at no charge. Should the MTS, SDTI, SDTC discharge the loaner, the cost of recharging shall be paid by MTS, SDTI, and SDTC.

Contractor shall be responsible for keeping fifty (50) five (5) pound loaner fire extinguishers on retainer for MTS' use from April 1st to June 1st of each year of the contract to support the annual bus service.

2.10. TRAINING

Contractor shall provide annual training "if requested" by MTS for MTS employees on proper use of portable fire extinguishers. The cost of this training shall be included in the annual service charge for equipment.

2.11. LICENSE REQUIREMENTS

During the entire contract term, Contractor must possess a Type A class of license to service any or all types of fire extinguishers.

2.12. GUARANTEE

Upon notice from MTS, SDTI, SDTC the Contractor shall, at his/her own expense, promptly and properly replace any and all improper work and material that may become apparent within a one (1) year period from the date of acceptance by MTS, SDTI, SDTC.

2.13. PRICING

Contractors per unit pricing shall include all costs incidental to fire extinguisher service. This shall include, but shall not be limited to: labor, supplies, parts, supervision, tools, equipment, transportation, and all effort necessary to perform fire extinguisher servicing. Prices shall be firm and fixed during the term of the Agreement.

2.14. INVOICES

Invoices must be sent to the MTS Accounting Department, via email at

ap@sdmts.com. All invoices must have the Purchase Order and contract number clearly displayed to ensure timely payment. MTS will not pay on packing slips, receiving documents, delivery documents, or other similar documents. Invoices must be submitted for payment.

Contractors must also indicate if any of the invoiced amount is for service or work provided by a subcontractor and indicate the amount that will be paid to the subcontractor. Contractors must also comply with the prompt payment requirements in Section 16 Prompt Progress Payments of the Standard Conditions.

2.15. DELIVERY AND ACCEPTANCE

Equipment or any deliverable provided under this contract, shall be delivered F.O.B. to MTS, 100 16th Street, San Diego, California 92101 or MTS, 4630 Ruffner Street, San Diego, California 92111 or SDTI, 1341 Commercial Street, San Diego, California 92113, unless otherwise specified, in first class condition, complete and ready for operation, and the Contractor shall assume all responsibility and risk of loss incident to said delivery.

Contractor shall state delivery on the Bid Form unless already specified, in which case, shall be made within the time set forth. Delivery is part of the consideration and must be adhered to as specified.

Contractor will not be held liable for failure to make delivery because of strikes, construction of property, governmental regulations, acts of God or any other causes beyond his control, provided a written extension of time is obtained from MTS.

Upon delivery, MTS will acknowledge receipt of said items or products. Delivery shall not constitute acceptance. Upon inspection and testing (if necessary) by MTS, a determination will be made whether said items or products are in conformance with contract requirements. If found in conformance, MTS shall immediately approve the Contractor's invoice for payment; thereby constituting acceptance. Payment terms begin from this point. If the delivered items or products are found not in compliance, MTS will immediately notify the Contractor and furnish all details of deficiencies. Contractor shall correct the deficiencies or supply new items or products (at the discretion of MTS) and resubmit for inspection and testing (if necessary).

BID FORM - Fire Extinguisher Maintenance and As-Needed Repair Services IFB, MTS Doc. No. PWG450.0-26

Instructions: In Table I, please enter the unit price for each location in the "Unit Price" column. To determine the Item Total for each location and year, please multiply the columns labeled "Estimated Quantity" by " Frequency" then by "Unit Price." For Table II, please enter the hourly rate for each type of as-needed repair in the column labled "Unit Price." Please multipy the Unit Price by the corresponding estimated Quantity to determine the Item Totals for each Item for each year. Please sum Item Totals for each Year to determine the Subtotals for Tables I & II. For Table III, an Annual Materials/Parts Allowance has already been provided to you and set by MTS. ***DO NOT MODIFY THE ALLOWANCES***. Instead, please enter the mark up percentage between 0 and 5 percent (rounding to the nearest hundreth) in the % Mark Up field for each year. Please multiply the mark up percentage by the Annual Materials/Parts Allowance (Item 1) for each respective year. The annual As-Needed Materials/Parts amount is the sum of Items 1 and 2 for each year. The Grand Total (basis of award) is the sum of the Subtotals for Tables I, II & III .

Table I: FIRE EXTINGUISHER TESTING AND MAINTENANCE

Group	Item	Location & Service	LBS	Estimated Quantity	Frequency	Year One Unit Price	1/1/2026-12/31/2027 Item Total	Year Two Unit Price	1/1/2027-12/31/2028 Item Total	Year Three Unit Price	1/1/2028-12/31/2029 Item Total	Year Four Unit Price	1/1/2029-12/31/2030 Item Total	Year Five Unit Price	1/1/2030-12/31/2031 Item Total
SDTI	1	Building A, 12 S. 13th Street, San Diego, CA 92113													
		Annual Testing & Maintenance	5	40	1	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00
	2	Building B, 1341 Commercial Street, San Diego, CA 92113													
		Annual Testing & Maintenance	5	25	1	$ 12.00	$ 300.00	$ 12.00	$ 300.00	$ 12.00	$ 300.00	$ 12.00	$ 300.00	$ 12.00	$ 300.00
		Annual Testing & Maintenance	10	10	1	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
		Annual Testing & Maintenance	20	5	1	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00
	3	Building C, 1341 Commercial Street, San Diego, CA 92113													
		Annual Testing & Maintenance	5	40	1	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00
	4	Yard Tower, 1341 Commercial Street, San Diego, CA 92113													
		Annual Testing & Maintenance	5	4	1	$ 12.00	$ 48.00	$ 12.00	$ 48.00	$ 12.00	$ 48.00	$ 12.00	$ 48.00	$ 12.00	$ 48.00
	5	Paint Booth, 1341 Commercial Street, San Diego, CA 92113													
		Annual Testing & Maintenance	10	16	1	$ 12.00	$ 192.00	$ 12.00	$ 192.00	$ 12.00	$ 192.00	$ 12.00	$ 192.00	$ 12.00	$ 192.00
	6	Sub Stations													
		Annual Testing & Maintenance	10	113	1	$ 12.00	$ 1,356.00	$ 12.00	$ 1,356.00	$ 12.00	$ 1,356.00	$ 12.00	$ 1,356.00	$ 12.00	$ 1,356.00
	7	Fashion Valley Station, 1205 Fashion Valley Rd., San Diego, CA 92108													
		Annual Testing & Maintenance	20	5	1	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00
	8	Qualcomm Stadium, 9449 Friars Rd., San Diego, CA 92108													
		Annual Testing & Maintenance	20	5	1	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00	$ 12.00	$ 60.00
	9	SDSU Station Platform, 5260 Campanille, San Diego, CA 92182													
		Annual Testing & Maintenance	5	12	1	$ 12.00	$ 144.00	$ 12.00	$ 144.00	$ 12.00	$ 144.00	$ 12.00	$ 144.00	$ 12.00	$ 144.00
	10	SDSU Station Room, 5260 Campanille, San Diego, CA 92182San Diego, CA 92182													
		Annual Testing & Maintenance	5	6	1	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00
		Annual Testing & Maintenance	10	40	1	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00	$ 12.00	$ 480.00
		Annual Testing & Maintenance	20	6	1	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00
	11	LRV Non-Revenue Vehicles													
		Annual Testing & Maintenance	5	10	1	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
		Annual Testing & Maintenance	10	6	1	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00
	12	MOW Non-Revenue Vehicles													
		Annual Testing & Maintenance	5	24	1	$ 12.00	$ 288.00	$ 12.00	$ 288.00	$ 12.00	$ 288.00	$ 12.00	$ 288.00	$ 12.00	$ 288.00
		Annual Testing & Maintenance	10	6	1	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00
	13	Track Non-Revenue Vehicles													
		Annual Testing & Maintenance	5	15	1	$ 12.00	$ 180.00	$ 12.00	$ 180.00	$ 12.00	$ 180.00	$ 12.00	$ 180.00	$ 12.00	$ 180.00
		Annual Testing & Maintenance	10	10	1	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
	14	Facilities Non Revenue Vehicles													
		Annual Testing & Maintenance	5	28	1	$ 12.00	$ 336.00	$ 12.00	$ 336.00	$ 12.00	$ 336.00	$ 12.00	$ 336.00	$ 12.00	$ 336.00
		Annual Testing & Maintenance	10	10	1	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
	15	Revenue Non-Revenue Vehicles													
		Annual Testing & Maintenance	5	14	1	$ 12.00	$ 168.00	$ 12.00	$ 168.00	$ 12.00	$ 168.00	$ 12.00	$ 168.00	$ 12.00	$ 168.00
		Annual Testing & Maintenance	10	10	1	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
	16	Transportation Non-Revenue Vehicles													
		Annual Testing & Maintenance	5	12	1	$ 12.00	$ 144.00	$ 12.00	$ 144.00	$ 12.00	$ 144.00	$ 12.00	$ 144.00	$ 12.00	$ 144.00
		Annual Testing & Maintenance	10	6	1	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00	$ 12.00	$ 72.00
	17	SD100 Vehicles													
		Annual Testing & Maintenance	10	340	1	$ 12.00	$ 4,080.00	$ 12.00	$ 4,080.00	$ 12.00	$ 4,080.00	$ 12.00	$ 4,080.00	$ 12.00	$ 4,080.00
	18	Spare Units													
		Annual Testing & Maintenance	5	75	1	$ 12.00	$ 900.00	$ 12.00	$ 900.00	$ 12.00	$ 900.00	$ 12.00	$ 900.00	$ 12.00	$ 900.00
		Annual Testing & Maintenance	10	50	1	$ 12.00	$ 600.00	$ 12.00	$ 600.00	$ 12.00	$ 600.00	$ 12.00	$ 600.00	$ 12.00	$ 600.00
		Annual Testing & Maintenance	20	10	1	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
	19	Bogie Garage 1601 Newton Ave., San Diego, CA 92113													
		Annual Testing and Maintenance	10	4	1	$ 12.00	$ 48.00	$ 12.00	$ 48.00	$ 12.00	$ 48.00	$ 12.00	$ 48.00	$ 12.00	$ 48.00
	20	MidCoast Elevated Stations													
		Annual Testing and Maintenance	5	36	1	$ 12.00	$ 432.00	$ 12.00	$ 432.00	$ 12.00	$ 432.00	$ 12.00	$ 432.00	$ 12.00	$ 432.00
SDTC	21	Imperial Avenue Division (IAD) 100 16th St., San Diego, CA. 92101													
		Annual Testing and Maintenance buses	5	170	1	$ 12.00	$ 2,040.00	$ 12.00	$ 2,040.00	$ 12.00	$ 2,040.00	$ 12.00	$ 2,040.00	$ 12.00	$ 2,040.00
		Annual Testing and Maintenance facility	10	96	1	$ 12.00	$ 1,152.00	$ 12.00	$ 1,152.00	$ 12.00	$ 1,152.00	$ 12.00	$ 1,152.00	$ 12.00	$ 1,152.00
	22	Kearny Mesa Division (KMD), 4630 Ruffner St., San Diego, CA. 92111													
		Annual Testing and Maintenance buses	5	130	1	$ 12.00	$ 1,560.00	$ 12.00	$ 1,560.00	$ 12.00	$ 1,560.00	$ 12.00	$ 1,560.00	$ 12.00	$ 1,560.00
		Annual Testing and Maintenance facility	10	84	1	$ 12.00	$ 1,008.00	$ 12.00	$ 1,008.00	$ 12.00	$ 1,008.00	$ 12.00	$ 1,008.00	$ 12.00	$ 1,008.00
BRT	23	Sabre Springs, 13538 Sabre Springs Pkwy., San Diego, CA 92128													
		Monthly Testing and Maintenance	10	26	12	$ 12.00	$ 3,744.00	$ 12.00	$ 3,744.00	$ 12.00	$ 3,744.00	$ 12.00	$ 3,744.00	$ 12.00	$ 3,744.00
		Annual Testing and Maintenance	10	26	1	$ 12.00	$ 312.00	$ 12.00	$ 312.00	$ 12.00	$ 312.00	$ 12.00	$ 312.00	$ 12.00	$ 312.00
	24	UTC Station, 8615 Genesee Ave, San Diego, CA 92122													
		Monthly Testing and Maintenance	10	2	12	$ 12.00	$ 288.00	$ 12.00	$ 288.00	$ 12.00	$ 288.00	$ 12.00	$ 288.00	$ 12.00	$ 288.00
		Annual Testing and Maintenance	10	2	1	$ 12.00	$ 24.00	$ 12.00	$ 24.00	$ 12.00	$ 24.00	$ 12.00	$ 24.00	$ 12.00	$ 24.00
					Table I Subtotals		$ 22,044.00		$ 22,044.00		$ 22,044.00		$ 22,044.00		$ 22,044.00

Table II: AS-NEEDED SERVICES

Item	Description	LBS	Est. Qty/Annual No. of Hours	Year One Unit Price	1/1/2026-12/31/2027 Item Total	Year Two Unit Price	1/1/2027-12/31/2028 Item Total	Year Three Unit Price	1/1/2028-12/31/2029 Item Total	Year Four Unit Price	1/1/2029-12/31/2030 Item Total	Year Five Unit Price	1/1/2030-12/31/2031 Item Total
1	5 year Hydrostatic Testing	n/a	4	$ 25.00	$ 100.00	$ 25.00	$ 100.00	$ 25.00	$ 100.00	$ 25.00	$ 100.00	$ 25.00	$ 100.00
2	Recharge Dry Chemical Fire Extinguisher	10	80	$ 12.00	$ 960.00	$ 12.00	$ 960.00	$ 12.00	$ 960.00	$ 12.00	$ 960.00	$ 12.00	$ 960.00
3	Recharge Dry Chemical Fire Extinguisher	20	10	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00	$ 12.00	$ 120.00
4	Replace Dry Chemical Fire Extinguisher	5	20	$ 55.00	$ 1,100.00	$ 55.00	$ 1,100.00	$ 55.00	$ 1,100.00	$ 55.00	$ 1,100.00	$ 55.00	$ 1,100.00
5	Replace Dry Chemical Fire Extinguisher	10	25	$ 80.00	$ 2,000.00	$ 80.00	$ 2,000.00	$ 80.00	$ 2,000.00	$ 80.00	$ 2,000.00	$ 80.00	$ 2,000.00
6	Replace Dry Chemical Fire Extinguisher	20	10	$ 140.00	$ 1,400.00	$ 140.00	$ 1,400.00	$ 140.00	$ 1,400.00	$ 140.00	$ 1,400.00	$ 140.00	$ 1,400.00
7	Replace Halotron Fire Extinguisher	11	7	$ 850.00	$ 5,950.00	$ 850.00	$ 5,950.00	$ 850.00	$ 5,950.00	$ 850.00	$ 5,950.00	$ 850.00	$ 5,950.00
8	Single Man Crew - Straight Time Hourly Rate	n/a	55	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Single Man Crew - Outside of MTS Normal Business Hours Hourly Rate.	n/a	12	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			Table II Subtotals:		$ 11,630.00		$ 11,630.00		$ 11,630.00		$ 11,630.00		$ 11,630.00

Table III: AS-NEEDED REPLACEMENT PARTS

Item	Description	Year One % Mark Up	1/1/2026-12/31/2027 Item Total	Year Two % Mark Up	1/1/2027-12/31/2028 Item Total	Year Three % Mark Up	1/1/2028-12/31/2029 Item Total	Year Four % Mark Up	1/1/2029-12/31/2030 Item Total	Year Five % Mark Up	1/1/2030-12/31/2031 Item Total
1	Annual Materials/Parts Allowance	0%	$ 6,900.00	0%	$ 7,245.00	0%	$ 7,607.25	0%	$ 7,987.61	0%	$ 8,386.99
2	Materials markup		$ -		$ -		$ -		$ -		$ -
	Table III Subtotals:		$ 6,900.00		$ 7,245.00		$ 7,607.25		$ 7,987.61		$ 8,386.99

Grand Total (BASIS OF AWARD)	$ 206,496.85

Metropolitan Transit System

Agenda Item No. 06

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Wheel Truing Machines Removal and Construction – Contract Award

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL448.0-26 (in substantially the same format as Attachment A), with All Source Company Building Group (All Source), for the full removal and disposal of two (2) damaged wheel truing machines full replacement of associated track sections, infill and modifications to in-ground pits, and construction of a trolley bogey storage rack in the amount of $615,760.00.

Budget Impact

The total cost of this contract is estimated to be $615,760.00. The contract will be funded by the Capital Improvement Program account 2008119901- Building A & C Wheel Truing Machine Area Reconstruction.

DISCUSSION:

The San Diego Trolley, Inc. (SDTI) utilized two (2) in-ground wheel-truing machines, located at the SDTI Buildings A and Building C. The wheel truing machine is used to maintain the profile of the wheels on the Light Rail Vehicle (LRV) fleet. Maintaining the proper profile is critical to ensure safe operations, proper rail to wheel interface, and ride quality.

As part of the flooding event in San Diego in January 2024, MTS experienced extensive damage to both in-ground wheel truing machines present in Buildings A and C. Both machines were damaged beyond repair and must be removed along with all ancillary hardware and equipment. Two above-ground wheel truing machines were purchased and are in use to maintain the profile of the LRV wheels.

This contract will allow All Source to completely remove and dispose of the previously damaged in-ground wheel truing machines and replace associated track sections feeding into the wheel truing machine pits. All Source will also provide an above-ground bogey rack to store power bogies and idler bogies, as more storage space is needed with the new above-ground wheel truing machines. Lastly, All Source will be infilling the in-ground wheel truing machine pit in Building A and providing modifications to the pit in Building C to allow staff the ability inspect the underside of LRVs. The technical specifications were prepared by MTS's Architectural and Engineering Consultant, HDR Engineering, Inc., as part of their design services work order (See Work Order No. WOA352-AE-47 to MTS Doc No. PWL352.0-22), which was approved by the

Board of Directors on December 19, 2024 (A.I. 10). This contract will cover the scope of work shown in Attachment B.

On September 22, 2025, MTS issued an Invitation for Bids (IFB) for the wheel truing machines removal and construction services.

On October 31, 2025, MTS received a single bid from All Source for $615,760.00. MTS staff conducted a single bid survey as required by law and based on the results determined that there were no restrictive elements in the scope of work, and the solicitation was conducted in a fair and open manner.

MTS has evaluated All Source's bid, shown in Attachment C, and has determined that it is fair and reasonable by comparison to the MTS Independent Cost Estimate (ICE). All Source's bid is consistent with expected market cost increases from previous wheel truing machine removal projects performed several years ago, and additional costs involving steel materials and demolition services.

Company Name	Firm Certifications	Bid Amount
MTS ICE		*$508,853.40*
All Source	**Small Business**	**$615,760.00**

This award is not subject to the Project Labor Agreement (PLA) requirements approved under Board Policy No. 66 because the MTS ICE was under $1 million.

All Source will be utilizing the following subcontractors to perform a portion of the work, as detailed further in Attachment D.

Subcontractor Name	Subcontractor Firm Certifications	Subcontractor Amount
All State Electric	N/A	$25,000.00
Performance Plumbing and Mechanical (PPM) Contracting	N/A	$396,500.00

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWL448.0-26 (in substantially the same format as Attachment A), with All Source, for the full removal and disposal of two (2) damaged wheel truing machines, full replacement of associated track sections, infill and modifications to in-ground pits, and construction of a trolley bogey storage rack in the amount of $615,760.00.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. Draft Agreement MTS Doc No.PWL448.0-26
B. Scope of Work
B.1 Technical Specifications
C. Costs
D. Subcontractor List

Metropolitan Transit System

STANDARD CONSTRUCTION AGREEMENT

FOR

MTS DOC. NO. PWL448.0-26

BUILDINGS A & C WHEEL TRUING MACHINES REMOVAL AND CONSTRUCTION PROJECT

THIS AGREEMENT is entered into this _____ day of _____ 2026, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: All Source Company Building Group Address: 10625 Scripps Ranch Blvd, Suite A
San Diego, CA 92131

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email: ryan@allsourceco.com

Telephone: (858) 586-0903

Authorized person to sign contracts Ryan Childs (Name) President (Title)

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in accordance with the Standard Agreement and General Conditions (Exhibit A), Scope of Work, Special Conditions and Attachments (Exhibit B), Bid Price Form (Exhibit C) and Forms (Exhibit D).

SCOPE OF WORK.

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

BUILDINGS A & C WHEEL TRUING MACHINES REMOVAL AND CONSTRUCTION PROJECT

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

San Diego Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego. MTS is also the For-Hire Vehicle administrator for multiple cities in San Diego County.

CONTRACT TIME.

Time is of the essence in the performance of the Work. The Work shall be commenced by the date stated in MTS's Notice to Proceed. The Contractor shall complete all Work required by the Contract Documents **within one hundred and twenty (120) calendar days** from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the Contract Time is adequate and reasonable to complete the Work.

CONTRACT PRICE.

MTS shall pay the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of six hundred fifteen thousand seven hundred sixty dollars ($615,760.00). Payment shall be made as set forth in the General Conditions.

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	ALL SOURCE COMPANY BUILDING GROUP
By: _____	
Sharon Cooney, Chief Executive Officer	**By:** _____
Approved as to form:	
By: _____	**Title:** _____
Karen Landers, General Counsel	

DRAFT

SCOPE OF WORK

1. GENERAL

Two buildings in the San Diego Trolley yard currently house two below-ground wheel truing machines in their own dedicated pits. Due to both age and flood damage MTS has switched to above ground wheel truing machines. MTS no longer needs the in-ground wheel truing machines and as such would like to remove and scrap the wheel truing equipment, fill back one pit with track replacement, and turn the second pit, in building C, into a train inspection pit.

All work is to occur at the MTS Trolley Yard located at 1535 Newton Ave, San Diego, CA 92113.

2. STAGING

Contractor is to keep and store all materials within a predesignated laydown area. Size and location of the laydown area is to be coordinated with the MTS Project Manager. All property stored onsite is the responsibility of the contractor and MTS shall not be held liable for any and all equipment, material, tools, etc. All deliveries to the site shall be coordinated through the MTS Project Manager. Only vehicles necessary for that day's controlling activities may be parked onsite adjacent to the work area. Remaining vehicles are to be parked on adjacent streets and public parking areas.

3. TEMP FACILITIES

The Contractor may use MTS restrooms and hand washing facilities for their employees, subcontractors, and suppliers throughout the duration of the project. Contractor may also use MTS power and water in relation to the construction, however water may not be available at all locations of work and contractor may have to supply their own.

4. SAFETY

Diligent caution must be taken during the undertaking of this work. Due to the 24 hour nature of operations at the MTS trolley yard extreme caution must be observed while driving on the yard and working in Building A and Building C. Due to the 24 hour nature of operations at the trolley yard, any open excavations or areas of newly placed concrete left overnight must be appropriately marked off with a suitable combination of delineators, warning lights, caution tape, and/or A-frames and/or temp fencing. At the end of each day the entirety of the area being worked on must be surrounded by at minimum, reflective delineators placed 6' on-center with caution tape strung between them clearly designating the area of work in order to prevent any buses from traveling over the area of work. Contractor must be aware of their surroundings at all times and yield the right-of-way to buses.

Max speed on the lot is 10 MPH. Contractor, subcontractors, vendors and supplier are to adhere to the speed limit, stop at all stop signs, and stop at all crosswalks. Failure to do so will result in MTS not granting any future vehicular access to the trolley yard.

5. WASTE

The Contractor is responsible for legally disposing of any and all waste in relation to the work. The contractor shall not use any MTS receptacles to dispose of material generated during the performance of this contract. Contractor is responsible for general cleanup at the end of each work day and the Contractor is to perform a final clean to meet the current condition and cleanliness of the on-site paving.

It is assumed that there will be concrete, reinforcing bar, track, asphalt and possibly aggregate base that will have to be exported. The Contractor is responsible for any and all costs associated with the removal, permits, hauling, and disposing of the exported concrete, reinforcing bar, track, asphalt and possibly aggregate base.

It is also assumed that there will likely be hydraulic fluid remaining in the wheel truing equipment of building A. It is the Contractor's responsibility to properly drain and legally dispose of any hydraulic fluids/ or materials that contaminated with hydraulic fluids that may be present in wheel truing equipment. Any disposal of hazardous waste must be communicated to MTS Environmental Health and Safety Specialist at Ngan.Nguyen@sdmts.com for approval prior to disposal.

6. SUBMITTALS

The Contractor shall provide submittals showing product data, details, and necessary information for all items described in the project specifications.

7. DRAWINGS

There are known As-builts for the area where the work is to occur, however; the designer has included all known underground appurtenances that may be encountered during the undertaking of the work on the project plans. These As-builts can be provided to the contractor after award if requested. The contractor shall verify all existing site conditions and familiarize themselves with the Contract Documents and existing site conditions.

8. SCHEDULE AND SEQUENCING

All base bid work shall be completed within one hundred twenty (120) calendar days from issuance of the Notice to Proceed.

The base bid work consists of three phases, demolition of wheel truing equipment, and construction of new elevated, post mounted track in building C, demolition of wheel truing equipment and infill of wheel truing pit with construction of new track sections in building A, and construction and installation of a new Bogie Rack (location to be determined by MTS at a later date) in building C.

9. BUILDING A AND C WHEEL TRUING MACHINE REMOVAL

   Contractor is to carry out all work as shown in the construction bid documents including the plans and specifications generated by HDR and dated June 2025, attached to this IFB.

MTS WHEEL TRUING MACHINE REMOVAL PROJECT

BUILDING A AND C

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SECTION 01 00 00
GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 ORDER OF WORK

A. Order of work shall be in accordance with Section 5.7, “Construction Sequence,” of the Special Conditions, and these Technical Specifications.

B. Within 10 calendar days of Notice to Proceed, the Contractor shall prepare and submit a proposed construction area work plan, for approval by the Engineer in accordance with Section 3.9, “Submittals,” of the Standard Agreement and General Conditions. Work plan shall include proposed phasing and laydown area requirements for equipment, material, company vehicles, and personnel vehicles. Work plan shall address working around overhead contact wire and maintaining rail operations. Proposed phasing shall be in accordance with the following restrictions:

1. The following restrictions and parameters apply to work windows with Building A and Building C:
    a. The contractor shall access to both Building “A”, and Building “C” during the hours of 7:00 AM and 3:00 PM, unless approved otherwise by MTS.
    b. Contractor shall coordinate with MTS the work windows needed to power down OCS, as detailed in the Section titled, “Maintaining Rail Operations,” unless approved otherwise by MTS.
    c. Contractor shall take special care to maintain the integrity of operational track sections during other nearby track section construction and shall demonstrate their approach in their Construction Area Work Plan.
    d. Contractor shall take special care to maintain the integrity of the existing track section during construction of adjacent non-track elements and shall demonstrate their approach in their Construction Area Work Plan.
2. All adjustments to the OCS system shall be done during windows from 1:45 AM to 4:00 AM, unless approved otherwise by MTS.

C. All construction shall be performed in the sequence shown in the Contractor’s approved work plan.

D. Non-conflicting work in subsequent stages may proceed concurrently with work in preceding stages, provided satisfactory progress is maintained in the preceding stages of construction.

E. Contractor shall notify Engineer of intent to start work a minimum of three (3) business days prior to scheduled start date. At this time Contractor shall also schedule on-site meeting in accordance with Article 3. 2, “Site Conditions and Access,” of these Technical Specifications. Work performed within 15 feet of the outside rail of a track will require appropriate notification and flagging. Light rail transit flagging provided will be done in accordance with Section 5.11,” Flagging,” of the Special Conditions. If the Contractor changes his plans, he shall notify the Engineer not less than 24 hours prior to the pre-

scheduled operation. If the Contractor neglects to notify the Engineer within this time frame, all costs for railroad flagmen shall be charged to the Contractor. The Contractor will not be assessed railroad flagging expenses when planned work is not performed due to conditions beyond his control.

F. Within 72 hours prior to scheduled start date Contractor shall coordinate site access and laydown area with Engineer during the on-site meeting described under Article 3. 2, “Site Conditions and Access.”

G. Refer to Section 5.10, Roadway Workers Protection, of the Special Conditions. Prior to the start of construction and at the Contractor’s expense, all personnel entering the MTS Right-Of-Way (ROW), including subcontractors and third parties shall complete the MTS Roadway Worker Protection (RWP) training course, upon receiving Notice-to-Proceed, at the Contractor’s expense. The course is approximately four (4) hours in duration. Visit these websites for information: https://www.sdmts.com/business-center-permits/safety-training. Annual renewals are required for Roadway Worker Protection Safety training should duration of construction exceed the one-year expiration date of any worker continuing to work within the railroad right-of-way. Any new worker, including subcontractors, arriving after start of work and expected to enter the railroad right-of-way shall complete required training. All work shall be in conformance with these railroad safety requirements. These requirements are in addition to other local, state, and federal safety requirements.

H. The Contractor, its employees, subcontractors and their employees shall be qualified per FRA Track Worker Safety requirements, 49 CFR, Part 214C. In addition, the Contractor, its employees, subcontractors, and their employees shall be in compliance with 49 CFR, Part 219, Control of Alcohol and Drug Use.

I. Procure and submit for approval all equipment and material as indicated in the General and Special Conditions and on the plans.

J. Demolition and installation of all material and equipment shall be as indicated in the Contract Documents.

K. The Contractor shall provide and install suitable safeguards to protect the underground utility facilities during construction operations. Safeguards shall conform to Article 3.4, "Preservation of Property."

L. Application of Best Management Practices (BMP’s) shall be required throughout the duration of this project. Attention is directed to Section 01 57 23, "Temporary Storm Water Pollution Control," of the Technical Specifications.

M. If, in the opinion of the Engineer, the Contractor's operations are delayed or interfered with, the owner will compensate the Contractor for such delays to the extent provided in Section 3.32, "Time for Completion and Liquidated Damages," of the Standard Agreement and General Conditions.

N. The Contractor shall conform to additional requirements specified in Article 3.22, “Maintaining Rail Traffic,” of these Technical Specifications.

O. Project sequencing shall be done to allow effective completion of all project work within the overall contract duration, and other work windows. Coordination, and planning shall include,

but are not limited to:

1. As required by Section 3.8, “Schedule,” of the Standard Agreement and General Conditions, develop a baseline schedule that meets the contract requirements.
2. Contactor shall develop hourly work plans for power shutdowns, and other work windows, to be reviewed and approved in advance by MTS.

1.2 PERMITS

A. Contractor shall be responsible for obtaining all necessary permits to meet the requirements of the contract documents.

1.3 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. Reference drawings for Owner Procured Material
2. Caltrans Standard Specifications (Standard Specifications, Current Edition)
3. Standard Specifications for Public Works Construction (SSPWC, Current Edition)
4. City of San Diego Whitebook (City Standard Specifications, Supplement to SSPWC Current Edition)
5. San Diego Regional Standard Drawings (SDRSD), Current Edition
6. AREMA Manual for Railway Engineering (AREMA Manual), Current Edition
7. AREMA Portfolio of Trackwork Plans, Current Edition
8. Caltrans’ California Trenching and Shoring Manual, Current Edition
9. Precast/Prestressed Concrete Institute (PCI) Design Handbook, Current Edition

B. Typical application of Standards are as follows:

1. Where the SSPWC is referenced, the Contractor shall be responsible for the inclusion of the City Standard Specifications (Whitebook) along with that reference.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MOBILIZATION

A. Mobilization shall, as defined in Section 3.33, “Payment,” of the Standard Construction Agreement and General Conditions and conform to Section 10104 of the Public Contract Code.

3.2 SITE CONDITIONS AND ACCESS

A. Contractor shall arrange a meeting on-site with the Engineer a minimum of five (5) days in advance of the start of construction at the site and examine the job-site area and conditions under which work will be performed. Contractor shall conform to the requirements of Section

5.8, “Documentation of Existing Conditions,” Standard Construction Agreement and General Conditions. The Contractor shall notify the Engineer in writing, within 48 hours following the on-site meeting, of all discrepancies between the existing site conditions and those shown on the plans. Contractor’s failure to provide written notification to the Engineer will indicate that no discrepancies exist.

B. The project site is accessible through public right of way, to the MTS yard access gate located on Newton Avenue. Where access is limited through public right of way, the Contractor shall make all necessary arrangements, agreements and provide compensation to private property owners if necessary to access the area.

C. Contractor is to maintain access to adjacent properties at all times. Disruption to these business activities shall be kept to a minimum. The Contractor shall communicate in advance with each property owner/tenant affected by its operations prior to the start of work. In addition, the Contractor shall maintain a proactive relationship with the area merchants and inform them weekly of the construction schedule to assure that impacts to their businesses are kept at a minimum throughout the contract period.

3.3 OBSTRUCTIONS

A. Attention is directed to Section 3.6, “Existence of Utilities at the Work Site,” of the Standard Construction Agreement and General Conditions.

B. The Contractor's attention is directed to the existence of certain underground facilities that may require special precautions to be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: overhead electrical wires; conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than six (6) inches in diameter or pipelines operating at pressures greater than 60 psi (gauge); underground electric supply system conductors or cables either directly buried or in duct or conduit that do not have concentric neutral conductors or other effectively grounded metal shields or sheaths; and underground electrical grounded metal shields or sheaths; underground electrical conductors with potential to ground more than 300 volts; and shallow water laterals.

C. The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least two (2) working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Southern California (USA)	811 1-800-227-2600
Cable, Pipe & Leak Detection (CPL) (For MTS Facilities)	1-619-660-0844

As MTS facilities are excluded from USA markouts, Contractor shall have all MTS facilities located and marked out by CPL or other approved utility locating subcontractor familiar with

MTS facilities.

D. Contractor to verify location and elevation of all exiting utilities by potholing and mark out prior to excavation as necessary. Notifications shall be performed as necessary to complete the improvements without damage to existing facilities. Any work on the underground facilities shall be coordinated with the Engineer. The Contractor shall schedule a utility coordination meeting and contact all attendees a minimum of 48 hours in advance of the meeting date. Meeting attendees shall include the Engineer or Project Manager, the Contractor's representative, the utility representative (as necessary), and the approved utility locating subcontractor.

3.4 PRESERVATION OF PROPERTY

A. Due care shall be taken to avoid damage or injury to improvements of project facility or adjacent facilities, their utilities, and landscaping features that are not designated for removal as indicated on the plans or in the Technical Specifications. Any damage to the property or adjacent properties incurred due to the operations of the Contractor shall be repaired, replaced, or restored at the Contractor's expense. Repair, replacement, or restoration shall be performed such that facilities damaged will be at the same condition as when the Contractor had entered the site, or as good as required by the specifications accompanying the contract. Additional requirements shall be in compliance with Section 3.28, "Protection of Work and Property," of the Standard Construction Agreement and General Conditions.

3.5 JOB SITE COOPERATION

A. Attention is directed to Section 3.42, "Separate Contracts," of the Standard Construction Agreement and General Conditions.

B. It is not anticipated, at this time, work by other contractors will be in progress adjacent to or within the limits of this project during the duration of this contract. However, the Contractor shall be familiar with the referenced specification section listed above.

C. Where required, Contractor shall coordinate efforts with utility agencies for adjustment or relocation of utilities that will affect Contractor's work.

3.6 PROGRESS SCHEDULE

A. The Contractor shall submit to the Engineer a project schedule conforming to Section 3.8, "Schedule," of the Standard Construction Agreement and General Conditions.

B. The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date, in conformance with the provisions in Section 3.34, "Changes and Extra Work Payment," of the Standard Construction Agreement and General Conditions.

3.7 CONSTRUCTION STAGING AREA

A. No MTS right of way or LRT stations shall be used for staging, storage or laydown areas during the construction period except as shown on the approved Construction Area Work Plan. The Contractor shall be responsible for procuring any onsite or offsite construction staging and laydown area, and shall be responsible for any property rental, permits, security, lighting, fencing, utilities or other temporary measures required to properly utilize

the site as a construction staging and laydown area. The Contractor shall accept full responsibility and liability for use of the site during the construction period, and MTS shall be liable for any claims resulting from Contractor's use of an onsite or offsite construction staging and laydown area.

3.8 DEVELOP WATER SUPPLY

A. Developing a water supply and applying watering shall conform to Section 10-6, "Watering" of the Standard Specifications. Existing LRT station or yard A and C water supply system must not be used for construction purposes.

3.9 DUST CONTROL

A. Dust control shall conform to the provisions of Section 10-5, "Dust Control," of the Standard Specifications. Control dust resulting from work, inside and outside of work limits. Inside work limits Contractor may use water application, dust palliative, or both. Water usage for dust control shall be such that runoff from work area is minimized and sediment is prevented from entering storm drain systems. Dust control for outside work limits includes preventing buildup of dirt on adjoining travelled ways and covering of material producing dust when hauled. However, the Contractor shall endeavor, whenever possible, to restrict the use of water to control dust for his convenience due to the current need to conserve water.

3.10 PROJECT APPEARANCE

A. Project Appearance of the site shall conform to the provisions in Section 3.22, "Cleaning Up," of the Standard Construction Agreement and General Conditions. The Contractor shall always maintain a neat appearance to the work site. Rail, wood ties, fencing, vegetation, concrete and asphalt rubble, and other debris developed during construction operations shall be disposed of concurrently with its removal. No stockpiling of demolition materials or debris will be permitted within the MTS or Public right-of-way. Materials to be relocated shall be neatly stored in a secure area.

3.11 SOUND CONTROL

A. Sound control shall conform to the provisions in Section 3.24, "Excessive Noise," of the Standard Construction Agreement and General Conditions. This requirement in no way relieves the Contractor from responsibility for complying with local ordinances regulating noise levels. For any night work, the Contractor will be required to obtain a Noise Permit from the City of San Diego, Development Services (telephone 619-446-5000).

3.12 TEMPORARY TRAFFIC CONTROL

A. GENERAL

1. The work shall consist of flagging, maintaining vehicular and pedestrian traffic, supplying, placing, and removing of temporary traffic control devices, application and removal of any temporary traffic striping and pavement markings required, and the replacement of any permanent traffic striping and pavement markings damaged or removed during construction at the locations as shown on the Plans or where designated by the Engineer; as specified in Section 3.16, "Traffic Control," of the Standard Construction Agreement and General Conditions. and as specified in these Technical Specifications:

a. Standard Specifications for Public Works Construction (SSPWC), The “Greenbook”, 2021 Edition, including the City of San Diego Supplement to the 2015 Greenbook, the “Whitebook”, Current Edition.

b. State of California, Department of Transportation, “California Manual on Uniform Traffic Control Devices” (including Revision 7), Current Edition.

c. State of California, Department of Transportation, Standard Plans, Current Edition.

d. State of California, Department of Transportation, Standard Specifications, Current Edition.

B. Any existing permanent striping that is damaged during construction shall be replaced to its original state and layout. The work performed in connection with replacing the striping shall conform to the provisions in Section 32 17 23, “Pavement Markings,” of the Technical Specifications.

C. The Contractor’s attention is directed to Section 3.16, “Traffic Control,” of the Standard Construction Agreement and General Conditions. The provisions in this section will not relieve the Contractor from his responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions in Section 3.16, “Traffic Control,” of the Standard Construction Agreement and General Conditions.

D. The Contractor shall limit the length of the construction work area in accordance with the provisions in Section 5.7, “Construction Sequence,” of the Special Conditions. All furnishings shall be reinstalled before the construction of a phase is considered complete and the next construction phase at another area may begin.

E. Roadway flagging as required by City of San Diego traffic control permits to be obtained by the Contractor shall conform to Section 12, Temporary Traffic Control of the Caltrans Standard Specifications. However, payment shall be as specified within these Technical Specifications. The Contractor is responsible to receive Engineer’s approval for vehicular traffic flagging (This excludes railroad flagging).

3.13 MAINTAINING VEHICULAR TRAFFIC

A. General

1. The Contractor shall notify all emergency services, transportation companies, or others identified on the plans in compliance with the City of San Diego Street Closure Permits in advance of implementing any construction detour.

2. The Contractor shall maintain all temporary vehicular access facilities in a safe and neat condition from time of installation to time of removal.

B. Parking

1. If parking is to be restricted during construction, the Contractor shall post "tow-away/no parking" signs 24 hours in advance after receiving approval from the Engineer and the City of San Diego Police Department. The sign shall contain "days/hours" information and be posted to be visible by the public.

2. Personal vehicles of the Contractor's employees shall not be parked within the railway right of way including any section closed to public traffic, except personal vehicles used in lieu of the Contractor's equipment. Said vehicles shall be included in the daily activity report and shall be marked with permanent or temporary name plates identifying contracting firm engaged in the work.

C. Lane/Street Closures

1. A street or lane shall not be closed until the Contractor is ready to prosecute the work with diligence, unless approved otherwise by the City of San Diego. Should the Engineer determine that the work, within a closed street or lane, is not proceeding in a timely manner, the Engineer may order a suspension of work.
2. When lane closures are made for work periods only, at the end of each work period all components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder.
3. Whenever traffic lanes or streets are to be closed to public traffic, the Contractor shall close lanes and streets as shown in the current California MUTCD.
4. It shall be the responsibility of the Contractor performing work on a public street, that involves a lane or street closure, to follow the local agency approved traffic control plans. If there is not a local agency approved traffic control plan for work to be performed, the Contractor shall prepare traffic control plans, obtain permits from the local agency, install and maintain the traffic control devices per the approved plan, as may be required to ensure the safe movement of vehicular traffic and bicyclists through and around the work area and provide maximum protection and safety to construction workers.

D. Traffic Lane Widths and Clearances

1. When traffic cones or portable delineators are used to delineate a temporary edge of the traffic lane, the line of cones or portable delineators shall be the edge of traffic lane; however, the Contractor shall not reduce the width of an existing lane to less than 12 feet without written approval from the governing agencies Traffic Engineering Department.
2. Notifications
   a. The Contractor shall notify the following at least five (5) working days in advance of any work on a public street:

City of San Diego Police	531-2000
Fire Department	236-6741
Traffic Signals	525-8650
Traffic Engineer	236-6040
Trash Pickup	492-5060
San Diego Transit	238-0100
Underground Service Alert	1-800-422-4133

E. Construction Area Work Plan

1. The Contractor shall prepare a comprehensive Construction Area Work Plan 30 calendar days prior to commencing work at the site and submit to the Engineer for approval in accordance with Section 5.7, “Construction Sequence,” of the Special Conditions. The plan shall indicate proposed staging, construction sequencing, laydown areas, detours, lane closures, barricades, traffic control devices, temporary fencing, signage, traffic and pedestrian handling on both public streets and transit properties and shall include traffic control plans approved by the City of San Diego for any work within the public streets or right of way.

F. Deviations

1. Minor deviations from the requirements of this section which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if, in the opinion of the Engineer, public vehicular traffic will be better served and the work expedited. Such deviations shall not be executed until the Engineer has approved them in writing. All other modifications shall be made by Contract Change Order.

3.14 MAINTAINING PEDESTRIAN TRAFFIC

A. General

1. The Contractor shall provide and maintain safe pedestrian access to all sidewalks adjacent to the construction area. Work areas, including temporary walkways, shall be delineated with barriers consisting of a top and bottom rail constructed of 3/4-inch pipe and Occupational Safety and Health Administration (OSHA)-type plastic mesh, or equal. Yellow caution tape will not be permitted.
2. The Contractor shall develop a Construction Area Work Plan in accordance with Section 3.13, “Maintaining Vehicular Traffic,” of these Technical Specifications. The Construction Area Work Plan shall be submitted to the Engineer for review and made in accordance with Section 1.1, “Order of Work.” The Contractor shall submit all Construction Area Work Plans to the Engineer and SDTI Operations. The Construction Area Work Plan for each phase of work shall show the layout of pedestrian circulation control devices.
3. The Contractor shall maintain all temporary pedestrian access facilities in a safe and neat condition from time of installation to time of removal.

B. Sidewalk Closures

1. At least one walkway shall be available and accessible at all times. If the Contractor's operations require the closure of one walkway, then another walkway shall be provided nearby, off the traveled roadway. For sidewalk closures or work in direct contact with an existing sidewalk, the Contractor shall construct a 6-feet chain link fence to protect the limits of the work area with all required hardware, including kick boards. Walkways shall be kept clear of obstructions. Closure signs shall be placed to provide pedestrians clear warning of closure ahead and shall provide clear direction to adjacent routes.

C. Deviations

1. Minor deviations from the requirements of this section which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if, in the opinion of the Engineer, public pedestrian traffic will be better served and the work expedited. Such deviations shall not be executed until the Engineer has approved them in writing. All other modifications shall be made by Contract Change Order.

3.15 TEMPORARY TRAFFIC CONTROL DEVICES

A. General

1. All temporary traffic control devices shall be furnished by the Contractor.
2. It shall be the responsibility of the Contractor performing work on a public street to install and maintain the temporary traffic control devices as shown on the Plans and as specified, as required to ensure the safe movement of traffic, pedestrians and bicyclists through and around the work area and provide maximum protection and safety to construction workers.
3. The Contractor shall maintain all temporary traffic control devices in a safe and neat condition from the time of installation to the time of removal. If any component of the temporary traffic control devices is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair said component to its original condition or replace said component and restore the component to its original location.
4. Equipment, material, or debris shall not be stored or remain in the public right of way without prior acceptance by the Engineer.

B. Signs

1. The Contractor shall erect advance warning signs per the traffic control plans as approved by the governing agency informing the public of the intent to close any street at least five (5) working days in advance of the proposed closure.
2. The Contractor shall provide detour signing to direct traffic along alternate routes during the closure(s) in accordance with the traffic control plans as approved and permitted by the governing agency.
3. In areas where no signing is shown on the Plans, all construction area signs shall conform to the signing shown in the latest "California Manual on Uniform Traffic Control Devices."

C. Barricades

1. Pedestrian and vehicular barricades shall be furnished, placed and maintained at the locations shown on the approved traffic control plans, specified in these Technical Specifications or where designated by the Engineer.
2. Temporary traffic control sign and marker panels shall be installed on barricades in a manner determined by the Engineer at the locations shown on the approved traffic control plans.

3.16 CONSTRUCTION AREA LIGHTING

A. All working areas utilized by the Contractor to perform work during the hours of darkness, shall be lighted to conform to the minimum illumination intensities established by the California Division of Industrial Safety Construction Safety Orders.

B. All lighting fixtures shall be mounted and directed in a manner precluding glare to adjacent residences, businesses, approaching traffic, and shall not be directed parallel to the track to avoid interfering with the vision of the train operators and crews. In addition, lighting fixtures shall not obscure any railroad signals.

3.17 TEMPORARY FENCING

A. Where applicable in accordance with these Technical Specifications temporary fencing shall be securely anchored and shall only be placed within MTS ROW except where temporary fencing is used for pedestrian traffic control. The Contractor shall submit a temporary fencing plan a minimum of five (5) working days for approval by the Engineer prior to the installation of any temporary fencing.

3.18 CONSTRUCTION SURVEYING

A. Construction staking shall be in conformance with Chapter 12 of the Caltrans Surveys Manual, including 2018 updates. Legible copies of all construction operations staking sheets shall be provided to Engineer two days before construction work is started.

B. All field construction surveying required for accurate location and the construction of the various items of work under the contract shall be performed and furnished by the Contractor.

C. The Contractor shall be responsible for performing a site verification survey to confirm the existing grades and conditions at the site prior to any grading or construction operations. The survey data shall be overlaid electronically, in Microstation format, on the original ground as shown on the project plans, and any variations brought to the attention of the Engineer.

D. The Contractor shall notify the Engineer, in writing, 48 hours in advance of any construction staking.

E. The Contractor shall replace any disturbed existing property corner markers, monuments, and local agencies' well monuments disturbed during construction operations. These new markers, monuments, and well monuments shall be documented by a record of survey map or corner record prepared in accordance with Section 8771 of the Business and Professions Code and all applicable laws and regulations and filed in the Office of the County Recorder of San Diego County at the Contractor's expense.

F. The Contractor shall be responsible for preparing and filing with the San Diego County surveyor a Corner Record of the references to existing monuments within the area of each street or highway to be reconstructed under this contract, prior to any reconstruction, as required by Section 8771 of the Business and Professions Code (August 19, 2023).

3.19 GROUND WATER AND DEWATERING

A. Work shall consist of dewatering as needed for the various items of work shown on the plans and as specified in the Contract Documents.

B. The Contractor shall note that a current environmental site assessment has not been performed and a potential for ground water contamination might exist.

C. The Contractor is advised of the potential for a high level of ground water in the project area. Groundwater has previously been found to range from approximately 9 to 21-feet below ground surface. The ground water levels should be expected to fluctuate in response to tide, rainfall runoff, nearby irrigation, leaks in water, sewer, or storm drain pipes, and/or changes in nearby extraction patterns. Groundwater may be discharged to the City of San Diego sanitary sewer system under the industrial Waste Discharge Program or to a storm drain under a National Pollution District Elimination System NPDES permit from RWQCB. Discharge to either the sewer or storm drain will require initial and periodic analysis and may require pretreatment and/or removal of contamination. The Contractor will be responsible for obtaining all required permits for disposal of ground water prior to discharging water.

D. The Contractor shall conform to discharge requirements specified in Section 3.21 “Compliance with General Construction Permit For Construction Activity,” of the Standard Construction Agreement and General Conditions.

E. The Contractor is responsible for obtaining permits, pumping and treating water and discharge monitoring. The Contractor shall discharge at all times in compliance with the discharge authorization.

F. Treated water and discharge volumes shall be measured using a totalizing flow meter.

3.20 QUALITY CONTROL

A. PURPOSE

The Contractor is responsible for Quality Control (QC) throughout the construction of the project. The QC system shall consist of plans, procedures, and organization necessary to produce a product that complies with the Contract requirements. The system shall cover construction and procurement operations, both onsite and offsite, and shall be keyed to the proposed construction sequence.

B. CONTRACTOR’S QUALITY CONTROL (CQC) PLAN

Not later than ten (10) calendar days following the return of the Notice to Proceed, the Contractor shall furnish the CQC Plan for review and approval by MTS. The CQC Plan shall identify personnel, procedures, control, instructions, tests, testing frequencies, records, and forms to be used. Construction will be permitted to begin only after acceptance of the CQC Plan.

C. CONTENT OF THE CQC PLAN

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

1. The purpose of the CQC Plan as well as the Contractor’s company policy statement regarding QC.

2. A description of the QC organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the CQC Plan for all aspects of the Work specified.
3. The names, qualifications, duties, responsibilities, and authorities of each person assigned a QC function.
4. Procurement control procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents.
5. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requirement test, feature of work to be tested, test frequency, and person responsible for each test.
6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.
7. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
8. Reporting procedures, including proposed reporting formats.
9. Contractor's plan identifying QC activities and testing requirements for all definable features of work. A definable feature of work is a task that is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there is frequently more than one definable feature under a particular section.

D. ACCEPTANCE OF THE CQC PLAN

Acceptance of the CQC Plan by MTS is required prior to the start of construction. Final acceptance is conditional and will be predicated on satisfactory performance during the construction. MTS reserves the right to require the Contractor to make changes to the CQC Plan, including the removal or addition of personnel, as necessary, to obtain the quality specified.

E. NOTIFICATION OF CHANGES TO THE CQC PLAN

After acceptance of the CQC Plan, the Contractor shall notify MTS, in writing, prior to any proposed change. Proposed changes must be approved by MTS.

F. INSPECTION AND QC TESTING

1. The Contractor shall perform inspection and Quality Control (QC) testing as specified or required by the Standard Specifications and these Special Provisions to verify that control measures are adequate to provide a product which conforms to contract requirements. A list of all tests to be performed shall be furnished to the Engineer prior to any work beginning. The list shall identify the test name, specification paragraph containing the test requirements, and the personnel responsible for each type of test. The Contractor shall notify the Engineer at least 24 hours in advance of testing.

2. Testing includes, but is not limited to: qualification tests, factory tests, installation verification tests, construction material tests, demonstration tests, and pre-operation tests. Contractor's QC testing shall be performed and documented by qualified persons other than those responsible for accomplishing the work being inspected.
3. Procedures shall be developed and implemented by the Contractor covering performance of inspection and test activities, including personnel qualification, measuring equipment control, and calibration and status control. Deficiencies during testing and inspection shall be noted in the Contractor's Daily Report and must be corrected prior to acceptance. Logs of testing and inspections shall be kept by the Contractor and are subject to review by MTS.
4. All tests taken, both passing and failing tests, shall be recorded in the Contractor's Daily Report. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. Items of nonconformance shall be identified and work shall not proceed for that feature of work until corrective action has been approved by MTS.
5. MTS may perform Quality Assurance (QA) testing with the aid of an independent testing laboratory to verify compliance. QA testing results by MTS, or their representative, shall govern and may require retesting for that feature of work at the Contractor's expense.
6. In-process inspection shall be utilized, in addition to receiving inspection, first article inspection, installation inspection, and final inspection, to evaluate project attributes (such as performance, reliability, etc.) and to verify that the project is built in accordance with the project requirements. Contractor-procured material shall be subject to Source Inspection requirements as stated in Section 3.27, "Tests and Inspections," of the Standard Construction Agreement and General Conditions.
7. Final acceptance of the project provides for a review of all pertinent records and documents impacting quality and is performed after all required inspections and testing are completed with acceptable results.
8. Records shall be maintained in the Contractor's project files for the various inspections and tests. Records provide evidence that the product has passed inspection/and or test with defined acceptance criteria. Records shall be submitted to MTS at the completion of the project.

3.21 TRACTION POWER SAFETY AND CONVENIENCE OF TROLLEY OPERATIONS

A. Attention is directed to the existence of overhead 650-volt DC power lines for the trolley. Except as noted above, these wires will be energized at all times. Extreme caution shall be exercised when working in the vicinity of these wires.

B. The Contractor shall not allow metal equipment or other items to contact the LRT tracks except when power has been shut off. These tracks act as the negative return for the 650 vdc propulsion current in the overhead wires.

C. The Contractor shall not shunt (ground) between the rails except when operating equipment necessary for the work. This activates the signaling system, including railroad crossing protection and gates at nearby cross streets.

3.22 MAINTAINING RAIL OPERATIONS

A. Your work shall not interfere with the normal rail operations, except as provided herein.

B. All work involving crossing or work inside the MTS railroad ROW shall be under the control of SDTI.

C. The SDTI dispatcher can be reached at (619) 595-4960.

D. You are liable for all additional SDTI expenses incurred, in the event that transit vehicles are unable to operate normally as a result of the Contractor's operations. A "slow order" shall not be interpreted as affecting normal LRT operations.

E. The catenary traction power system must remain in service 24 hours a day, seven (7) days a week, except as provided herein.

F. When requested, SDTI will de-energize the traction power system between the hours of 1:45 a.m. and 4:00 a.m. It will take SDTI 30 minutes to de-energize and 30 minutes to re-energize the system within the above time. De-energizing the system shall conform to the procedures of SDTI (known as the "Red Tag Clearance Procedure"). Contractor may also request SDTI de-energize sections of the project limits during AWW and single-track operations for approval by MTS, unless approved otherwise.

G. You must notify the Engineer not less than three (3) business days prior to any planned power shutdown (Red Tag Request).

H. You must not operate construction equipment that will encroach within 15 feet of any track that is being used by LRT vehicles, or 15 feet of any track that is being used for freight trains during the respective operating hours without appropriate notification and flagging. Contractor shall not store equipment, tools, and materials within fifteen feet from any operable track.

I. If you plan to perform work within these zones, you must notify the Engineer not less than three business days prior to performing such work. All freight and light rail transit flagging will be provided, at no cost, to the Contractor. If you change plans, you must notify the Engineer not less than 12 hours prior to the pre-scheduled operation. You neglect to notify the Engineer, as stated herein, all costs incurred for railroad flagmen shall be charged to the Contractor. You will not be assessed railroad flagging expenses when planned work is not performed due to conditions beyond your control.

J. Failure to comply with this requirement or a violation of the red tag procedure, will result in a $500 penalty for each occurrence and you will be required to immediately cease work and vacate the designated area until such time as flagging is obtained, or the violation is corrected. The penalty will be deducted from the progress payment for the present month.

K. You are required to perform certain tasks in close coordination with SDTI operations. These tasks include, but are not limited to:

   1. Connection to and modifications of signal system, track and roadbed, and overhead catenary system.
   2. Verification of the field conditions of all existing facilities.

3. Testing of the new track, signals, and overhead catenary system installed under this Contract.

L. In addition to the cut-over plan submitted with the overall work plan and schedule, you must submit to MTS for approval, a detailed cut-over plan requesting exact dates and times at least thirty (30) working days prior to the requested date and be available to discuss the details of the cut-over with MTS and SDTI staff.

M. Minor deviations from the requirements of this section which do not significantly change the cost of the work may be permitted upon written request if, in the opinion of the Engineer, the light rail transit will be better served, and the work expedited. Such deviations shall not be adopted until the Engineer has indicated his approval in writing.

3.23 RAILROAD COORDINATION

A. Railroad Operations on the Orange Line tracks accommodate San Diego and Imperial Valley (SDIY) service, and their operations may not be interrupted by the work of this contract.

3.24 RECORD DRAWINGS

A. Record accurately on one complete set of full size black and white prints denoting variation in work from original drawings. All recorded variations shall be done in red.

B. Dimensioning shall be from two permanent points of reference (sidewalks, pavement, curbs, streetlights, buildings, centerline of track, etc.). Markups shall be shown on record drawings daily or as work is performed. All drafting must be clearly legible, and dimensions shall be no smaller the 0.25-inches in size. Delineation between lines (edge of curb, irrigation line, edge of asphalt, etc.) must be clearly made by note or line type.

C. The Contractors shall maintain record drawings on site at all times. These drawings are subject to inspection at any time.

D. Upon acceptance of work Contractor must submit the complete and final set of record drawings to the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for.

B. Mobilization

1. Mobilization will be measured for payment as a lump sum.

C. Dewatering

1. Measurement of work performed under this section shall be per the provisions of Section 3.34, “Changes and Extra Work Payment” of the Standard Construction Agreement and General Conditions.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section, not otherwise provided for, shall be considered as included in contract prices paid for the various items of work involved, and no additional compensation will be allowed therefore.

B. Mobilization

1. The contract lump sum price paid for “Mobilization” shall be in accordance with Section 3.33, “Payment,” of the of the Standard Construction Agreement and General Conditions.

C. Dewatering

1. Payment for dewatering, including treatment of extracted groundwater prior to discharge, permits, analysis, pumping, and discharge fees will be made in accordance with the provisions of Section 3.34, “Changes and Extra Work Payment” of the of the Standard Construction Agreement and General Conditions.

END OF SECTION

SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 WATER POLLUTION CONTROL – GENERAL

A. Water pollution control work shall conform to the provisions in Section 3.21, “Compliance with Construction General Permit for Construction Activity Schedule," of the Standard Construction Agreement and General Conditions, and these Technical Specifications.

1. The Contractor shall additionally, comply with the following permits:
    a. State Water Resources Control Board (SWRCB) Order No. 2013-0001-DWQ and National Pollutant Discharge Elimination System (NPDES) Permit No. CAS000004 (if applicable)
    b. Regional Water Quality Control Board (RWQCB) Order No. R9-2017-0006 and NPDES Permit No. CAS000004 (if applicable)
2. The Contractor may obtain other National Pollutant Discharge Elimination System (NPDES) permits that apply to activities and mobile operations within or outside of the project limits including material borrow and/or processing areas, concrete plants, staging areas, storage yards, or access roads.
3. The Contractor shall perform water pollution control work in conformance with the requirements in the “California Stormwater Quality Association Construction Stormwater Best Management Practices Handbook,” and Water Pollution Control Program (WPCP) Preparation Manual" and addenda in effect on the day the Notice to Contractors is dated. This manual is referred to as the "Preparation Manual." Copies of the Preparation Manual may be obtained from:
    a. State of California Department of Transportation Publication Distribution Unit 1900 Royal Oaks Drive Sacramento, CA 95815; Telephone: (916) 445-3520
    b. The Preparation Manual and other references for performing water pollution control work are available from the Caltrans' Construction Storm Water and Water Pollution Control web site at: https://dot.ca.gov/programs/construction/storm-water-and-water-pollution-control

1.2 CONTRACTOR QUALIFICATIONS

A. The Contractor shall designate in writing a Qualified WPC Preparer who will have required qualifications and training for Qualified SWPPP Developer (QSD) and Qualified SWPPP Practitioner (QSP). The Contractor shall submit a statement of qualifications describing the training, work history, and expertise of the proposed QSD and QSP along with certifications. Contractor shall comply with the training qualifications and certifications requirements defining the QSD and QSP as outlined in the NPDES permit.

B. The development of and revisions/amendments to, the WPCP must be performed by the QSD as defined in the NPDES permit. Installation, monitoring, maintenance, and repair of

Best Management Practices (BMPs) shall be performed or supervised by the QSP as defined in the NPDES permit. Stormwater sampling, as required by the NPDES permit and/or the WPCP shall be performed or supervised by the QSP as defined in the NPDES permit. The QSP may delegate any or all of these activities to an employee trained to do the task(s) appropriately but shall ensure adequate deployment.

C. The Contractor's management and supervisory personnel along with Contractor and subcontractor workers involved with the placement and maintenance of non-storm and storm water pollution prevention "Best Management Practices" (BMP's) shall be trained on general non-storm and storm water pollution control requirements consistent with the "Construction Site Best Management Practices" and should be commensurate with the job performed by the employee.

1.3 WATER POLLUTION CONTROL PLAN (WPCP) PREPARATION AND SUBMITTAL

A. The Contractor shall prepare and submit a Water Pollution Control Plan (WPCP) to the Engineer for approval. The WPCP shall conform to the requirements in the Preparation Manual, the NPDES permits, and these Technical Specifications.

B. The WPCP shall include Best Management Practices (BMP's):

1. For storm water and non-storm water from areas outside of the job site related to construction activities for this contract such as:
    a. Staging areas.
    b. Storage yards.
    c. Access roads.
        1) Appropriate for each season.
        2) For activities or mobile operations related to all NPDES permits.

C. The WPCP shall include a schedule that:

1. Describes when work activities that could cause water pollution will be performed.
2. Identifies soil stabilization and sediment control practices for disturbed soil area.
3. Includes dates when these practices will be 25, 50, and 100-percent complete.

D. The WPCP shall include the following temporary BMP's and their associated contract items of work as shown on the plans or specified in these Technical Specifications:

1. Temporary Soil Stabilization
2. Temporary Sediment Control
3. Tracking Control
4. Wind Erosion Control
5. Non-Storm Water Management
6. Waste Management and Materials Pollution Control

E. Within 30 days after the notice of award, the Contractor shall submit three (3) copies of the WPCP to the Engineer. The Contractor shall allow 20 days for the Engineer's review. If

revisions are required, the Engineer will provide comments and specify the date that the review stopped. The Contractor shall revise and resubmit the WPCP within 15 days of receipt of the Engineer's comments. The Engineer's review will resume when the complete WPCP is resubmitted. When the Engineer approves the WPCP, the Contractor shall submit 4 copies of the approved WPCP to the Engineer. The Contractor may proceed with construction activities if the Engineer conditionally approves the WPCP while minor revisions are being completed. If the Engineer fails to complete the review within the time allowed and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay, the Contractor will be compensated for resulting losses, and an extension of time will be granted, as provided for in Section 3.32, "Time for Completion and Liquidated Damages," of the Standard Construction Agreement and General Conditions.

F. The Contractor shall not perform work that may cause water pollution until the WPCP has been approved by the Engineer. The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State and local laws, regulations, and requirements.

G. If there is a change in construction schedule or activities, the Contractor shall prepare an amendment to the WPCP to identify additional or revised BMP's. In addition, the WPCP shall be updated for each new phase or stage of the construction project. The Contractor shall submit the amendment to the Engineer for review within a time agreed to by the Engineer not to exceed the number of days specified for the initial submittal of the WPCP. The Engineer will review the amendment within the same time allotted for the review of the initial submittal of the WPCP.

H. If directed by the Engineer or requested in writing by the Contractor and approved by the Engineer, changes to the water pollution control work specified in these Technical Specifications would be allowed. Changes may include addition of new BMP's. The Contractor shall incorporate these changes in the WPCP. Additional water pollution control work will be paid for as extra work in accordance with Section 3.34, "Changes and Extra Work Payment," of the Standard Construction Agreement and General Conditions.

I. The Contractor shall keep a copy of the approved WPCP at the job site. The WPCP shall be made available when requested by a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests from the public shall be directed to the Engineer.

1.4 IMPLEMENTATION REQUIREMENTS

A. The Contractor shall construct, inspect, maintain, remove, and dispose of temporary BMP's in accordance with the approved WPCP. The Contractor's responsibility for WPCP implementation shall continue throughout any temporary suspension of work ordered by the Engineer.

B. If the Contractor or the Engineer identifies a deficiency in the implementation of the approved WPCP, the deficiency shall be corrected immediately, unless an agreed date for correction is approved in writing by the Engineer. The deficiency shall be corrected before the onset of precipitation. If the Contractor fails to correct the deficiency by the agreed date or before the onset of precipitation, the owner may correct the deficiency and deduct the

cost of correcting deficiencies from payments.

1.5 YEAR ROUND

A. As part of the WPCP, the Contractor shall have a “weather triggered” action plan and have the ability to deploy BMP’s as required to completely protect the exposed portion of the project site within 48 hours of a predicted storm event (50-percent chance of 1/2-inch or more rain). The “weather triggered” action plan shall include details for mobilizing sufficient labor and equipment to deploy the BMP’s required to protect soil areas prior to the onset of precipitation.

B. The Contractor may discontinue earthwork operations for a disturbed area for up to 21 days and the disturbed soil area will still be considered active. When earthwork operations in the disturbed area have been completed, the Contractor shall implement appropriate BMPs within 15 days, or before predicted precipitation, whichever occurs first.

1.6 RAINY SEASON

A. The Contractor shall provide soil stabilization and sediment control practices during the rainy season between October 1 and April 30.

B. The Contractor shall implement soil stabilization and sediment control practices a minimum of ten (10) days before the start of the rainy season.

C. The Contractor shall maintain soil stabilization and sediment control materials on site to protect disturbed soil areas.

D. The Contractor shall provide an updated “weather triggered” action plan on a monthly basis at the beginning of each month during the rainy season (October 1st through April 30th). A detailed plan for the mobilization of sufficient labor and equipment shall be maintained to deploy the temporary BMP’s required to protect disturbed soil areas prior to the onset of precipitation.

1.7 INSPECTION AND MAINTENANCE

A. The QSP shall inspect the temporary BMP’s identified in the WPCP as follows:

1. Before a forecasted storm,
2. After precipitation that causes site runoff,
3. At 24-hour intervals during extended precipitation,
4. On a predetermined schedule, a minimum of once every month outside of the defined rainy season, and
5. On a predetermined schedule, a minimum of once every two (2) weeks during the defined rainy season.
6. On a predetermined schedule, a minimum of once per week during the defined rainy season if a project is located over or within 150 feet of a 303d listed waterbody.
    a. Forecasted storm is defined as a 50-percent chance of 1/2-inch or more of rain within 48 hours, as identified by the National Weather Service.

B. The QSP shall oversee the maintenance of the BMP's. The QSP shall use the Storm Water Quality Construction Site Inspection Checklist provided in the Preparation Manual or an alternative inspection checklist provided by the Engineer. A copy of the completed site inspection checklist shall be submitted to the Engineer within 24 hours of finishing the inspection. The Engineer shall ensure the site inspections are accurate and complete.

1.8 UNAUTHORIZED DISCHARGES

A. No unauthorized discharges of any material, debris, or pollutant may leave the project site and/or enter the storm water conveyance system including process and wash waters, dust, petroleum products, soil or debris. The Contractor shall be responsible for clean-up, mitigation, and penalties resulting from failure to implement and maintain appropriate BMP's for pollution prevention. Any penalties assessed to the Owner as a result of unauthorized discharges will be withheld from the Contractor's progress payments.

1.9 CLEAN UP

A. All unsalvageable materials used in the storm water pollution prevention program shall be properly disposed of outside of the Owner's property at the completion of work.

1.10 REPORTING REQUIREMENTS

A. If the Contractor identifies discharges into surface waters or drainage systems causing or potentially causing pollution, or if the project receives a written notice or order from a regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within seven (7) days of the discharge, notice or order. The report shall include the following information:

B. The date, time, location, nature of the operation, type of discharge; and the cause of the notice or order.

C. The BMP's used before the discharge, or before receiving the notice or order.

D. The date of placement and type of additional or altered BMP's placed after the discharge, or after receiving the notice or order.

E. A maintenance schedule for affected BMP's.

1.11 ANNUAL CERTIFICATIONS

A. By July 15 of each year, the Contractor shall complete and submit to the Engineer an Annual Certification of Compliance, as contained in the Preparation Manual.

1.12 COST BREAK-DOWN

A. The Contractor shall include a Water Pollution Control Cost Break-Down in the WPCP which itemizes the contract lump sum for water pollution control work.

1.13 RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

A. This project lies within the boundaries of the San Diego Regional Water Quality Control Board (RWQCB).

B. This project is subject to the requirements of Section 3.21, “Compliance with General Construction Permit for Construction Activity Schedule,” of the Standard Construction Agreement and General Conditions.

C. This project shall conform to the permits and modifications thereto. The Contractor shall maintain copies of the permits at the project site and shall make them available during construction.

D. The Contractor shall know and comply with provisions of Federal, State, and local regulations and requirements that govern the Contractor's operations and storm water and non-storm water discharges from the project site and areas of disturbance outside the project limits during construction.

E. The Contractor shall be responsible for penalties assessed on the Contractor or the owner as a result of the Contractor's failure to comply with the provisions in this Technical Specification or with the applicable provisions of the Federal, State, and local regulations and requirements. If project documentation, including but not limited to site inspection checklists and correspondence to the Contractor, shows that the Contractor is in compliance with the project WPCP, the Engineer may waive Contractor responsibility for penalties.

F. Penalties as used in this section shall include fines, penalties, and damages, whether proposed, assessed, or levied against the owner or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Control Act, by governmental agencies or as a result of citizen suits. Penalties shall also include payments made or costs incurred in settlement for alleged violations of applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

1.14 WITHHOLDS

A. The Engineer will withhold money due the Contractor, in an amount determined by the Engineer, up to and including the entire amount of penalties proposed, assessed, or levied as a result of the Contractor's violation of the permits, or Federal or State law, regulations, or requirements. Funds will be withheld by the Engineer until final disposition of penalties has been made. The Contractor shall remain liable for the full amount of penalties until they are finally resolved with the entity seeking the penalties.

B. If a regulatory agency identifies a failure to comply with the permits and modifications thereto, or other Federal, State, or local requirements, the owner will withhold money due the Contractor, subject to the following:

1. The Engineer will give the Contractor 30 days’ notice of the owner's intention to withhold funds from payments, which may become due to the Contractor before acceptance of the contract. Funds withheld after acceptance of the contract will be made without prior notice to the Contractor.

2. If the Engineer has withheld funds, and it is subsequently determined that the State is not subject to the entire amount of the costs and liabilities assessed or proposed in connection with the matter for which the withhold was made, the Engineer will be liable for interest on the amount withheld for the period of the withhold. The interest rate payable shall be 6 percent per annum.

C. The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the Contractor's records pertaining to water pollution control work. The Contractor and the owner shall provide copies of correspondence, notices of violation, enforcement actions, or proposed fines by regulatory agencies to the requesting regulatory agency.

PART 2 - PRODUCTS

A. Product material for temporary BMP elements listed below used during construction shall comply with the approved Water Pollution Control Plan, the Construction Site Best Management Practices (BMP) Manual of the Caltrans Storm Water Quality Handbooks and these Technical Specifications.

PART 3 - EXECUTION

3.1 GENERAL

A. Best Management Practice (BMP) itemized elements are as follows:

1. Temporary Concrete Washout Facility
2. Temporary Drainage Inlet Protection
3. Temporary Fiber Roll
4. Street Sweeping
5. Others as required per contractor developed WPCP conforming to Caltrans WPCP Preparation Manual.

3.2 TEMPORARY CONCRETE WASHOUT FACILITY

A. General

1. Temporary concrete washout facilities shall be constructed, maintained, and later removed at the locations shown on the approved Water Pollution Control Plan in conformance with these Technical Specifications, WM-8 in the Construction Site Best Management Practices (BMP) Manual of the Caltrans Storm Water Quality Handbooks.
2. Temporary concrete washout facilities shall be one of the BMP's for waste management and materials pollution control. The Water Pollution Control Plan shall include the use of temporary concrete washout facilities.
3. Temporary concrete washout facilities shall be above ground only and comply with Section 13-9, "Temporary Concrete Washouts," of the Caltrans Standard Specifications and these Technical Specifications.

B. Maintenance

1. Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 1-foot. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with authorized removal methods submitted to the Engineer by the Contractor. Holes, rips, and voids in the plastic liner shall be patched and repaired by taping or the plastic liner shall be replaced. Plastic liner shall be replaced when patches or repairs compromise the impermeability of the material as determined by the Engineer.
2. Gravel bags shall be replaced when the bag material is ruptured or when the geotextile has failed, allowing the bag contents to spill out.
3. Temporary concrete washout facility shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary concrete washout facility resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor’s expense.

3.3 TEMPORARY DRAINAGE INLET PROTECTION

A. General

1. Temporary drainage inlet protection shall be constructed, maintained, and later removed at the locations shown on the approved Water Pollution Control Plan in conformance with these Technical Specifications, SC-10 in the Construction Site Best Management Practices (BMP) Manual of the Caltrans Storm Water Quality Handbooks, and in conformance with details shown on the plans and these Technical Specifications.
2. Temporary drainage inlet protection shall be one of the BMP’s for sediment control. The Water Pollution Control Plan shall include the use of temporary drainage inlet protection.
3. Temporary drainage inlet protection shall be Type 3, unless specified otherwise.

B. Materials

1. Erosion Control Blanket
   a. Erosion control blanket for temporary drainage inlet protection (Type 3) shall be Class 8 geotextile conforming to the provisions in Section 72-2.02C, "Fabric," of the Caltrans Standard Specifications.
2. Staples
   a. Staples for temporary drainage inlet protection shall be as shown on the plans. An alternative attachment device such as geotextile pins or plastic pegs may be used instead of staples. The Contractor shall submit a sample of the alternative attachment device for Engineer's approval prior to installation.
3. Gravel Bag
   a. Gravel bag fabric for temporary drainage inlet protection (Types 3 or 4) shall be non-woven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

Specification	Requirements
Mass per unit area, oz per square yd, min. ASTM Designation: D 5261	10
Grab tensile strength (1-inch grip), lbf, min. ASTM Designation: D4632*	200
Ultraviolet stability, percent tensile strength retained after 500 hours	70

* or appropriate test method for specific polymer

b. Gravel bags shall be between 2-feet and 2.5-feet in length, and between 1.5-feet and 1.6 feet in width.

c. Yarn used for binding gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

d. Gravel shall be between 3/8-inch and 3/4-inch in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 30 lbs and 50 lbs in weight.

C. Installation

1. Temporary drainage inlet protection shall be installed at drain inlets in paved and unpaved areas as follows:
2. Temporary drainage inlet protection shall be installed such that ponded runoff does not encroach into the traveled way or overtop the curb or dike. Gravel-filled bags shall be placed to control ponding and prevent runoff from overtopping the curb or dike.
3. The bedding area for the temporary drainage inlet protection shall be cleared of obstructions including, but not limited to, rocks, clods, and debris greater than 1 inch in diameter prior to installation.
4. Erosion control blanket or geotextile fabric shall be secured with staples and embedded into a trench adjacent to the drainage inlet. Gravel-filled bags shall be staked in rows two layers high in a pyramid configuration to form a gravel bag barrier centered over the perimeter of the erosion control blanket or geotextile fabric. The gravel-filled bags shall be placed so that the bags are tightly abutted and overlap the joints in adjacent rows. A spillway shall be created by removing one or more gravel-filled bags from the upper layer of the gravel bag barrier.
5. The Contractor shall select the appropriate drainage inlet protection in conformance with the details to meet the field condition around the drainage inlet. For all other drainage inlets within the project limits that do not conform to the details shown on the plans, the Contractor shall submit to the Engineer for approval, provisions for providing temporary drainage inlet protection.
6. Details for an alternative temporary drainage inlet protection shall be submitted to the Engineer for approval at least seven (7) days prior to installation.
7. Throughout the duration of the Contract, the Contractor shall be required to provide protection to meet the changing condition of the drainage inlet.

8. In areas adjacent to traffic where temporary railing (Type K) is not present temporary drainage protection (Type 3A) and (Type 3B) shall not be used.
9. When the temporary drainage inlet protections are no longer required, temporary drainage inlet protection materials shall be removed and disposed of in conformance with Federal, State, and local regulations.
10. Holes, depressions or other ground disturbance caused by the removal of the temporary drainage inlet protection shall be backfilled and repaired in conformance with the provisions in Section 4.26, "Protection of Work and Property," of the General Conditions.

D. Maintenance

1. Temporary drainage inlet protection shall be maintained to provide sediment holding capacity and to reduce runoff velocities and as follows:
2. Gravel-filled bags shall be replaced when the bag material ruptures and allows the contents to spill out, or when the geotextile fails and allows the bag contents to spill out.
3. Locations where rills and other evidence of concentrated runoff have occurred beneath the gravel bag barriers shall be corrected.
4. Sediment deposits, trash and debris shall be removed from temporary drainage inlet as described in this special provision or as directed by the Engineer. Removed sediment shall be deposited within the project limits in such a way that the sediment is not subject to erosion by wind or by water. Trash and debris shall be removed and disposed of in conformance with Federal, State, and local regulations.
5. Temporary drainage inlet protection (Type 3): Sediment deposits shall be removed when the deposit reaches one-third the height of the gravel bag barrier or one-half the height of the spillway; whichever is less.
6. Temporary Drainage Inlet Protection shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary drainage inlet protection resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor’s expense.

3.4 TEMPORARY FIBER ROLL

A. General

Temporary fiber roll shall be furnished, installed, maintained, and later removed at the locations shown on the approved Water Pollution Prevention Plan in conformance with these Technical Specifications, SC-5 in the Construction Site Best Management Practices (BMP) Manual of the Caltrans Storm Water Quality Handbooks.

Temporary fiber roll shall be one of the BMP’s for sediment control. The Water Pollution Prevention Plan shall include the use of temporary fiber roll.

B. Materials

1. Fiber Roll

Fiber roll shall be one of the following:

a. Fiber roll shall be constructed with a pre-manufactured blanket consisting of one material or a combination of materials consisting of wood excelsior, rice or wheat straw, or coconut fibers. The blanket shall be between 6.5-feet and 8-feet in width and between 65-feet and 95-feet in length. Wood excelsior shall be individual fibers, of which 80-percent shall be 6-inches or longer in length. The blanket shall have a photodegradable plastic netting or biodegradable jute, sisal or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 6.5-feet apart along the full length of the roll and placed 6-inches from the ends of each roll. The finished roll shall be between 8-inches and 10-inches in diameter, between 10-feet and 20-feet in length and shall weigh at least 2 lbs/ft. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 6 inches along the length of the blanket.

b. Fiber roll shall be a pre-manufactured roll of rice or wheat straw, wood excelsior or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal or coir fiber netting. Rolls shall be between 8-inches and 10-inches in diameter, between 10-feet and 20-feet in length and shall weigh at least 3.5 lbs/ft. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the rolls.

2. Stakes

Wood stakes shall be a minimum of 3/4-inch by 3/4-inch in size, and sufficient length as required by WPCP. Stakes shall be driven to a maximum of 2-inches above, or flush with the top of the roll. Wood stakes shall be untreated fir, redwood, cedar, or pine, shall be cut from sound timber, and shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes may be used as an alternative. The Contractor shall submit a sample of the metal stake for Engineer's approval prior to installation. The tops of the metal stakes shall be bent at a 90-degree angle.

3. Rope

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35 mm.

C. Installation

1. Temporary fiber roll shall be installed as follows:

a. Temporary fiber roll: Furrows shall be constructed to a depth between 2-inches and 4-inches, and to a sufficient width to hold the fiber rolls. Stakes shall be installed 2-feet apart along the length of the fiber rolls and stopped at 1-foot from each end of the rolls. Stakes shall be driven to a maximum of 2-inches above, or flush with, the top of the roll.

b. Temporary fiber roll shall be installed as shown on the plans.

c. The bedding area for the fiber roll shall be cleared of obstructions including, but not limited to, rocks, clods, and debris greater than 1-inch in diameter prior to installation.

d. Temporary fiber roll shall be installed approximately parallel to the slope contour.

e. Temporary fiber roll shall be installed prior to the application of other temporary erosion control or soil stabilization materials in the same area.

f. When no longer required, as determined by the Engineer, temporary fiber roll shall become the property of the Contractor and shall be removed and disposed of in conformance with Federal, State, and local regulations.

g. Ground disturbances, including holes and depressions, caused by the installation and removal of the temporary fiber roll shall be backfilled and repaired in conformance with the provisions in Article 3.4, "Preservation of Property," of these Technical Specifications.

D. Maintenance

Temporary fiber roll shall be maintained to disperse concentrated water runoff and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected.

E. Temporary fiber roll shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary fiber rolls resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

3.5 STREET SWEEPING

A. General

1. Street sweeping shall be conducted where sediment is tracked from the project site onto paved roads.
2. Street sweeping shall be one of the BMP's for sediment control. The Water Pollution Control Plan shall include the use of street sweeping. Street sweeping shall be performed in conformance with Section 4, SC-7 in the Construction Site Best Management Practices (BMP) Manual of the Caltrans Storm Water Quality Handbooks.
3. Material collected during street sweeping operations shall be disposed of in accordance with Federal, State, and local regulations.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Unless otherwise indicated Temporary Storm Water Pollution Control shall be measured as lump sum.

4.2 PAYMENT

A. The contract lump sum price paid for Temporary Storm Water Pollution Control shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Temporary Storm Water Pollution Control During Construction including preparation of WPCP, complying with WPCP and regulatory requirements, installing, constructing, maintaining, removing, and disposing of temporary construction BMPs, including non-storm water management, and waste management and materials

pollution BMPs, as specified in the Caltrans Standard Specifications, these Technical Specifications, as directed by the Engineer, and as indicated below:

B. During each estimate period the Contractor fails to conform to the provisions in this section or fails to implement the BMP's outlined in the WPCP or specified elsewhere in these Technical Specifications as items of work, the owner may withhold 25-percent of the progress payment.

1. Failure to implement practices may include, but are not limited to, the following:
    a. Observation of non-storm water discharges without proper BMP implementation observation of erosion due to missing or improperly implemented soil stabilization and sediment control BMP's.
    b. Failure to submit an updated WPCP for a new phase or stage.
    c. Failure to amend the WPCP when a change in project conditions occurs or when BMP deficiencies are identified.
    d. Failure to implement required erosion and sediment control BMPs on active and/or inactive disturbed soil areas.
    e. Failure to maintain a stockpile of BMP's for installation prior to a rain event.
    f. Failure to maintain BMP's in the field.
    g. Failure to perform appropriate site inspections.
    h. Failure to implement the project's Sampling and Analysis Plan.
    i. Failure to install or maintain BMP's as described in the WPCP and in the Maintenance sections of these Technical Specifications.
2. Withholds for failure to perform water pollution control work will be in addition to all other withholds provided for in the contract. The owner will return performance-failure withholds in the progress payment following the correction of noncompliance.
3. Implementation of temporary BMP's in areas outside the MTS right of way not specifically provided for in the WPCP or in these Technical Specifications will not be paid for.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General provisions applicable to demolition and removals.
2. Civil/site demolition and removals.
3. Architectural and structural demolition and removals.
4. Mechanical demolition and removals
5. Electrical demolition and removals.
6. Disposal of demolition debris, materials, and equipment.

1.2 REFERENCES

A. The Contractor shall comply with provisions of all local, state and federal regulations, codes, specifications, and standards and the most recent edition, including all addenda, of the following codes, specifications, standards, and recommended practices, except as otherwise indicated:

1. NFPA National Fire Protection Association (NFPA):
   a. 241 - Safeguarding Construction, Alteration, and Demolition Operations
2. OSHA Occupational Safety and Health Standards of the U.S. Department of Labor
3. CAL/OSHA State of California – Division of Occupational Safety and Health (DOSH)
4. EPA (40 CFR Parts 260-273) Environmental Protection Agency
5. RCRA Resource Conservation and Recovery Act
6. TSCA Toxic Substances Control Act

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Review procedures under this, other Special Provision sections and coordinate the work to be performed with, or before, demolition and removals.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of authorities having jurisdiction and relevant permits required and obtained for demolition.

B. Qualifications:

1. Electrical Removals: Contractor performing electrical removals shall be legally qualified to perform electrical construction and electrical work in the jurisdiction where the site(s) are located.
2. Plumbing Removals: Contractor performing plumbing removals shall be legally qualified to perform plumbing construction and plumbing work in the jurisdiction where the site(s) are located.
3. Mechanical Removals: Contractor performing mechanical removals shall be legally qualified to perform mechanical construction and mechanical work in the jurisdiction where the site(s) are located.

1.5 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Procedure Submittals:

a. Demolition and Removal Plan: Not less than ten days prior to start of demolition work, submit plan to MTS for review and approval, including:

1) Plan for coordinating shut-offs, OCS power-downs, capping, temporary services, and continuing utility services.

2) General indication of intended approach for performing demolition work, including how proposed demolition will affect MTS operations and properties adjacent to the site and the public.

3) Disposal and recycling facilities proposed, including facility owner, facility name, location, and processes. Include copies of appropriate permits and licenses, and compliance status.

4) Planned demolition operating sequences, relative to their effect on MTS operations and adjacent to the site and the public.

5) Detailed schedule of demolition work in accordance with the Progress Schedule accepted by MTS.

6) Copy of demolition permit (when required) obtained from authorities having jurisdiction.

B. MTS review, comments, and acceptance of Contractor's procedure submittals for demolition are only for the limited purposes indicated in the Contract Documents. MTS review, comments, action, or inaction concerning such submittals, shall not, in any way, reduce or mitigate Contractor's sole responsibility for construction means, methods, techniques, procedures, and sequences, or associated safety and protection measures.

1. Notification of Intended Demolition Start: Submit in accordance with Paragraph 3.1.A of this Section.

2. Qualifications Statements:
    a. Name and qualifications of Contractor performing electrical removals, including copy of licenses required by authorities having jurisdiction.
    b. Name and qualifications of entity performing plumbing removals, including copy of licenses required by authorities having jurisdiction.
    c. Name and qualifications of entity performing mechanical removals, including copy of licenses required by authorities having jurisdiction.

1.6 FIELD CONDITIONS

A. Existing Conditions:
1. MTS makes no representation of conditions or structural integrity of areas to be demolished or where removals are required by the Contract Documents.
2. Contractor to perform a survey of conditions of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Notification:
1. Not less than 48 hours prior to commencing demolition or removal, advise MTS in writing of planned start of demolition Work. Do not start removals when MTS furnishes reasonable objection.
2. Where demolition or removal has potential to affect adjacent operations, properties, occupants, streets, or other public thoroughfare, transportation facilities, utilities, water courses, or any combination thereof, furnish required notices to owners and occupants of properties, buildings, and structures that may be affected by the demolition or removal.
3. In accordance with Laws and Regulations, and applicable permits, furnish to authorities having jurisdiction, including emergency services as necessary, appropriate notices of planned demolition and removals.
4. Submit to MTS copies of notices furnished to adjacent property owners, occupants, and authorities having jurisdiction.

B. Protection of In-Place Conditions:

1. Perform demolition and removal preventing damage and injury to property, structures, workers, occupants, the public, and facilities. Do not interfere with use of, and free and safe access to and from buildings, structures, and properties, unless allowed by the Contract Documents or allowed in writing by MTS.
2. Closing or obstructing roads, drives, sidewalks, and passageways adjacent to the work is not allowed unless indicated otherwise in the Contract Documents. Perform the work with minimum interference to vehicular, LRT and pedestrian traffic.
3. Provide temporary partitions between demolition work areas and (a) areas that will be occupied during demolition and removals, and (b) areas accessible to the public or visitors. Temporary partitions shall be sturdy, braced plywood in good condition, of dimensions sufficient to adequately screen demolition work from view of occupants, public, and visitors. Maintain temporary partitions in place until demolition and removal is complete or until other work requires removal of temporary partitions.
4. Provide appropriate temporary barriers, lighting, sidewalk sheds, and other necessary protection.
5. Repair damage to facilities not subject to demolition or removal when such damage results from Contractor's action or inaction.

C. Existing Utilities: Adhere to the requirements of Section 01 00 00 - General Requirements and perform the following:

1. Should unforeseen, unknown, or incorrectly shown or indicated Underground Facilities be encountered, Contractor responsibilities shall be in accordance with Section 01 00 00 - General Requirements. Cooperate with utility owners in keeping adjacent services and facilities in operation.
2. Sanitary Sewer: Before proceeding with demolition, locate and cap all sewer lines and service laterals discharging from the building or structure being demolished.
3. Storm Water Sewerage: Existing storm water system shall remain in place until demolition of existing building or structure is complete. Upon completion of demolition, cut and cap storm sewer at locations shown on the Drawings. Remove existing storm water piping and related structures between points of cutting, and backfill, restore to grade, and stabilize the area over the removed facilities in accordance with the Contract Documents.
4. Water Piping and Related Facilities: Before proceeding with demolition, locate and cap all potable and non-potable waterlines and service laterals serving the building or structure being demolished. Ensure compliance with Laws and Regulations regarding water quality.
5. Other Utilities: Before proceeding with demolition, locate and cap as required all other utilities, such as fuel and gas; compressed air; heating, ventilating, and air conditioning; electric; and communications; and service laterals serving the building or structure being demolished.

6. Coordinate with utility owners in relation to demolition and removal. Where utility owner requires that only the associated utility owner modify, disconnect, cap, or any combination thereof, its associated utility service, pay the utility owner for performing such modification, disconnection, capping, or other necessary work.
7. Shutdown of utility services shall be coordinated by Contractor, assisted by MTS.

D. Remediation:

1. If unanticipated hazardous environmental conditions are believed to be encountered during demolition and removal of the wheel truing machines, comply with requirements of Section 01 00 00 - General Requirements and Section 34 01 23.13 - Equipment Removal and Salvage.

3.2 DEMOLITION - GENERAL

A. General, Common Requirements for Demolition and Removal

1. Contractor shall provide all labor, materials, construction equipment and machinery, tools, services (including professional services when necessary), and incidentals as shown, specified and required for demolition, removals, and disposal.
2. The work under this Section includes, but is not necessarily limited to:
   a. Demolition and removal of existing materials and equipment as shown or indicated in the Contract Documents. The work may include demolition of structural concrete, foundations, structural steel, metals, attachments, appurtenances, piping, electrical and mechanical systems and equipment, pavement, fencing, and similar existing materials, equipment, and items.
3. Demolition and removals indicated in the Technical Specification shall comply with requirements of this section.
4. Perform demolition as shown or indicated on the Drawings and as indicated elsewhere in the Contract Documents.
5. Pay for transporting and, as applicable, disposing of materials and equipment resulting from demolition and removals.
6. Locate construction equipment used for demolition and remove demolished materials and equipment to avoid imposing excessive loading on supporting and adjacent walls, floors, framing, facilities, and Underground Facilities.

B. Pollution Controls:

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit emissions of dust and dirt to the lowest practical level.
2. Do not use water when water may create hazardous or objectionable conditions such as icing, flooding, or pollution.
3. Clean adjacent structures, facilities, properties, and improvements of dust, dirt, and debris caused by demolition Work, in accordance with the Section 01 00 00 - General Requirements.

C. Building or Structure Demolition and Removals:

1. Demolish concrete in small sections.
2. Remove structural framing members and lower them to ground using hoists, cranes, or other suitable methods. Do not throw or drop to the ground.
3. Break up and remove foundations, mats, and slabs-on-grade unless otherwise shown or indicated as remaining in place.
4. Temporary Bracing and Supports:
    a. Provide temporary bracing and supports sufficient to maintain safety, stability, and resist all loads to which the structure may be subject during demolition and removals, until entirety is permanently removed or permanently stabilized.
    b. Temporary bracing and supports shall be sufficient for associated dead load, live load, transient loading, and dynamic loads such as wind, seismic, and other loads to which the temporary bracing or support may be subject.

D. Salvage and Ownership:

1. The following applies to materials and equipment to remain property of MTS:
    a. Contractor shall carefully remove and appropriately handle materials and equipment to remain MTS' property in a manner that avoids damaging and invalidating warranties for such items. Brace motors attached to flexible mountings until reinstallation or delivery to the MTS storage location.
    b. Remove, as functional units, together with all appurtenances required for operation.
    c. Clean and tag for storage, items to remain MTS' property, and maintain comprehensive, detailed listing of such items. Update such listing when items are relocated.
    d. Protect from damage.
    e. Deliver to designated storage location at site designated by MTS. Storage location shall be within 20 miles of project site.
2. Preparation of existing MTS equipment for storage:
    a. Where appropriate, identify each component with markings or tags to indicate its position in the assembly and the assembly of which it is part.
    b. Place small parts in appropriate, durable boxes and clearly mark contents on the outside of box or container.
    c. Remove oil from oil-lubricated bearings and gear boxes and replace with storage oil.
    d. Provide grease for grease-lubricated bearings.
    e. Attach unit to suitable crate bottom.
    f. Enclose unit in polyethylene film and seal all seams and the film to the base of the unit with tape.

g. Construct crate of wood slats around top and sides of unit.

h. Attach permanent instruction tag to outside of crate stating: “This unit has been prepared for storage. Replace oil, vent plugs, and lubricant in accordance with manufacturer's instructions before start-up.”

E. Finishing of Surfaces Exposed by Removals: Unless otherwise shown or indicated in the Contract Documents, surfaces of walls, floors, ceilings, and other areas exposed by removals, and that will remain as finished surfaces, shall be repaired and re-finished with materials that match existing adjacent surface, or as otherwise approved by MTS.

3.3 STRUCTURAL REMOVALS

A. Remove structures to lines and grades shown or indicated, unless otherwise directed by MTS. Where limits are not shown or indicated in the Contract Documents, limits shall be four inches outside the item to be installed. Removals beyond limits shown shall be at Contractor’s risk and expense and such excess removals shall be reconstructed to satisfaction and without additional cost to MTS.

B. Recycling and Reuse of Demolition Materials:

1. All concrete, reinforcing steel, structural metals, miscellaneous metals, plaster, wire mesh, and other items contained in structure to be demolished, shall be removed, transported, and disposed away from the site, unless otherwise approved by MTS.

2. Do not use demolished materials as fill or backfill adjacent to buildings and structures, in pipeline trenches, or as subbase under buildings, structures, or pavement.

C. After removing concrete or portions thereof, mats, slabs, and similar construction that ties into existing construction, neatly repair the junction point to leave exposed only finished edges and finished surfaces.

D. Where parts of existing structures are to remain in service following demolition:

1. Where parts of existing structures are to remain in service following demolition, remove the portions shown or indicated for removal, repair damage, and leave the structure in proper condition for the intended use.

2. Remove concrete to the lines shown or indicated by sawing, drilling, chipping, and other suitable methods. Leave the resulting surfaces true and even, with sharp, straight corners, resulting in neat joints with new construction and be satisfactory for the purpose intended.

3. Do not damage reinforcing bars beyond the area of concrete removal. Do not saw-cut beyond the area to be removed.

4. Reinforcing bars that are exposed at surfaces of removed concrete that will not be covered with new concrete or masonry shall be removed to 1.5-inches below the final surface. Repair resulting hole, with repair mortar so that filled hole is flush with adjacent surface.

5. Where existing reinforcing bars are shown or indicated to extend into new construction, remove existing concrete so that reinforcing bars are clean and undamaged.

E. Removal of Anchorages and Protruding Metals:

1. Where equipment or material anchored to concrete or masonry are removed, and anchors are not to be re-used, and where existing metals protrude from concrete, remove anchors and other metal to not less than 1.5-inches beneath surface of concrete. Repair resulting hole, with repair mortar so that filled hole is flush with adjacent surface.
2. At Contractor's option, when anchor is stainless steel, anchor may be cut flush with surface of concrete or masonry, when so approved by MTS.

F. Where anchoring materials, including bolts, nuts, hangers, welds, and reinforcing steel, are required to attach to existing construction, provide such materials under this Section, unless specified elsewhere in the Contract Documents.

G. Equipment Demolition and Removals:

1. To the extent shown and necessary for removal of existing mechanical equipment, including (but not limited to):
   a. Facility equipment, wheel truing machines, lockers, electrical panels and similar facility items.
   b. Conveying equipment such as elevators, escalators, and similar general-use conveying systems.
   c. Fire suppression and plumbing equipment.
   d. Heating, ventilating, and air conditioning equipment.
   e. Standby power generators.
   f. Security systems equipment.
   g. Transportation-related equipment.
   h. Flow control gates and valves.
   i. Hoisting equipment.
   j. Bulk materials conveying equipment.
   k. Process heating and cooling equipment.
   l. Blowers, compressors, air filters, air dryers, and similar equipment.
   m. Pumps.
   n. Tanks.
   o. Process equipment, including purification equipment, pollution control and solid waste equipment, and treatment process equipment.
   p. Appurtenances (including motors, drive systems, controls, cooling water and seal water systems)

2. Where necessary, disassemble equipment to avoid imposing excessive loading on supporting walls, floors, framing, facilities, and underground facilities. Disassemble equipment as necessary for access through, and egress from, buildings and structures. Disassembly and removal shall comply with applicable Laws and Regulations. Provide means to remove equipment from buildings and structures.
3. Remove control panels, operator stations, and instrumentation associated with equipment being removed, unless shown or indicated otherwise.
    a. Where tank or equipment contains solid or slurry-type material, remove, handle, and transport the contents and appropriately dispose of the materials offsite in accordance with Laws and Regulations, unless otherwise indicated in the Contract Documents.
4. Remove access platforms, ladders, and stairs related to equipment being removed, unless otherwise shown or indicated.
5. Instrumentation and Control Systems Removal:
    a. Remove instrumentation and controls equipment in accordance with this Section's requirements for mechanical removals and electrical removals.

3.4 ELECTRICAL REMOVALS

A. Electrical Demolition Work Includes Performing the Following Activities and Removing Existing Electrical Items as follows:
    1. Disconnecting cabling from motors, electrical sources, control panels, control stations, instrumentation and control items, and similar devices and equipment.
    2. Conduits, raceways, cable trays, hangers and supports, cabling, and related items.
    3. Switches, panelboards, control stations, and similar items.
    4. Transformers, distribution switchboards, control panels, motors, starters, variable speed controllers, and similar items.
    5. Lighting fixtures and related items.
    6. Utility poles, site lighting standards, and overhead cabling.
    7. Appurtenances and miscellaneous electrical equipment, as shown, specified, or required.

B. Electrical Removals – General:
    1. Comply with Laws and Regulations, including applicable electrical construction codes.
    2. Lock Out and Tagging:
        a. Contractor shall lock-out and tag circuit breakers and switches operated by MTS and verify that affected cabling are de-energized to ground potential before commencing electrical removals.

b. Upon completion of electrical removals, remove locks and tags and promptly advise MTS that existing facilities are available for use.

3. Remove existing electrical equipment, fixtures, and systems while avoiding damaging items required to remain. Unless shutdown is expressly allowed for MTS operations, keep existing electrical systems in operation. Maintain integrity of grounding systems.
4. Disconnect and remove motors, control panels, and other electrical items where shown or indicated.
5. Store removed motors, microprocessors and electronics, and other electrical items to be reused in accordance with its manufacturer's recommendations and requirements of the Contract Documents.

C. Removal of Cabling, Conduits, Raceways and Similar Items:

1. Verify the function of each cable before disconnecting and removing.
2. Remove cabling, conduits, hangers and supports, and similar items back to the power source or control panel, unless otherwise shown or indicated.
3. Remove cabling, conduits, and similar items where shown or indicated for removal. Abandoned conduits concealed in floors, ceiling slabs, or in walls shall be cut flush with the slab or wall (as applicable) at point of entrance, suitably capped, and the area repaired in a flush, smooth manner acceptable to MTS.
4. Disassemble and remove exposed conduits, junction boxes, other electrical appurtenances, and their supports.
5. Repair all areas of the work to prevent rusting on exposed surfaces.

D. Lighting fixtures, wall switches, receptacles, starters, and other miscellaneous electrical equipment, not designated as remaining as MTS property, shall be removed and properly disposed off-site as required in accordance with Laws and Regulations.

3.5 DEMOLITION OF SITE IMPROVEMENTS

A. Pavement, Sidewalks, Curbs, and Gutters:

1. Demolition of asphalt or concrete pavement as applicable, shall terminate at cut edges. Edges shall be linear and have a vertical cut face.
2. To cut pavement, use machinery or tools that provide a smooth-cut edge, appropriate for the required result. Where cut edges are not smooth and vertical, appropriately repair cut edge to remain, or provide new cut (in accordance with the Contract Documents) through sound material not less than six inches from original cut, providing smooth, even appearance.

B. Fencing, Guardrails, and Bollards:

1. Remove to the limits shown or indicated on the Drawings.
2. Completely remove below-grade posts and concrete.

C. Manholes, Vaults, Chambers, and Handholes:

1. Remove to the limits shown or indicated on the Drawings.

a. If not shown or indicated on the Drawings, remove to not less than three feet below finished grade indicated on the Drawings.

b. Where a portion of manhole, vault, handhole, or similar structure remains in-place, backfill portion of item that will remain. Other than Manholes, Vaults, Chambers, and Handholes" provision, below, of this Article.

D. Underground Facilities Other than Manholes, Vaults, Chambers, and Handholes:

1. Remove to the extent shown or indicated on the Drawings.

2. Unless otherwise shown or indicated, cap ends of piping to remain in place in accordance with the Section 3.4 - Electrical Removals of this Section.

3. Completely fill, with flowable fill (controlled low-strength material), the following Underground Facilities that will be abandoned in-place:

a. Portions of manholes, vaults, handholes, and similar items that will remain in-place. At Contractor's option, such structures to remain may be filled with granular structural fill.

b. Buried piping 8-inches in diameter and larger.

c. Indicate Project-specific buried piping or other Underground Facility.

4. Provide flowable fill in accordance with Section 31 23 24 – Flowable Fill and Section 31 23 05 - Excavation and Fill.

E. Other Site Improvements: When the Contract Documents require removal of other site improvements not addressed above, comply with Contract requirements for removal of structures.

3.6 DISPOSAL OF DEMOLITION DEBRIS

A. Disposal – General:

1. Promptly remove all debris, waste, rubbish, material, and equipment resulting from demolition and removal work. Upon completion of demolition and removal, promptly remove construction equipment used in demolition.

2. Do not sell at, or adjacent to, the site demolition materials or removed equipment or items. If materials, equipment or debris will be sold by Contractor, remove the items from the site and adjacent areas, and perform the sale or transaction elsewhere, in accordance with Laws and Regulations.

B. Transportation and Disposal:

1. Non-Hazardous Materials, Equipment, and Debris: Properly transport and dispose of non-hazardous demolition materials, equipment, and debris at appropriate landfill or other suitable locations, in accordance with Laws and Regulations. Non-hazardous material does not contain Constituents of Concern such as (but not limited to) asbestos, PCBs, petroleum, hazardous waste,

radioactive material, or other material designated as hazardous in Laws or Regulations.

2. Hazardous Materials, Equipment, and Debris: When handling and disposal of items containing Constituents of Concern, properly transport and disposal of such items in accordance with the Contract Documents and Laws and Regulations.

C. Submit to MTS information required in this Section on proposed facilities where demolition materials, equipment, and debris will be recycled. Upon request, MTS shall be allowed to visit recycling facilities to verify adequacy and compliance status. During such visits, recycling facility operators shall cooperate and assist MTS.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for. Demolition shall consist of all the work involved in removing and disposing of existing materials as shown on the plans and as described in the Standard Specifications and these Special Provisions.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section, not otherwise provided for, shall be considered as included in contract prices paid for the various items of work involved, and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 02 41 13.13

PAVING REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

A. This section consists of furnishing all labor, materials, and equipment necessary and incidental to the demolition, removal, and disposal of concrete and asphalt paving, and certain existing improvements to be reconstructed and/or relocated. Removal of the existing facilities at the construction site shall conform to the provisions of the Technical Specifications and the General and Special Conditions.

B. The Contractor shall be responsible for obtaining all necessary permits and approvals for accomplishing all removal and disposal operations. Unless otherwise stipulated, all materials resulting from the removal of obstructions shall become the property of the Contractor at the place of origin and shall be disposed of by the Contractor in conformance with all laws, regulations and rules legally imposed on such activities. All existing facilities removed or demolished shall be immediately loaded into trucks and removed from the site in accordance with Federal, State, and local regulations, the Technical Specifications, and the General and Special Conditions. No stockpiling of said materials shall occur on site without the express approval of the Engineer.

C. The Contractor shall not dispose of the improvements or materials by sale, gift, or in any manner whatsoever to the general public at the site, provided however that this provision shall not be construed as limiting or prohibiting the sale or disposal of such improvements or materials at the site to duly licensed contractors, and provided that the Contractor verifies that all such materials have been removed from the site.

D. The Contractor is encouraged to separate asphalt pavement and provide to sites for use in recycled asphalt pavement preparation. The Contractor is encouraged to use recycling as a method of disposal whenever possible.

E. The demolition and construction work shall be performed in accordance with Section 01 00 00-1.1, “Order of Work,” of the Technical Specifications.

F. Handhole/Pullbox adjustments or replacements shall be performed in accordance with the requirements of this section.

1.2 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), The “Greenbook”, Current Edition, including the City of San Diego Supplement to the Greenbook, the “Whitebook”, Current Edition.

B. State of California, Department of Transportation, “California Manual on Uniform Traffic Control Devices” (including Revision 7), Current Edition.

C. State of California, Department of Transportation, Standard Plans, Current Edition.

D. State of California, Department of Transportation, Standard Specifications, Current Edition.

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXISTING FACILITIES

A. Plans of the existing LRT trackway and station platforms, including overhead catenary and signaling systems, may be requested from the Engineer. Plans of the existing facilities available to the Contractor are reproductions of the original contract plans with significant changes noted and working drawings and do not necessarily show normal construction tolerances and variances. Where dimensions of new construction required by this contract are dependent on the dimensions of existing buildings or facilities, the Contractor shall verify the controlling field dimensions and shall be responsible for adjusting dimensions of the work to fit existing conditions.

3.2 PROTECTION OF EXISTING STATION PLATFORMS

A. Existing station platforms adjacent to proposed work shall not be damaged during demolition. Damage to the existing platforms shall be reported to the Engineer and shall be repaired at the Contractor’s expense.

3.3 REMOVE PAVEMENT

A. General

1. Demolition shall consist of performing all work necessary to demolish, remove and dispose of existing concrete, asphalt concrete (AC) pavement, and other features, as shown on the plans and specified in the Section 300-1.3, “Removal and Disposal of Materials,” of the SSPWC, these Technical Specifications, and as directed by the Engineer; and for doing all the work that may be required to construct and maintain the facilities within the limits of work.
2. Prior to start of demolition operations the Contractor shall perform a job site visit with the Engineer to further verify the extent of the work to be performed under this Contract. Carefully identify limits of selective demolition and mark interface surfaces as required to enable workmen to identify items to be removed, items to be protected and left in place, and items to be relocated. Any discrepancies between the proposed improvements and the existing conditions shall be noted in writing to the Engineer.

3. The joint between any surfacing to be removed and surfacing which is to remain in place shall be cut to a neat line with a power-driven saw to full depth prior to removal. Residue from saw cutting operations shall be removed from the pavement surface by vacuuming or other approved method and shall not be allowed to flow across the pavement nor be left on the surface of the pavement. Residue from saw cutting operations shall be disposed of outside the project right-of-way in conformance with Federal, State, and local regulations, the Technical Specifications, and of the General and Special Conditions.
4. All materials, equipment and fixtures that are not indicated by the Engineer to remain on the premises shall become the property of the Contractor and shall be disposed of in accordance with Federal, State, and local regulations, the Technical Specifications, and of the General and Special Conditions.

B. Remove Concrete Pavement

1. Removal of existing concrete shall conform to Section 300-1.3, “Removal and Disposal of Materials,” of the SSPWC and these Technical Specifications.
2. Existing concrete pavement shown on the plans to be removed shall be removed to the full depth, or as directed by the Engineer. Resulting holes and depressions below subgrade shall be backfilled with Class 2 base material to the lines and grade shown on the plans. Where removing existing concrete paving within the trackway that is to remain care shall be taken to avoid damage to rail, ties, or fastening system.
3. Concrete pavement shall be removed completely and disposed of unless otherwise permitted by the Engineer.
4. If no joint exists at the Station called out on the Plans for concrete to be removed, the limits of removal shall be expanded to the nearest existing joint as directed by the Engineer.
5. The material removed shall be disposed of outside the railroad or highway right of way in accordance with Section 300-1.3, “Removal and Disposal of Materials,” of the SSPWC.

C. Remove Asphalt Concrete Pavement

1. Existing asphalt concrete pavement shown on the plans to be removed shall be removed to the full depth, or as directed by the Engineer. Where removing existing asphalt concrete paving within the trackway that is to remain care shall be taken to avoid damage to rail, ties, and fastening system.
2. The material removed shall be disposed of outside the railroad or highway right of way in accordance with Section 300-1.3, “Removal and Disposal of Materials,” of the SSPWC.

3.4 ADJUST OR RELOCATE EXISTING FACILITIES

A. Existing manhole frames and covers, valve boxes and vaults, and other facilities to remain in place shall be protected and preserved or adjusted to grade as required by the proposed improvements.

B. Adjustments to existing facilities shall be in conformance with the provisions in Section 301-1.6, "Adjustment of Manhole and Gate Valve Frames and Covers to Grade," of the City of San Diego Standard Specifications, and as shown on the Plans.

3.5 REPLACE HANDHOLE

A. Existing handhole frames and covers, valve boxes and vaults, shown to be replaced shall be furnished and installed to grade as required by the proposed improvements.

B. Where new pull boxes are shown on the plans to be installed, the Contractor shall install Caltrans Standard traffic rated (T) pull boxes as shown on ES-8 of the State of California, Department of Transportation Standard Plans and shall conform to the requirements of Section 86-2.07, “Traffic Pull Boxes,” of the Standard Specifications Plastic pull boxes shall not be allowed. Handhole shall conform the traffic rated requirements of Caltrans 6T or approved equal.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Remove Existing Asphalt/Concrete Pavement

1. Remove Existing Asphalt/Concrete Pavement shall be measured for payment by the square foot.

B. Sawcut Existing Asphalt/Concrete Pavement

2. Sawcut shall be measured by the linear foot of the line as shown on the plans.

C. Adjust Handhole/Pullbox to Grade

3. No separate measurement shall be made to Adjust Handhole/Pullbox to grade conforming to the requirements of the final conditions.

D. Replace Handhole (by Type)

4. Replace Handhole (by Type) shall be measured for payment by Each.

4.2 PAYMENT

A. Remove Existing Asphalt/Concrete Pavement

1. The contract price paid per square foot for Remove Asphalt or Concrete Pavement shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing and disposing of asphalt or concrete pavement, importing and placing backfill material protecting existing utilities, protecting existing rail and rail components, as shown on the plans, as specified in the SSPWC, these Technical Specifications, and as directed by the Engineer.

B. Sawcut Existing Asphalt/Concrete Pavement

1. The contract price paid per linear foot of sawcut existing asphalt or concrete pavement shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work necessary to sawcut and legally dispose of resulting materials in accordance with the Contract Documents and as directed by the Engineer.

END OF SECTION

SECTION 02 41 13.33

RAIL TRACK REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

A. This section consists of furnishing all labor, materials, and equipment necessary and incidental to the demolition, removal, and disposal of the existing trackwork materials, including 115RE rail, special trackwork, timber and/or concrete crossties, ballast, and any contaminated subgrade material.

B. The Contractor is directed to Section 01 00 00 – 3.3, “Obstruction,” of the Technical Specifications, where it is stated that all existing underground facilities within the limits of the Project site are to be located and protected in-place. The Contractor shall be responsible for replacement of any damaged facilities.

C. No stockpiling of said materials shall occur on MTS property or within the public right-of-way without the expressed approval of the Engineer.

D. All trackwork material removed and approved to be disposed of by the Engineer shall become the property of the Contractor, unless stated otherwise, and shall be disposed of in accordance with Section 14-10, “Solid Waste Disposal and Recycling,” of the Caltrans Standard Specifications and with all applicable laws and regulations.

E. Existing preservative-treated timber crossties that are removed during trackwork demolition shall be disposed of in a safe manner in accordance with the relevant Health and Safety Codes of Practice.

F. Prior to cutting any existing continuous welded rail (CWR) at any point, install rail anchors beyond the ends of rails to be cut to anchor CWR when the rails are cut. Maintain rail bonding at all times or use jumpers to maintain track circuits. Rail bonding and track circuits are to be located in accordance with 01 00 00-3.03 “Obstructions” of the Technical Specifications.

G. If applicable, track circuits shall be arranged such that signals show red when rails are removed. Switch points on crossovers shall be clamped and protected so that out-of-service track cannot be used.

1.2 REFERENCES

A. Caltrans Standard Specifications, Current Edition

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions

1. Track removal plan

a. Rail anchoring limits.

b. Rail Bonding limits.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REMOVE EXISTING TRACKWORK MATERIAL

A. Existing Rail, and Special Trackwork materials shall be removed and disposed of by the Contractor, unless stated otherwise.

B. Existing tracks, timber or concrete crossties, crosstie plates and spikes, joint bars, and other trackwork materials shown on the Plans to be removed shall be removed and disposed of by the Contractor.

3.2 REMOVE EXISTING BALLAST AND SUBGRADE MATERIAL

A. Existing ballast shall be removed, and subgrade material shall be removed or leveled as necessary, to maintain a minimum 6” ballast thickness below tie to upper surface of subgrade. The method of removal shall not disturb the compaction of the underlying materials. Ballast pockets and soft or saturated material shall be excavated and replaced with compacted competent material as directed by the Engineer. The removal of the ballast shall be done by hand or by using mechanical methods, where necessary, as specified by the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Remove Existing Track

1. Remove Existing Track shall be measured for payment by the track foot.

4.2 PAYMENT

A. Remove Existing Track

1. The contract price paid per track foot for Remove Existing Track shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the removal of existing track, ballast, and grading, as directed in these technical specifications and as directed by the Engineer. Measurement and payment for over-excavation of existing ballast beyond the detailed limits or as directed by the Engineer shall be in accordance with the provisions in Section 3.34, “Changes and Extra Work Payment,” of the Standard Construction Agreement and General Conditions.

END OF SECTION

SECTION 03 05 00
CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish labor, materials, tools, equipment, and services for Concrete, as indicated, in accordance with provisions of Contract Documents.

B. Coordinate with work of other trades.

1.2 QUALITY ASSURANCE

A. ASTM designated specifications for material quality and test methods appear throughout this specification.

B. Standards for concrete work: Comply with applicable provisions of latest editions of American Concrete Institute (ACI) publications except as otherwise indicated.

1. ACI 301 Specifications for Structural Concrete.
2. ACI 302.2R 06 Guide for Concrete Slabs that Receive Moisture Sensitive Flooring Materials.
3. ACI 347R Guide to formwork for Concrete.
4. ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete.

C. Concrete Mixture Proportioning:

1. Employ and pay for testing agency acceptable to Architect and Owner to perform materials evaluation, testing and design of concrete mixes.
2. Certificates, signed by material producer and Contractor, may be submitted in lieu of material testing when approved by Architect.

D. Concrete Testing:

1. Owner will employ a testing laboratory to perform routine testing and evaluation of concrete delivered to jobsite.
2. Contractor to assist with related communication and temporary storage of test cylinders at jobsite.

1.3 DEFINITIONS

A. Lightweight Concrete:

1. Concrete made with low density, lightweight aggregate ASTM C330 or mixture of lightweight and normal weight aggregate.
2. Usually having a dry unit weight less than 115 pcf.

B. Normal Weight Concrete:

1. Concrete for which density is not a controlled attribute.

C. Formwork:

1. Total system of support for freshly placed concrete including mold or sheathing which contacts concrete as well as supporting members, hardware, and necessary bracing.

D. Exposed Construction:

1. Concrete surface seen by the public from eye level from walking surface in a public location after completion of building.

E. Public Location:

1. Building areas routinely accessible to public and employees not responsible for maintenance.
    a. Storerooms, unfinished space, and large mechanical rooms are considered public locations.
    b. Equipment closets, elevator and mechanical penthouses are not considered public space.

1.4 SUBMITTALS

A. Shop Drawings:

1. Reinforcing drawings showing sufficient detail to permit placement in the field without reference to Contract Drawings.

B. Product Data:

1. Concrete Mix Designs for each proposed concrete mix.
    a. Proportions of materials.
    b. Slump.
    c. Air content.
    d. 7-day and 28-day compression test results of trial mixes or standard deviation analysis of an established mix.
2. Source and certification or proof of quality and compatibility of admixtures for each of the constituents of the proposed concrete mixes.
    a. Cement.
    b. Aggregate including gradation.
    c. Water.
    d. Admixtures:
        1) Air Entraining Admixture.
        2) High-Range Water Reducer.
        3) Other.
3. Joint filler.
4. Curing compound.
    a. Interior slabs: Include floor covering manufacturer’s written approval for use.

5. Waterstops.

C. Samples:

1. Joint filler.
2. Waterstops.
3. Vapor Retarder and sealing products.

D. Project Information:

1. Testing Agency qualifications.
2. Production sample test reports:
   a. Include same data as required for mix design reports.
3. Reports of Contractor optional tests.
4. Test reports for in-place testing if such testing is performed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement:

1. ASTM C150, Type I or Type III or ASTM C595.
2. Cement Color: Natural gray.

B. Aggregates:

1. General:
   a. Regard fine and coarse aggregates as separate ingredients.
   b. Each size of coarse aggregate, as well as combination of sizes when two or more are used, shall conform to grading requirements of applicable ASTM specifications.
2. Normal Weight Concrete:
   a. ASTM C33 – Standard Specification for Concrete Aggregates.
   b. Aggregate approved by the local State Highway Department for use in concrete for state bridges.

C. Potable Water:

1. Conforming to ASTM C 1602.

D. Admixtures:

1. Use only when specifically required or permitted by Contract Documents, otherwise must be approved by Structural Engineer.
2. Prepare trial mixes and tests with job materials, including admixture, to demonstrate effect on strength and durability of hardened concrete.
3. Calcium chloride or admixtures containing more than 0.05% chloride ions are not permitted.

4. Air-entraining Admixtures:
    a. ASTM C260.
5. Mid-Range Water Reducer:
    a. ASTM C494, Type A.
6. Water-reducing, Retarding, and Accelerating Admixtures:
    a. ASTM C494.
7. Calcium-nitrite Corrosion Inhibitor:
    a. DCI and DCI S by Grace Construction Products.
    b. Rheocrete CNI by Master Builders Solutions.
    c. Eucon CIA by the Euclid Chemical Company
    d. Incorporate at a rate of 3 GAL/YD3 inches the areas identified.
8. Supplementary Cementitious Materials, including Fly Ash:
    a. Fly Ash:
        1) ASTM C618, Class C or Class F.
        2) Obtain, prepare, and test samples in accordance with ASTM C311.

E. Curing Compounds:

1. Strippable Curing Compound:
    a. The compound shall conform to ASTM C309, VOC Compliant, 350 g/l.
        1) For use on slabs receiving subsequent applied finishes and where noted on drawings.
        2) Install in accordance with manufacturer’s recommendation and supervision.
    b. Manufacturers:
        1) Kurez DR VOX or Kurez W VOX
        2) Horncure WB Horncure WB 30 by the Euclid Chemical Company.
2. Chemical Curing Compound:
    a. Base:
        1) L&M Construction Chemicals.
    b. Optional:
        1) Dayton Superior.
        2) Euclid.
        3) Sonneborn.
        4) WR Meadows.

F. Granular Fill:

1. Clean, densely graded granular material with a balanced fine content..

2. Compactable, east-to-trim, granular fill that will remain stable and support construction traffic.
3. DOT approved road base.
4. Submit sieve analysis verifying following gradation.
    a. 100% passing 1 1/2 inches sieve.
    b. 15 to 55% passing the No. 4 sieve.
    c. Less than 12% pass the No. 200 sieve that is clean granular fill with less than 3% clay or friable particles.

G. Formwork Materials:

1. Exposed concrete surfaces: Acceptable panel type to provide continuous, straight, smooth finish. Use largest practical sizes to minimize form joints.
2. Unexposed concrete surfaces: Suitable material, dressed on edges and sides for tight fit.

H. Reinforcing Materials:

1. Reinforcing bars: ASTM A615, Grade 60
2. Welded wire reinforcing: ASTM A1064

2.2 WATERSTOPS

A. Self -Expanding Rubber Strip Waterstops:

1. Bentonite-free hydrophilic polymer modified chloroprene rubber, suitable for adhesive bonding to concrete.
2. Profile: Rectangular or trapezoidal strip unless otherwise indicated.
3. Minimum Dimensions: 3/8 inches by 3/4 inches thick
4. Provide in maximum practicable length to minimize end joints.
5. Butt splice joints at intersections and at ends of pieces in accordance with manufacturer’s instructions.
    a. Make joints to develop effective water tightness fully equal to that of continuous waterstop material, to permanently develop not less than 50% of mechanical strength of parent section, and permanently retain flexibility.
6. Base Products: Hydrotite by Greenstreak; Ultra Seal by Adeka (Mitsubishi); Swellseal by Deneef Construction Chemicals; Superstop by Progress Unlimited, Inc

2.3 PROPORTIONING CONCRETE MIXES

A. General:

1. Contractor and concrete supplier are responsible to provide concrete, in-place, which satisfies requirements listed in following table.
2. Contractor and concrete supplier are responsible to adjust concrete mixes, as needed, to:
    a. Correct for non-conformance.

b. Correct for a variation in the quality of a constituent.

c. Compensate for extreme conditions in the field.

B. Establish concrete material proportions by proportioning methods described in ACI-301 guidelines.

Concrete Properties Table – IP Units							
Use	**28-day Strength (KSI)**	**Dry Unit Weight (PCF)**	**Max Aggregate Size (inch)**	**Air percent**	**Max. W/C Ratio**	**Slump (inch)**	**Cement Type**
Slabs-on-grade	4.0		1 1/2		0.45	3	I, II or V
All other uses	4.0		3/4	6	0.45	4	I, II, or V

C. Instructions for use of Table:

1. Provide concrete mixes with properties indicated in locations identified in Use column.
2. 28-day Strength:
   a. Installed concrete must meet or exceed the minimum 28-day compressive strength indicated.
   b. Laboratory mix design strengths must exceed this strength by the appropriate amount per ACI 301.
   c. Determine strength in accordance with ASTM C192 and ASTM C39.
3. Dry Unit Weight:
   a. If no value is listed, assume normal weight.
   b. Dry unit weight of light weight mixes shall be maximum air dry unit weight permitted.
   c. Correlate fresh weight with air dry of same mix to use as basis of acceptance on job site. Test in accordance with ASTM C567.
   d. Dry unit weight for concrete for Radiation Shielding shall be minimum air dry unit weight permitted. Use heavy aggregate if necessary.
4. Maximum Aggregate Size:
   a. Maximum size of coarse aggregate determined in accordance with:
      1) ASTM C33 for normal weight concrete.
   b. Some mixes are designated 3/4 inches or 1 inch, permitting contractor / supplier option.
5. Air Content:
   a. Required percentage of air as measured by ASTM C231, ASTM C173, or ASTM C138 as appropriate.
   b. Tolerance of air content as delivered is plus or minus 1-1/2% for normal weight and plus or minus 2% for lightweight concrete.

6. Water Reducer:
    a. Mid-range water-reducer or high-range water-reducer shall be provided as necessary to achieve slump indicated.
    b. Contractor, as option, may elect to use water reducers in other mixes to improve workability or permit pumping.
7. Maximum W/C Ratio:
    a. Maximum ratio of pounds of water to pounds of cementitious material allowed in the concrete mix.
8. Maximum Slump:
    a. Mixes without Water Reducers:
        1) Slump tolerance: Up to 1 inch above maximum indicated is allowed, provided the average of 5 consecutive batches does not exceed the indicated amount by more than a 1/2 inches.
    b. Mixes with Water Reducers:
        1) Slump indicated is after dosing.
        2) Slump tolerance after dosing: +1-1/2 inches and -1 inches is permitted for each batch.
        3) Slump tolerance prior to dosing: +1/2 inches and -1 inches from design mix slump.
    c. Determine slump in accordance with ASTM C143.
    d. Where slump is not specified, provide concrete with slump in accordance with approved mix designs.
9. Cement:
    a. Provide cement type indicated.
    b. Fly Ash or Ground Blast Furnace Slag is acceptable for partial replacement of cement.
        1) For each unit of cement removed, replace with two (2) units of Class F fly ash or one (1) unit of Class C fly ash.
        2) For each unit of cement that is removed, replace with one (1) unit of Ground Blast Furnace Slag
        3) Maximum amount of cement replaced shall not exceed that specified in table 4.2.2.9 of ACI 301.
        4) W/C Ratio shall be based on total cementitious material content.

D. Admixtures:
    1. Use admixtures in accordance with manufacturer's instructions.
    2. Use only approved admixtures.

PART 3 - EXECUTION

3.1 STORAGE OF MATERIALS

A. Store cement in weather tight buildings, bins, or silos which will exclude moisture and

contaminants.

B. Arrange aggregate stockpiles and use in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of like aggregates.

1. Perform test to determine conformance to requirements for cleanliness and grading on samples secured from aggregates at point of batching.
2. Do not use frozen or partially frozen aggregates.

C. Allow sand to drain until it has reached relatively uniform moisture content before use.

D. Store admixtures in manner to avoid contamination, evaporation, or damage.

1. For those used in form of suspensions or non-stable solutions, provide agitating equipment to assure uniform distribution of ingredients.
2. Protect liquid admixtures from freezing and temperature changes which would adversely affect their characteristics.

3.2 MIXING AND DELIVERY

A. Batch, mix and transport concrete in accordance with ASTM C94/C94M.

B. Batch and mix admixtures in accordance with manufacturer's instructions. If two or more admixtures are used, verify compatibility with manufacturers.

C. When adding water at job site is planned, deliver concrete to job site with a slump of 2 to 4 inches.

1. Limit water additions at job site to comply with W/C Ratio requirements.

D. Following addition of high range water reducer, mix for a minimum of 70 revolutions or 5 minutes to assure a consistent mixture.

E. Reduction of required average strength:

1. During construction, and after sufficient data becomes available, laboratory strength of mixes may be reduced in accordance with Section 4.2.3.6a of ACI 301, subject to approval by the Architect.

F. Trim excess material after slab is placed.

3.3 FORMWORK AND REINFORCEMENT

A. Rough form finish may be provided for concrete surfaces covered with earth and not exposed to public view.

1. Ordinary form facing material may be used for rough form work.

B. Use smooth forms for interior and exterior concrete surfaces exposed to view.

1. Interior surfaces may be painted.
2. Use a plastic coated plywood or plastic liner to produce a hard, smooth uniform finish on concrete.
3. Arrange form joints and snap-tie holes to produce a repeating, orderly pattern with number of seams kept to practical minimum.

4. Seal seams to prevent leakage of mortar.
5. Support form facing with framing and backing capable of preventing visible form deflection.

C. Layout and measurement of concrete forms and embedment's, required for work, performed by a licensed surveyor, employed by contractor.

D. Clean, adjust and seal forms prior to concrete placement.

E. Remove excess form release materials to avoid visible residue on concrete surface.

F. Tighten forms to eliminate mortar leaks.

G. Accurately position, support and secure reinforcement and other cast-in items against displacement when placing concrete.

H. Locate and support with chairs, runners, spacers, and hangers, as required.

I. Set wire ties so ends are directed into concrete.

J. Install welded wire reinforcement in maximum practicable sizes.

K. Lap sides and ends at least one mesh square plus 2 inches.

L. Provide construction, isolation, and control joints as indicated or required.

M. Place construction joints so as to not impair strength and appearance of structure in locations approved by Architect.

N. Locate isolation and control joints in slabs-on-grade to stabilize differential settlement and random cracking.

O. Set and build in anchorage devices and other embedded items required for other work that is attached to or supported by concrete.

P. Place sleeves, inserts, anchors, and embedded items required for adjoining work or for its support, prior to concreting.

1. Give Contractors whose work is related to concrete or supported by it ample notice and opportunity to introduce and furnish embedded items before concrete placement.
2. Position expansion joint material, waterstops, and other embedded items accurately and support against displacement.
3. Fill voids in sleeves, inserts and anchor slots temporarily with readily removable material to prevent entry of concrete.

Q. Use setting diagrams, templates, and instructions for locating and setting.

3.4 PLACING CONCRETE

A. Place concrete in compliance with recommendations of ACI 304.

B. Place in a continuous operation within planned joints or sections.

C. Begin placement when work of other trades affecting concrete is completed.

D. Consolidate concrete using mechanical vibrators supplemented with hand rodding and tamping, so that concrete is worked around reinforcement and embedded items into parts of forms.

E. Protect concrete from physical damage or reduced strength due to weather extremes.

1. In hot weather comply with recommendations of ACI 305.
2. In cold weather comply with ACI 306.

3.5 CURING

A. Begin curing as soon as free water has disappeared from exposed surfaces.

B. Keep moist for 72 hours.

C. Continue curing by use of moisture retaining cover or strippable membrane forming curing compound for a period of 14 days.

D. Cure formed surfaces by moist curing until forms are removed.

E. Provide protection as required to prevent damage to concrete.

3.6 PATCHING AND FINISHING

A. Rough form finish:

1. Patch defects and tie holes.
2. Chip or rub off fins exceeding 1/4 inches in height.
3. Leave surfaces with texture imparted by forms.

B. Smooth form finish:

1. Remove forms and perform following work on walls and beam sides within day after placement.
2. Painted surfaces:
   a. Remove fins completely and grind smooth. Bush hammer and grind misaligned joints.
   b. With grout colored to match adjacent concrete, patch tie holes and areas of poor consolidation or mortar leakage and rub with carborundum bricks until uniform color and texture is produced.
3. Unpainted surfaces:
   a. Perform work as outlined for painted surfaces. In addition, provide a smooth rubbed finish over entire concrete surface no later than a day following form removal.
   b. Wet surfaces and rub with carborundum brick or other abrasive until uniform color and texture are produced.
   c. Use no cement grout other than cement paste drawn from concrete itself by rubbing process.

C. Slab trowel finish:

1. Apply steel trowel finish to monolithic slab surfaces exposed to view or covered with resilient flooring or other thin film coating.
2. Consolidate concrete surface by troweling, free of trowel marks, uniform in texture and appearance.
3. Finish concrete to maximum tolerance of 1:500.
4. Finishing tolerances:
    a. For shored construction, measurements for conformance with finishing tolerances shall be made as soon as slab can tolerate foot traffic, and before shores are removed.
5. Thoroughly consolidate surface by hand troweling.
6. Leave finished surface essentially free of trowel marks, uniform in texture and appearance and plane to an Ff25/Fl20 tolerance.
7. On surfaces intended to receive floor coverings, grind off defects which would indicate through floor covering or burnished-over finished surfaces which inhibit adhesion of flooring adhesives.
8. On surfaces intended to receive waterproofing membranes grind off defects that might tear or otherwise damage membrane.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Concrete shall be measured by the cubic yard. Quantity shall be confirmed by submittal of weigh tickets for all concrete material used on the project.

4.2 PAYMENT

A. The contract price paid per cubic yard for Concrete shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in Concrete, complete in place, including sawcutting, removing and disposing of pavement and base materials, as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

END OF SECTION

CONCRETE MIX DESIGN SUBMITTAL FORM

Project: _____

City: _____

General Contractor: _____

Concrete Contractor: _____

Concrete Strength Class: _____

Describe Use: _____

Based on Standard Deviation Analysis ☐

Trial Mix Test Data ☐

Design Characteristics

Density _____ PCF

Strength _____ PSI - 28 day

Air _____ Percent specified

Materials	**Type/Source**	**Specific Gravity**	**Weight** LB	**Absolute Volume** CU FT
Cement				
Fly Ash				
Slag				
Coarse Aggregate				
Fine Aggregate				
Water				
Air				
Other				
		Total		

* Water/Cementitious Ratio (lbs. water/lbs. cement) = [_____] .

Admixtures	Manufacturer	Dosage oz/cwt
Water Reducer		
Air Entraining Agent		
High Range Water Reducer		
Non-Corrosive Accelerator		
Other		

Slump before HRWR _____ inches

Slump after HRWR _____ inches

Standard Deviation analysis (from Experience Records):

Number of Test Cylinders Evaluated: _____

Standard Deviation: _____

Use larger Value:

f'cr = f 'c + 1.34s or f 'cr = f 'c + 2.33s – 500 for 5000 psi or less

f 'cr = 0.90 f ‘c + 2.33s for higher strengths

(Refer to ACI 301 for increased deviation factor when less than 30 tests are available)

Laboratory Test Data				
Compressive Strength	**Age - Days**	**Mix 1 - PSI**	**Mix 2 - PSI**	**Mix 3 - PSI**
	7			
	7			
	28			
	28			
	28 Average			

F‘cr = f’c + 1200 psi for 5000 psi or less

Or 1.10 f’c + 700 psi for strengths higher than 5000 psi at 28 days

Required Attachments:	Check
Combined Aggregate Gradation Report	
Standard Deviation Analysis of compressive Strength Data or Trial Mixture Test Data	
Admixture Compatibility Certification Letter	

Submitted By:

Name: _____

Address: _____

_____

Phone No.: _____

Main Plant Location: _____

Miles from Project: _____

Secondary Plant Location: _____

Miles from Project: _____

Date: _____

END OF SUBMITTAL FORM

SECTION 03 15 19
ANCHORAGE TO CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for anchorages in concrete, including cast-in-place anchor bolts, anchor rods, reinforcing anchorage adhesive, and post-installed concrete anchors required for the Project but not specified elsewhere in the Contract Documents.
2. Delegated design requirements for concrete anchors not expressly shown or indicated on the Drawings or elsewhere in the Contract Documents, including, but not limited to, anchorages in concrete for the following structural and nonstructural components:
    a. Structural members and accessories.
    b. Metal, wood, and plastic fabrications.
    c. Architectural Work, including building components, finishes, specials, facility equipment and conveying equipment, furnishings, and special construction Work.
    d. Mechanical and electrical Work, including process-mechanical Work, site and infrastructure Work, electrical Work, communications Work, electronic safety and security systems Work, and others.
    e. Fire suppression, plumbing, and HVAC Work.
    f. Other components requiring anchorages to concrete.

B. Related Requirements: Include but are not necessarily limited to:

1. Section 01 35 73 - Delegated Design Procedures.
2. Section 01 81 10 - Wind and Seismic Criteria
3. Section 03 05 05 - Concrete Testing and Inspection.

1.2 REFERENCES

A. Definitions and Terminology:

1. This provision presents definitions and terminology, which have the meanings indicated in this provision, applied to the singular or plural thereof, and without regard to use of initial capital letters.
    a. Adhesive Anchors:
        1) Post-installed anchors developing their strength primarily from chemical bond between the concrete and the anchor.
        2) Includes anchors using acrylics, epoxy and other similar adhesives.
    b. Anchor Bolt: Any cast-in-place anchorage that is made of a headed (i.e. bolt) material.

c. Anchor Rod: Any cast-in-place or post-installed anchorage made from unheaded, threaded, rod or deformed bar material.

d. Concrete Anchor: Generic term for either an anchor bolt or an anchor rod.

e. Galvanizing: Hot-dip galvanizing in accordance with ASTM A123, ASTM A153 or ASTM F2329 with minimum coating of 2.0 ounces of zinc per square foot of metal (average of specimens) unless noted otherwise or dictated by reference standard.

f. Hardware: As defined in [ASTM A153] [ASTM F2329].

g. MPII: Manufacturer's printed installation instructions.

h. Mechanical Anchors:

1) Post-installed anchors developing their strength from attachment other than thru adhesives or chemical bond to concrete.

2) Includes expansion anchors, expansion sleeve, screw anchors, undercut anchors, specialty inserts and other similar types of anchorages.

3) Drop-in anchors and other similar non-ICC ES approved anchors are unacceptable.

i. Post-Installed Anchor: Adhesive or mechanical anchor installed into previously placed and adequately cured concrete.

B. Reference Standards:

1. American Concrete Institute (ACI):

a. 318, Building Code Requirements for Structural Concrete and Commentary.

2. American Concrete Institute/Concrete Reinforcing Steel Institute (ACI-CRSI):

a. Adhesive Anchor Installation Certification Program: Adhesive Anchor Installer.

3. American Institute of Steel Construction (AISC):

a. 303, Code of Standard Practice for Steel Buildings and Bridges.

b. 355.2, Seismic Testing of Post-Installed Concrete and Masonry Anchors in Cracked Concrete.

c. 355.4, Qualification of Post-Installed Adhesive Anchors in Concrete.

4. ASTM International (ASTM):

a. A36, Standard Specification for Carbon Structural Steel.

b. A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.

c. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

d. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

e. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

f. A496, Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.

g. A563, Standard Specification for Carbon and Alloy Steel Nuts.

h. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

i. F436, Standard Specification for Hardened Steel Washers.

j. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

k. F594, Standard Specification for Stainless Steel Nuts.

l. F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

m. F2329, Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

5. International Code Council Evaluation Service (ICC-ES):

a. AC193, Acceptance Criteria for Mechanical Anchors in Concrete Elements.

b. AC308, Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. For post-installed anchors and other anchorages installed in existing concrete, comply with Section 01 73 29 - Cutting and Patching.

2. Comply with coordination requirements in Section 01 35 73 - Delegated Design Procedures.

B. Pre-Design Conference:

1. Pre-design conference for anchorages to concrete (where such anchorages are delegated design Work) is not required.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Code-required Special Instructions:

a. Special Inspection is required in accordance with the building code for all concrete anchorages.

b. Notify the Special Inspector that an inspection is required prior to concrete placement (or during post-installed anchorage installation).

c. See the “Field Quality Control” Article in “Part 3 – Execution” of this Section for additional requirements.

B. Qualifications:

1. Delegated Design Professional:

a. Delegated design professional’s qualifications and responsibilities shall be in accordance with Section 01 35 73 - Delegated Design Procedures.

2. Installer:

   a. Installer for post-installed anchors shall be trained by the manufacturer or certified by a training program approved by the Engineer.

   b. Installer for adhesive anchors installed in horizontal, upward incline, or overhead applications shall be certified by ACI-CRSI Adhesive Anchor Installation Certification Program.

1.5 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:

   a. Submit schedule (table or listing) of types, sizes (diameter, length, embedment length), material, finish, and proposed manufacturers of anchorages to concrete to be provided. Apportion by Project-specific application (for example, “Anchorages for cooling water pumps in basement”) and indicate where anchorages are fully-designed by Engineer and those for which final design was prepared by delegated design professional.

   b. Engineer’s approval of such Shop Drawing will be only for anchorages fully designed by Engineer. For anchorages for which final design is by delegated design professional, include on such Shop Drawing delegated design professional’s approval stamp.

2. Product Data: Submit as Action Submittals product data for anchorages to concrete fully designed by Engineer. For anchorages to concrete for which final design is by delegated design professional, submit as Informational Submittals bearing approval stamp of delegated design professional.

   a. Manufacturer’s express, written acknowledgement that proposed items comply with referenced standards indicated in this Section and, as applicable, by delegated design professional.

   b. Manufacturer published data and information for each anchor.

      1) Clearly indicate items that are proposed for the Work. Neatly strike out or obscure materials and products not proposed.

   c. Manufacturer's published installation instructions and instructions for code-required special inspections and tests.

   d. Post-Installed Anchors: In addition, submit for each post-installed anchor system current ICC-ES report, indicating the following:

      1) Manufacturer’s certification that anchors comply with requirements indicated in the Contract Documents.

      2) Performance data indicating that anchor is approved by its manufacturer for use in cracked concrete.

      3) Seismic design categories for which anchor system is approved by ICC-ES report.

   e. Anchorage layout drawings and details:

      1) Drawings showing location, configuration, spacing and edge distance.

3. Delegated Design Professional's Instruments of Service Submittals: Submit, in accordance with this Section and Section 01 35 73 – Delegated Design Procedures, for each anchorage to concrete for which final design is by delegated design professional:
    a. Certification of compliance, in accordance with Section 01 35 73 – Delegated Design Procedures. Indicate design tension and shear loads used for anchor design.
    b. Delegated design professional's drawings.
    c. Delegated design professional's specifications, if any, when prepared by delegated design professional.
    d. Post-Installed Anchors (for which final design is by delegated design professional): Submittal shall also include the following for post-installed anchors for which final design was by delegated design professional:
        1) Show diameter, embedment depth and edge distance of each anchor.
        2) Indicate compliance with ACI 318 Chapter 17, [ACI 350-06 Appendix D], [ACI 350-20 Appendix E], [ACI 318, Appendix D].
        3) Type of post-installed anchor system used.
            a) Provide manufacturer's ICC-ES report for the following:
                (1) Mechanical anchorage per ICC-ES AC193.
                (2) Adhesive anchorage per ICC-ES AC308.
4. Samples:
    a. Submit representative Samples of anchorages to concrete, when requested by Engineer. Engineer's approval of Samples will be for type and finish only.

B. Informational Submittals: Submit the following:

1. Shop Drawings and Product Data Approved by Delegated Design Professional:
    a. Submit with delegated design professional's approval stamp those Shop Drawings and product data Submittals indicated in this Article but for which final design was performed by delegated design professional.
2. Calculations by Delegated Design Professional:
    a. Submit sealed and signed calculations for sizing and determining embedment length of anchorages to concrete not fully designed by Engineer.
    b. Post-Installed Anchors Designed by Delegated Design Professional: In addition, also submit design calculations:
        1) Indicate design load to each anchor.
        2) When design load is not indicated on the Drawings, include calculations to develop anchor forces based on performance and design criteria indicated in this Section.
3. Supplier's Instructions:
    a. Submit manufacturer's published instructions for installation.
4. Field Quality Control Submittals:

a. Submit written results of required field quality control activities indicated in this Section.

5. Reports of Supplier's Visits to Site:

a. Submit each written report of visit to the Site by Supplier's factory trained representative and delegated design professional. For each, indicate date and time of visit, purpose of visit, observations made, decisions made, problems encountered, and other pertinent information.

6. Qualifications Statements:

a. Delegated design professional.

b. Each installer.

PART 2 - PRODUCTS

2.1 MATERIALS – ALL ANCHORAGES

A. Materials – General:

1. This Article applies to all anchorages to concrete, regardless of whether fully designed by Engineer or delegated design professional. Requirements for delegated designs are in the following Article.

2. Additional requirements for anchorages fully designed by Engineer are indicated in the Article following requirements for delegated design anchorages.

3. For structural applications, do not use powder actuated fasteners and other types of bolts or fasteners not specified in this Section unless approved by Engineer or otherwise required by the Contract Documents.

B. Description:

1. Provide anchorages to concrete, of the types shown or indicated, to secure to concrete materials, equipment, and appurtenances installed as part of the Work.

2. Locations where anchorages are required are generally shown or indicated on the Drawings. Where not shown or indicated on the Drawings provide anchorages or the types required for materials, equipment, and systems where such materials, equipment, and systems are shown on the Drawings.

3. Anchorages required include those for materials, equipment, and systems shown on the structural Drawings and Drawing other than the structural Drawings.

4. Design loads for concrete anchorages are shown or indicated on the Drawings for anchorages where design responsibility is delegated to Contractor's delegated design professional. For such anchorages, embedment depths are not shown or indicated.

C. Cast-in-place Concrete Anchors:

1. Buildings, non-building structures, and equipment, unless otherwise specified:

a. ASTM F1554, Grade 36 or Grade 55 with weldability supplement S1 for galvanized [or non-galvanized] threaded rods.

b. ASTM A307, Grade A for galvanized headed bolts.

2. All other cast-in-place concrete anchors:

a. Stainless steel with matching nut and washer.

b. Submerged application: ASTM F593, Type 316, minimum yield strength of 45,000 psi.

c. Non-submerged application: ASTM F593, Type 304 or Type 316, minimum yield strength of 45,000 psi.

D. Post-Installed Mechanical and Adhesive Concrete Anchors:

1. Submerged application: ASTM F593, Type 316, minimum yield strength of 45,000 psi with matching nut and washer.

2. Non-submerged application: ASTM F593, Type 304 or Type 316, minimum yield strength of 45,000 psi with matching nut and washer.

3. Post-installed anchors and related materials shall be listed by ICC-ES or Engineer-approved equivalent.

E. Reinforcing: Comply with Section 03 21 00 - Reinforcement.

F. Headed Studs: ASTM A108 with a minimum yield strength of 50,000 psi and a minimum tensile strength of 60,000 psi.

G. Deformed Bar Anchors: ASTM A496 with minimum yield strength of 70,000 psi and a minimum tensile strength of 80,000 psi.

H. Washers:

1. ASTM F436 unless indicated otherwise, finish to match bolt.

2. When stainless steel anchorage is provided for cast-in-place anchorages, provide washers of the same material and alloy as in the associated anchorage.

3. Plate washers: Minimum [1/2] [3/4] inch thick fabricated ASTM A36 square plates as required.

4. Comply with manufacturer’s written instructions for all post-installed anchorages.

I. Nuts:

1. ASTM A563 for cast-in-place anchorages.

2. When stainless steel anchorages are provided for cast-in-place anchorages, nuts shall comply with ASTM F594 and shall match material and alloy of the associated anchorage.

3. Follow manufacturer’s requirements if using post-installed anchorage.

J. Galvanizing Repair Paint:

1. High zinc dust content paint for regalvanizing welds and abrasions.

2. ASTM A780.

3. Zinc content: Minimum 92 percent in dry film.

4. Products and Manufacturers: "ZRC Cold Galvanizing", by ZRC; or "High Performance Zinc Spray", by Clearco; or equal.

K. Dissimilar Materials Protection: Comply with Section 09 96 00 - High-Performance Industrial Coatings.

2.2 DELEGATED DESIGN ANCHORAGES TO CONCRETE

A. Manufacturers:

1. Post-installed anchor systems for indicated manufacturers are acceptable only when a current ICC-ES evaluation report is furnished as a Submittal and the subject anchorage system is approved by delegated design professional.
    a. Hilti.
    b. Dewalt.
    c. Simpson Strong-Tie.
    d. Or equal.

B. Description: Perform delegated design for anchorages when one or more of the following applies:

1. Design load for concrete anchorage is shown or indicated on the Drawings and anchorage embedment depth is not shown or indicated.
2. When specifically required by the Contract Documents.
3. When an anchorage is necessary but is not shown or indicated on the Drawings.
4. Anchorages shown on the Drawings other than the structural Drawings.

C. Performance and Design Criteria for Delegated Design Anchorages:

1. Determine design loads, including wind and seismic loads, in accordance with applicable building code and other Laws and Regulations.
2. For anchorage of equipment and non-structural components, use actual dead load and operating loads obtained by Contractor or delegated design professional from manufacturer. Design loads shall include operating conditions when equipment or element of the Work is in operation, dynamic loads, and other loads as appropriate or required by the building code or other Laws or Regulations.
3. Design assuming cracked concrete.

2.3 ANCHORAGES FULLY DESIGNED BY ENGINEER

A. When size, length, and details of anchorage are shown or indicated on the structural Drawings, such anchorages are considered as fully designed by Engineer and delegated design of such anchorage is not required.

B. Manufacturers:

1. For post-installed anchor systems regardless of whether proposed manufacturer is indicated below, furnish as Submittal current evaluation agency report and anchor system is certified by ICC-ES for cracked concrete conditions.
2. Mechanical Anchors:
    a. Hilti:
        1) Kwik Bolt TZ (ICC-ES ESR-1917).
    b. Dewalt:
        1) Power-Stud+ SD1 (ICC-ES ESR-2818).

c. Simpson Strong-Tie:
   1) Strong-Bolt 2 (ICC-ES ESR-3037).
d. Or equal.

3. Adhesive Anchors for Concrete:
   a. Hilti:
      1) HIT RE 500 V3 (ICC ESR-3814).
   b. Dewalt:
      1) PURE110+ (ICC-ES ESR-3298).
   c. Simpson Strong-Tie:
      1) SET-3G (ICC ES 4057)
   d. Or equal.
4. Screw Anchors for Concrete:
   a. Hilti:
      1) Kwik HUS-EZ Screw (ICC-ES ESR-3027).
   b. Dewalt:
      1) Screw-Bolt+ (ICC-ES ESR-3889).
   c. Simpson Strong-Tie:
      1) Titen HD (ICC-ES ESR-2713).
   d. Or equal.
5. Requests, if any, for Engineer's approval of "or-equals" or substitutes shall indicate proposed anchor has at least the same tension and shear strength as the associated anchorage products indicated by name in this Article.

PART 3 - EXECUTION

3.1 PREPARATION

A. For cast-in-place concrete anchorages, allow adequate time for proper installation, inspection, and observation prior to placing concrete.

B. Prior to installation, inspect and verify areas and conditions under which concrete anchorages will be installed.

1. Notify Engineer of conditions detrimental to proper and timely completion of the Work.
2. Do not proceed with the Work until unsatisfactory conditions are properly remedied.

3.2 INSTALLATION

A. Installation Requirements - General:

1. Install items in accordance with the Contract Documents, manufacturer's written instructions, and Laws and Regulations. Where such requirements conflict, obtain interpretation or clarification from [Architect] [Engineer] prior to commencing the associated Work.
2. Perform the following unless shown or indicated otherwise:
    a. Provide stainless steel anchorages for connecting aluminum and steel members to concrete and masonry. Provide dissimilar materials protection in accordance with Section 09 96 00 – High-Performance Industrial Coatings.
    b. Provide washers for all anchorages.
    c. Where exposed, extend threaded anchorage [a maximum of 0.75 inch and] a minimum of 0.5 inch above top of fully-engaged nut. If anchorage is cut off to required maximum height, dress the threads to allow nuts to be removed without damage to nuts.
3. Tightening of nuts: Do the following after nuts are snug-tightened down:
    a. Upset anchorage threads to prevent nuts from backing off. Provide double nut or lock nut in lieu of upset threads for items that may require future removal.
    b. For cast-in-place anchorages (excluding post-installed anchorages), tighten nuts an additional 1/8 turn beyond snug tight to prevent nuts from backing off.
    c. When two nuts are used per concrete anchor above the base plate, tighten top nut an additional 1/8 turn to "lock" the two nuts together.
    d. For post-installed anchorages, comply with MPII.
4. Secure architectural components to avoid aesthetic distortion and to avoid overstressing fasteners from expansion, contraction, or installation.

B. Cast-in-Place Anchorages:

1. Provide where anchor rods or anchor bolts are indicated on the Drawings, unless another anchor type is approved by Engineer.
2. Provide concrete anchorages as shown on the Drawings or as required to secure the Work to concrete.
3. Tie cast-in-place anchorage in position to embedded reinforcing steel using wire.
4. Tack welding of anchorage is prohibited.
5. Chase threads as required and coat projected portion of carbon steel anchors and nut threads with a heavy coat of clean grease after concrete has cured.
6. Anchorage location Tolerance: in accordance with AISC 303.
7. Provide steel or durable wood templates for all column and equipment anchorages. Place templates above top of concrete; do not impede proper concrete placement and consolidation.

C. Mechanical Anchorages:

1. Use only where specifically indicated on the Drawings or when approved for use by the Engineer.
2. Do not use where subjected to vibration.
3. May be used in overhead applications.

4. Contact Engineer for clarification when anchors will not be installed in compliance with manufacturer's printed installation requirements.

D. Post-installed Anchorages:

1. For post-installed anchors, comply with MPII regarding hole diameter and depth required to fully develop the tensile strength of anchor or reinforcing bar.
2. Use hammer drills to create holes.
3. Properly clean out holes in accordance with the associated ICC-ES report using non-metallic, fiber bristle brush and compressed air, or as otherwise necessary to remove all loose material from each hole prior to installing anchor in the presence of Special Inspector.
4. Adhesive Anchorages:
   a. Provide only where specifically indicated on the Drawings or when approved for use by Engineer.
   b. May be provided where subjected to vibration or at buried or submerged locations.
   c. Do not install for overhead applications or sustained tension loading conditions such as utility hangers.
   d. Install adhesive anchors in concrete aged not less than 21 days.

E. Finishes:

1. Coat aluminum surfaces in contact with dissimilar materials in accordance with Section 09 96 00 – High-Performance Industrial Coatings.
2. Repair of damaged galvanized surfaces:
   a. Prepare damaged surfaces by abrasive blasting or power sanding.
   b. Repair damaged galvanized surfaces in accordance with ASTM A780.
   c. Apply galvanizing repair paint to not less than 6 mils dry film thickness in accordance with galvanizing repair material manufacturer's instructions and ASTM A780.

F. Ensure that embedded items are protected from damage and are not filled in with concrete or related materials.

3.3 FIELD QUALITY CONTROL

A. Field Tests and Inspections:

1. Special Inspections: Comply with Section 01 45 33 - Code-Required Special Inspections and Procedures.
2. Comply with Section 03 05 05 - Concrete Testing and Inspection.
3. Tests and inspections of anchorages shall comply with ACI 355.2 and/or ACI 355.4 as applicable.
4. Owner reserves the right to inspect and test completed anchorages at a minimum of [10] [25] to [25] [50] [100] percent of provided anchorages.

B. Supplier’s services:

1. Post-installed anchor manufacturer's representative shall demonstrate and observe the proper installation procedures for the post-installed anchors.

C. Defective Work:

1. Anchorages that do not successfully pass required field tests and inspections or that are otherwise deemed defective by Engineer shall be remedied, in accordance with the Contract Documents, at no cost to Owner.

3.4 CLEANING

A. After concrete has been placed, remove protection and clean all anchorage of all concrete, dirt, and other foreign matter.

B. Provide surface acceptable to receive field applied paint coatings when specified in Specification Section [09 91 00] [09 96 00].

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for. Anchorage to Concrete shall be included in the measurement for Structural Steel.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in anchoring members to Concrete, shall be considered as included in contract prices paid for the various items of work involved, and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel, including the fabrication and erection of support and bracing members, including connections.
2. Connection detail design as required.

B. Related Specification Sections include but are not necessarily limited to:

3. Section 03 15 19 - Anchorage to Concrete.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Institute of Steel Construction (AISC):
   a. 303, Code of Standard Practice for Steel Buildings and Bridges.
   b. 360, Specifications for Structural Steel Buildings.
   c. Quality Certification Program for Fabricators.
2. American Society of Mechanical Engineers (ASME):
   a. B18.21.1, Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series).
3. ASTM International (ASTM):
   a. A2, Standard Specification for Carbon Steel Girder Rails of Plain, Grooved, and Guard Types.
   b. A6/A6M, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
   c. A36/A36M, Standard Specification for Carbon Structural Steel.
   d. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   e. A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
   f. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   g. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   h. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

i. A500/A500M, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

j. A563, Standard Specification for Carbon and Alloy Steel Nuts.

k. A992/A992M, Standard Specification for Structural Steel Shapes.

l. A1064/A1064M, Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

m. F436, Standard Specification for Hardened Steel Washers.

n. F959, Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.

o. F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

p. F3125, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

4. American Welding Society (AWS):

a. A5.1/A5.1M, Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.

b. A5.5/A5.5M, Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding.

c. A5.17/A5.17M, Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding.

d. A5.18/A5.18M, Specification for Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding.

e. A5.20/A5.20M, Specification for Carbon Steel Electrodes for Flux Cored Arc Welding.

f. A5.23/A5.23M, Specification for Low-Alloy Steel Electrodes and Fluxes for Submerged Arc Welding.

g. A5.28/A5.28M, Specification for Low-Alloy Steel Electrodes and Rods for Gas Shielded Arc Welding.

h. A5.29/A5.29M, Specification for Low-Alloy Steel Electrodes for Flux Cored Arc Welding.

i. D1.1/D1.1M, Structural Welding Code - Steel.

1) Steel stud connectors and their installation to comply with requirements of AWS D1.1/D1.1M.

5. National Institute of Steel Detailing (NISD).

6. Research Council on Structural Connections (RCSC):

a. Specification for Structural Joints Using High-Strength Bolts.

B. Qualifications:

1. Steel fabricator:

a. Minimum of 10 years of experience in fabrication of structural steel or participate in the AISC Certification program and is designated an AISC Certified Plant, Category at time of bid.

b. Fabricator plant quality control and inspection program: Meet requirements of the building code and/or be an Approved Fabricator.

c. Plants that are not an Approved Fabricator may be acceptable, provided:

1) Plant meets all remaining qualifications.

2) Contractor reimburses the Owner the cost of required Special Inspection services.

2. Steel erector:

a. Minimum of 10years of experience in erection of structural steel similar in the scope of this project [or certified as CSE under the AISC Quality Certification Program].

b. With an active and enforced quality assurance program in place, as described in the applicable Codes.

3. Qualify welding procedures and welding operators in accordance with AWS.

1.3 DEFINITIONS

A. Owner: May mean the Owner's Designated Representative for Construction as defined by the AISC 303.

B. Galvanizing: Hot-dipped galvanizing per ASTM A153/A153M and/or ASTM A123/A123M with minimum coating of 2.0 oz of zinc per square foot of metal (average of specimens) unless noted otherwise or dictated by aforementioned standards.

C. Approved Fabricator: Approved by the Building Official to perform the building code required Special Inspections.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

b. Manufacturer's installation instructions.

c. Detailed supplemental specification relating to load indicator washers or high-strength bolts.

1) Alternate design for Engineer approval (submitted at Contractor's option if desired by Contractor for use).

d. Source and certification of quality for high-strength bolts, nuts and washers.

2. Fabrication and/or layout drawings:

a. Prepare Shop Drawings under NISD Quality Procedures Program certification.

b. Complete Shop Drawings for all of the work showing clearly all pieces, sizes, dimensions, details, connections materials and shop coatings.

1) All Shop Drawings must be checked and signed "approved" before submittal.

2) Show all cuts, copes, and holes.

3) Indicate all shop and field bolts.

4) Indicate all shop and field welds using AWS symbols.

c. Prepare complete erection drawings showing the location and marks of all pieces.

1) Copies of up-to-date erection drawings shall accompany the Shop Drawings.

2) Use match marks on the erection drawings to indicate the sheet number on which each particular member is detailed.

d. Correct any incorrect or unacceptable material or fabrication due to incorrect detailing, shop work, or erection, without additional charge.

3. Certifications:

a. Certificates of compliance with standards specified for all major components and fasteners incorporated into work.

b. Copies of current welding certificates for each welder assigned to perform welding indicating compliance with testing specified by AWS.

c. Welder qualification data and prequalified procedures.

d. Special Inspections reports.

e. Source Quality Control Documentation, including certificate of compliance stating that the work performed in the fabrication shop was done in accordance with the approved construction documents.

1) Certification is required only if the fabricator is fabricator approved by the Building Official.

4. Test reports:

a. Certified copies of mill tests.

b. Manufacturer's load test and temperature sensitivity data for post-installed anchor bolts.

c. Test reports for all structural steel work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Handle and store steel members above ground on skids or other supports.

1. Keep free of dirt and other foreign material and protect against corrosion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. High-strength bolts:
    a. Portland Bolt and Manufacturing Company.
    b. Lewis Bolt & Nut Company.
    c. Nucor Fasteners.
    d. St. Louis Screw and Bolt Company.
2. Load indicator washers for high-strength bolts:
    a. Portland Bolt and Manufacturing Company.
    b. Mid-South Bolt and Screw Co., Inc.
    c. J and M Turner, Inc.
3. Alternate design high-strength bolts:
    a. T. C. Bolt Corporation.
    b. Construction Fastener Systems Division of Bristol Machine Company.
    c. LeJuene Bolt Co.
4. Headed studs and deformed bar anchors:
    a. Nelson Stud Welding Division, TRW, Inc.
    b. Stud Welding Products, Inc.
5. Mechanical anchor bolts:
    a. See Section 03 15 19.
6. Adhesive anchors bolts:
    a. See Section 03 15 19.
7. Anchor bolt sleeves:
    a. Sinco/Wilson.

2.2 MATERIALS

A. Steel, Structural Shapes and Plate (unless noted otherwise on Drawings):

1. All W-shapes and WT-shapes: ASTM A992/A992M.
2. All other plates, bars and rolled shapes: ASTM A36/A36M.

B. Pipe: ASTM A53/A53M, Grade B (Type E or S) (Fy=35).

C. Hollow Structural Sections (HSS):

1. Round: ASTM A500/A500M, Grade C (Fy=50).
2. Square or rectangular: ASTM A500/A500M, Grade C (Fy=50).

D. High-Strength Bolts, Nuts and Washers:

1. ASTM F3125 or Grade A325 with ASTM A563 nuts galvanized
2. High-strength bolts:
    a. Provide two ASTM F436 washers for all bolts [galvanized].
    b. Provide beveled washers at connections of sloped/tapered sections.
3. High-strength bolts with compressible washer type direct tension indicators (DTI), ASTM F959.
    a. Provide at Contractor's option and subject to approval of Engineer.
4. Alternate high-strength design: Provide at Contractor's option and subject to approval of Engineer.

E. Bolts, Non-high Strength: ASTM A307, Grade A.

F. Threaded Rod: ASTM F1554, Grade 36.

G. Washers, Plain (for Non-high Strength Bolts): ASME B18.22.1, Type B.

H. Welding Electrodes:

1. Shielded metal arc: AWS A5.1/A5.1M or AWS A5.5/A5.5M, E70XX or E801X-X.
2. Submerged arc: AWS A5.17/A5.17M or AWS A5.23/A5.23M, F7XX-EXXX or F8XX-EXXX-XX.
3. Gas metal arc: AWS A5.18/A5.18M, E70S-X or E70U-1 or AWS A5.28/A5.28M, ER80S-XX, E80C-XXX.
4. Flux cored arc: AWS A5.20/A5.20M, E7XT-X (except 2, 3, 10, GS), AWS A5.29/A5.29M, E7XT-X or E8XTX-X, E8XTX-XM.

I. Anchor Rods and Bolts:

1. See Section 03 15 19.

J. Headed Studs and Deformed Bar Anchors:

1. Headed studs:
    a. ASTM A108, complying with AWS D1.1/D1.1M, Section 7, Type B; minimum yield strength 50,000 psi, minimum tensile strength 60,000 psi.
    b. Uniform diameter.
    c. Heads: Concentric and normal to shaft.
    d. Weld end: Chamfered and solid flux.
2. Deformed bar anchor:
    a. ASTM A1064/A1064M, complying with AWS D1.1/D1.1M, Section 7, Type C.
    b. Minimum yield strength: 70,000 psi.
    c. Minimum tensile strength: 80,000 psi.
    d. Straight, unless indicated otherwise.

e. Solid flux.

3. After welding, remove ceramic ferrules and maintain free from any substance which would interfere with function, or prevent bonding to concrete.

K. Nonshrink Grout:

1. Base: L&M Construction Chemicals, Duragrout.
2. Minimum Strength: 4000 psi at 7 days and 8000 psi at 28 days.

L. Crane Rails:

1. Controlled-cooled, open-hearth carbon steel ASCE (American Society of Civil Engineers) rails per ASTM A2, Class A, #1 rails, unless noted otherwise, of size and weight indicated.
   a. Furnish rails with milled tight end joints suitable for crane service, with standard drilling, removable end stops and all related accessories required, including:
      1) Joint bars: Match rail section and properties, drilled to match rail drilling.
      2) Joint bar bolts and nuts: High strength.
      3) Hardened washer: ASTM F436 for bar bolts.
      4) Except as indicated otherwise, two-bolt type fixed or floating rail clamps to suit the conditions, of forged or pressed steel, complete with Grade A325 bolts, reversible fillers, and self-locking nut or nut and lock washer.

M. Mechanical and Adhesive Anchor Bolts for Fastening to Concrete:

1. See Specification Section 03 15 19.

2.3 FABRICATION

A. Comply with requirements of applicable building code and AISC 360 with modifications and additional requirements specified herein.

1. Identify high-strength steel material in fabricated members in accordance with ASTM A6/A6M.

B. Minimize the amount of field welding.

1. Shop assemble components into largest size possible commensurate with transportation and handling limitations.
2. Shop connections: Bolted with high-strength bolts or welded.

C. Connection Details:

1. Provide as a minimum, two, 3/4 inches diameter, high-strength bolts for all bolted connections unless otherwise specified.

D. Provide bearing type connections for all bolted connections, unless otherwise noted.

E. Field Connections:

1. Provide bolts for all field connections except where shown otherwise on the Drawings.

2. Use high-strength bolts unless shown or specified otherwise.
3. Use of high-strength bolts: Conform to RCSC Specification for Structural Joints Using High-Strength Bolts.
4. Unfinished bolts may be used for attaching stair treads to stringers.
5. If structural steel details (field welds versus shop welds, etc.) shown on design Drawings are not compatible with selected erection procedures, submit proposed modifications for review.
6. Connections to structural steel provided by others: Provide all connectors and coordinate location of bolt holes to match connection holes in steel provided by others.

F. Accurately mill column end bearing surfaces to true plane.

G. Fabricate and erect beams with non-specified camber in accordance with AISC 360, Chapter L1.

H. Cut, drill, or punch holes at right angles to surface of metal.

1. Do not make or enlarge holes by burning.
2. Make holes clean cut, without torn or ragged edges.
3. Remove outside burrs resulting from drilling or reaming operations with tool making 1/16 IN bevel.
4. Provide holes in members to permit connection of work of other trades or contractors.

I. Make allowance for draw in all cross bracing to provide small amount of initial tension in members.

J. Make splices only where indicated or where approved.

K. Wall Girts:

1. Extend past columns and miter ends unless noted otherwise.
2. Connect girts to each other at corners unless noted otherwise.

L. Cope at 45 degrees, corners of stiffener plates at junction of member flanges with webs.

M. Flame cut bevels for welds, provided such cutting is done automatically.

1. Leave free of burrs and slag by grinding or planing the cut edges.

N. Grind smooth all rough welds and sharp steel edges shall be ground to approximately 1/8 inches radius.

O. Tolerances (unless noted otherwise on Drawings):

1. When material received from the mill does not satisfy ASTM A6/A6M tolerances for camber, profile, flatness or sweep, Contractor is permitted to perform corrective work by the use of controlled heating, and mechanical straightening, subject to the limitations of the AISC 360.

2. Fabrication tolerance:
    a. Member length:
        1) Both ends finished for contact bearing: 1/32 inches.
        2) Framing members: [30 feet or less: 1/16 inches] [Over 30 feet: 1/8 inches].
    b. Member straightness:
        1) Compression members: 1/1000 of axial length between points laterally supported.
        2) Non-compression members: ASTM A6/A6M tolerance for wide flange shapes.
    c. Specified member camber (except compression members):
        1) 50 feet or less: -0/+1/2 inches.
        2) Over 50 feet: -0/+1/2 inches (+1/8 inches per 10 feet over 50 feet).
        3) Members received from mill with 75% of specified camber require no further cambering.
        4) Fabricate beams/trusses without specified camber so after erection, camber is upward.
        5) Measure camber in fabrication shop in unstressed condition.
    d. Use filler plates at bolted splices to take up depth deviation.
        1) At welded joints, adjust weld profile to conform to variation in depth.
        2) Slope weld surface per AWS requirements.
    e. Free finished members from twists, bends and open joints.
        1) Sharp kinks, bends and deviation from the above tolerances are cause for rejection of material.

2.4 WELDING

A. Comply with AWS D1.1/D1.1M, and other requirements indicated herein, for all welding, techniques of welding employed, appearance and quality of welds, and methods used to correct defective work.

1. Qualify joint welding procedures or test in accordance with AWS qualification procedures.

B. Test and qualify welders, welding operators and tackers in compliance with AWS D1.1/D1.1M for position and type of welding to which they will be assigned.

1. Conduct tests in presence of approved testing agency.
2. Certification within previous 12 months will be acceptable, provided samples of the welder's work are satisfactory.

C. Before Starting Welding:

1. Carefully plumb and align members in compliance with specified requirements.
2. Fully tighten all bolts.

3. Comply with AWS D1.1/D1.1M, Section 5 for assembly and surface preparation.
4. Preheat base metal to temperature stated in AWS D1.1/D1.1M.
    a. When no preheat temperature is given in AWS D1.1/D1.1M and base metal is below 50 degrees F, preheat base metal to at least 70 degrees F.
    b. Maintain temperature during welding.
    c. Preheat surface of all base metal within distance from point of welding equal to thickness of thicker part being welded or 3 inches, whichever is greater, to specified preheat temperature.
    d. Maintain this temperature during welding.
5. Mark welds with an identifying mark unique to each welder.

D. Make flange welds before making web welds.

E. Where groove welds have back-up plates, make first three passes with 1/8 inches round electrodes.

1. Use backup plates in accordance with AWS D1.1/D1.1M, extending minimum of 1 inch either side of joint.

F. Flame cut edges of stiffener plates at shop or field butt weld.

1. Do not shear.

G. Grind flush web fillets at webs notched to receive backup plates for flange groove welds.

H. Low Hydrogen Electrodes: Dry and store electrodes in compliance with AWS D1.1/D1.1M.

I. Do not perform welding when ambient temperature is lower than 0 degrees F or where surfaces are wet or exposed to rain, snow, or high wind, or when welders are exposed to inclement conditions.

J. Headed Studs and Deformed Bar Anchors:

1. Automatically end welded in accordance with the AWS D1.1/D1.1M and manufacturer's recommendations.
2. Fillet welding of headed studs and deformed bar anchors is not allowed unless approved by Engineer.

K. Test in-place studs in accordance with requirements of AWS D1.1/D1.1M to ensure satisfactory welding of studs to members.

1. Replace studs failing this test.

L. When headed stud-type shear connectors are to be applied, clean top surface of members to receive studs in shop to remove oil, scale, rust, dirt, and other materials injurious to satisfactory welding.

1. Do not shop paint or galvanize metal surfaces to receive field applied studs.

2.5 SHOP COATING

M. Coordinate shop primer, surface preparation and coating with field applied primers and coatings per 09 96 00 “High Performance Industrial Coatings” in the technical specification.

N. Provide suitable methods of handling and transporting painted steel to avoid damage to coating.

O. Do not coat following surfaces:

1. Machined surfaces, surfaces adjacent to field welds, and surfaces fully embedded in concrete.
2. All other members for which no coating is specified.
3. Contact surfaces at bolted slip-critical connections, unless surface condition conforms to the RCSC Specification for Structural Joints Using High-Strength Bolts, Part 3.2.2.

P. Clean thoroughly all surfaces not coated before shipping.

1. Remove loose mill scale, rust, dirt, oil and grease.
2. Protect machined surfaces.

2.6 SOURCE QUALITY CONTROL

A. Special Inspection and Testing:

1. See Specification Section 01 45 33.
2. If the fabricator is not an Approved Fabricator, Owner will employ the services of an independent testing agency to inspect and test structural steel shop work for compliance with Specifications.
   a. Contractor provides sufficient notification and access so inspection and testing can be accomplished.
3. Contractor responsible for testing to qualify shop welders and as needed for Contractor's own quality control to ensure compliance with Contract Documents.

B. Approved Fabricator or Testing Agency Responsibilities:

1. Inspect shop and field welding in accordance with AWS D1.1/D1.1M, Section 6 including the following non-destructive testing:
   a. Visually inspect all welds.
   b. In addition to visual inspection, test 50% of full penetration welds and 20% of fillet welds with liquid dye penetrant.
   c. Test 20% of liquid dye penetrant tested full penetration welds with ultrasonic or radiographic testing.
2. Inspect high-strength bolting in accordance with the RCSC Specification for Structural Joints Using High-Strength Bolts, Section 9.
   a. Verify proper pretension for slip-critical bolted connection only.
   b. Verify direct tension indicator gaps for slip-critical bolted connection only.

3. Inspect stud welding in accordance with AWS D1.1/D1.1M, Section 7.8.
4. Prepare and submit inspection and test reports to Engineer.

2.7 GENERAL

A. Contractor is solely responsible for safety.

1. Construction means and methods and sequencing of work is the prerogative of the Contractor.
2. Take into consideration that full structural capacity of many structural members is not realized until structural assembly is complete; e.g., until slabs, decks, bracing or rigid connections are installed.
3. Partially complete structural members shall not be loaded without an investigation by the Contractor.
4. Until all elements of the permanent structure and lateral bracing system are complete, provide temporary bracing designed, furnished, and installed by the Contractor for the partially complete structure.

B. Adequate temporary bracing to provide safety, stability and to resist all loads to which the partially complete structure may be subjected, including wind, construction activities, and operation of equipment, is the responsibility of the Contractor.

1. Use temporary guys, braces, shoring, connections, etc., necessary to maintain the structural framing plumb and in proper alignment until permanent connections are made, the succeeding work is in place, and temporary work is no longer necessary.
2. Use temporary guys, bracing, shoring, and other work to prevent injury or damage to adjacent work or construction from stresses due to erection procedures and operation of erection equipment, construction loads, and wind.
3. Design of the temporary bracing system and consideration of the sequence and schedule of placement of such elements and effects of loads imposed on the structural steel members by partially or completely installed work, including work of all other trades, is the Contractor's responsibility.
    a. If not obvious from experience or from the Drawings, confer with the Engineer to identify those structural steel elements that must be complete before the temporary bracing system is removed.
4. Remove and dispose of all temporary work and facilities off-site.

C. Examine work-in-place on which specified work is in any way dependent to ensure that conditions are satisfactory for the installation of the work.

1. Report defects in work-in-place which may influence satisfactory completion of the work.
2. Absence of such notification will be construed as acceptance of work-in-place.

D. Field Measurement:

1. Take field measurements as necessary to verify or supplement dimensions indicated on the Drawings.
2. Contractor is responsible for the accurate fit of the work.

E. Check the elevations of all finished footings or foundations and the location and alignment of all anchor bolts before starting erection.

1. Notify Engineer of any errors or deviations found by such checking.

PART 3 - EXECUTION

3.1 ERECTION

A. Framing member location tolerances after erection shall not exceed the framing tolerances listed in the FIELD QUALITY CONTROL Article in PART 3 of this Specification Section.

B. Erect plumb and level; introduce temporary bracing required to support erection loads.

C. Use light drifting necessary to draw holes together.

1. Drifting to match unfair holes is not allowed.

D. Welding:

1. Conform to AWS D1.1/D1/1M and requirements of this Specification Section.
2. Join two (2) sections of steel of different ASTM designations using welding techniques in accordance with a qualified AWS D1.1/D1.1M procedure.

E. Shore existing members when unbolting of common connections is required.

1. Use new bolts for rebolting connections.

F. Clean stored material of all foreign matter accumulated during erection period.

G. Clean bearing and contact surfaces before assembly.

H. Set beam and column base and bearing plates accurately, as indicated, on nonshrink grout.

1. Set and anchor each base plate to proper line and elevation.
2. Use metal wedges, shims or setting nuts as required and tighten anchor bolts.
   a. Use same metal as base plate.
   b. Cut off protrusions of wedges and shims flush with edge of base plate.
3. Fill sleeves around anchor bolts with nonshrink grout.
4. Pack grout solidly between bottom of plate and bearing surface.
5. Refer to Specification Section 03 05 00 for nonshrink grout requirements.

I. Cast-in-place Anchor Bolts:

1. See Specification Section 03 15 19.

J. Install high strength bolts with hardened washers.

1. Install and tighten in accordance with the RCSC Specification for Structural Joints Using High-Strength Bolts, Section 8.

2. Coordinate installation with inspection.
    a. Do not start installation until coordination with Testing Agency is complete.
3. Bearing-type connections: High-strength bolts shall be tightened to snug-tight condition.
4. Slip-critical connections:
    a. Perform calibration testing for all methods of installation of high-strength bolts in accordance with RCSC Specification for Structural Joints Using High-Strength Bolts, Section 8.2.
    b. Turn-of-nut tightening:
        1) Inspector shall observe the pre-installation verification testing.
        2) Subsequently, ensure by routine observation that the bolting crew properly rotates the turned element relative to the unturned element by the amount specified.
        3) Alternatively, when fastener assemblies are match-marked after the initial fitup of the joint but prior to pretensioning, visual inspection after pretensioning is permitted in lieu of routine observation.
    c. Calibrated wrench tightening: Calibrate on a daily basis.
    d. Direct tension indicator tightening: If previously approved by Engineer.
    e. Installation of alternate design bolts: If previously approved by Engineer.
5. In the event any bolt in a connection is found to be defective, check and retighten all bolts in the connection.

K. Do not use gas cutting to correct fabrication errors.
1. In case members do not fit or holes do not match, ream out the holes and insert the next larger size bolt.
    a. Drill new holes if the connections require new holes.
    b. Make no such corrections without prior approval of the Engineer.
2. Burning of holes is not permitted.

L. Prior to making field connections to existing structural steel, remove completely all paint from existing steel which will be in contact with new steel and new welds.

M. Tighten and leave in place erection bolts used in welded construction.

N. Provide beveled washers to give full bearing to bolt head or nut where bolts are to be used on surfaces having slopes greater than 1 in 20 with a plane normal to bolt axis.

O. After bolts are tightened, upset threads of non-high strength bolts and anchor bolts to prevent nuts from backing off.

P. After Erection:
1. Grind smooth all sharp surface irregularities resulting from field cutting or welding.

2. Power tool clean welds, bolts, washers and abrasions to shop coat removing all rust and foreign matter.

Q. Mechanical Anchor Bolts and Adhesive Anchor Bolts:

1. See Specification Section 03 15 19.

3.2 FIELD QUALITY CONTROL

A. Special Inspection and Testing:

1. Special Inspection to be in accordance with the building code.
2. Special Inspection is required for:
   a. Material verification of high-strength bolts, nuts, and washers.
      1) Frequency: All high-strength bolts, prior to being covered up or substantial completion.
   b. Inspection of high-strength boltings:
      1) Frequency:
         a) All high-strength bolts, prior to being covered up or substantial completion.
         b) Pretensioned and slip-critical joints using turn-of-nut without match marking or calibrated wrench methods of installation require continuous inspection.
   c. Material verification of structural steel.
      1) Frequency: Prior to being covered up or substantial completion,
   d. Material verification of weld filler materials.
      1) Frequency:
         a) Prior to welding on site.
         b) Randomly therafter.
   e. Inspection of welding.
      1) Frequency:
         a) Visually inspect all welds.
         b) In addition to visual inspection, test 50% of full penetration welds and 20% of fillet welds with liquid dye penetrant or magnetic particle.
         c) Test 20% of liquid dye penetrant tested full penetration welds with ultrasonic or radiographic testing.
   f. Inspect structural steel which has been erected.
      1) Frequency: Prior to members being covered up or substantial completion.
   g. Inspect stud welding in accordance with AWS D1.1/D1.1M, Section 7.8.

B. Erected Framing Tolerance, unless noted otherwise on the Drawings:

1. Do not exceed cumulative effect of rolling, fabrication and erection tolerance for overall finished dimensions.
2. Erection tolerances are defined relative to member working points and working lines as follows:
    a. Actual centerline of top flange or surface at each end for horizontal members.
    b. Actual center of member at each end for all other members.
    c. Other points may be used, providing they are based on these definitions.
    d. Working line is straight line connecting member working points.
3. Tolerances on position and alignment are as specified in the Code, unless otherwise modified.
    a. Provide "adjustable items" such as lintels, wall supports, curb angles, window mullions and similar members with adjustable connections to supporting structural framing.
4. Certification by steel erector:
    a. Certify the location of erected structural steel is acceptable for plumbness, level and aligned within tolerances specified.
    b. Provide certification upon completion of any part of work.
    c. Provide certification prior to start of work by other trades that may be supported; attach to structural steel work.

3.3 CLEANING AND REPAIR OF SHOP PRIMER PAINT

A. After erection, clean all steel of mud or other foreign materials, and repair any damage.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Structural Steel shall be measured by the ton. Quantities measured for payment will be calculated on the basis of the dimensions shown on the plans not by quantity placed.

4.2 PAYMENT

A. The contract price paid per ton for Structural Steel shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in Structural Steel including Metal Fabrications, as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Custom fabricated metal items and certain manufactured units not otherwise indicated to be supplied under work of other Specification Sections.
    a. Bollards
    b. Abrasive Stair Nosings
    c. Aluminum Grating
    d. Steel Grating
    e. Heavy-Duty Castings, Trench Covers, and Accessories
    f. Access Cover
    g. Loose Lintels
2. Design of all temporary bracing not indicated on Drawings.
3. Delegated design systems and components, including but not limited to:
    a. Metal Stairs.
    b. Concrete Filled Steel Pan Stairs.
    c. Landings.
    d. Ladders.
    e. Landing and Ladder gates.
    f. Steel checkered plate.
    g. Aluminum checkered plate.
    h. Modular framing system.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 35 73 – Delegated Design Procedures.
2. Section 03 05 00 - Concrete.
3. Section 03 15 19 - Anchorage to Concrete.
4. Section 05 12 00 - Structural Steel.

1.2 REFERENCES

A. Definitions

1. Fasteners: As defined in ASTM F1789.

2. Galvanizing: Hot-dip galvanizing per ASTM A123/A123M or ASTM A153/A153M with minimum coating of 2.0 oz of zinc per square foot of metal (average of specimens) unless noted otherwise or dictated by standard.
3. Hardware: As defined in ASTM A153/A153M.
4. Installer or Applicator:
    a. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
    b. Installer and applicator are synonymous.
5. PQR: Procedure Qualification Record
6. MIC: Microbiologically induced corrosion.

B. Referenced Standards: Standards referenced in this section include, but are not necessarily limited to, the following:

1. Aluminum Association (AA):
    a. ADM 1, Aluminum Design Manual.
2. American Association of State Highway and Transportation Officials (AASHTO):
    a. HB, Standard Specifications for Highway Bridges.
3. American Institute of Steel Construction (AISC):
    a. 325, Manual of Steel Construction.
    b. 360, Specifications for Structural Steel Buildings (referred to herein as AISC Specification).
4. The American Ladder Institute (ALI):
    a. A14.3, Ladders - Fixed - Safety Requirements.
5. American Society of Civil Engineers (ASCE):
    a. 7, Minimum Design Loads for Buildings and Other Structures.
6. ASTM International (ASTM):
    a. A6, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
    b. A36, Standard Specification for Carbon Structural Steel.
    c. A47, Standard Specification for Ferritic Malleable Iron Castings.
    d. A48, Standard Specification for Gray Iron Castings.
    e. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
    f. A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished.
    g. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    h. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
    i. A197, Standard Specification for Cupola Malleable Iron.

j. A269, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

k. A276, Standard Specification for Stainless Steel Bars and Shapes.

l. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

m. A312, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.

n. A380/A380M, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.

o. A500, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

p. A501, Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

q. A536, Standard Specification for Ductile Iron Castings.

r. A554, Standard Specification for Welded Stainless Steel Mechanical Tubing.

s. A572, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.

t. A563, Standard Specification for Carbon and Alloy Steel Nuts.

u. A666, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

v. A668, Standard Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use.

w. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

x. A786, Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.

y. A992, Standard Specification for Steel for Structural Shapes.

z. A1064, Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

aa. A1011, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

bb. B26, Standard Specification for Aluminum-Alloy Sand Castings.

cc. B209, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

dd. B221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

ee. B308, Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.

ff. B429, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

gg. B632, Standard Specification for Aluminum-Alloy Rolled Tread Plate.

hh. F436, Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.

ii. F467, Standard Specification for Nonferrous Nuts for General Use.

jj. F468, Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs for General Use.

kk. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

ll. F835, Standard Specification for Alloy Steel Socket Button and Flat Countersunk Head Cap Screws.

mm. F879, Standard Specification for Stainless Steel Socket Button and Flat Countersunk Head Cap Screws.

nn. F1789, Standard Terminology for F16 Mechanical Fasteners.

oo. F3125, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

7. American Welding Society (AWS):
   a. A5.1/A5.1M, Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.
   b. B2.1, Specification for Welding Procedure and Performance Qualification
   c. D1.1, Structural Welding Code - Steel.
   d. D1.2, Structural Welding Code - Aluminum.
   e. D1.6/D1.6M, Structural Welding Code - Stainless Steel.
8. National Association of Architectural Metal Manufacturers (NAAMM):
   a. AMP 510, Metal Stairs Manual.
   b. AMP 555, Code of Standard Practice for the Architectural Metal Industry (Including Miscellaneous Iron).
   c. MBG 531, Metal Bar Grating Manual.
9. NACE International (NACE).
10. Nickel Development Institute (NiDI):
    a. Publication 11 007, Guidelines for the Welded Fabrication of Nickel-Containing Stainless Steels for Corrosion Resistant Services.
11. Occupational Safety and Health Administration (OSHA):
    a. 29 CFR 1910, Occupational Safety and Health Standards, referred to herein as OSHA Standards.

1.3 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
   a. Fabrication and/or layout drawings and details:
      1) Submit drawings for all fabrications and assemblies.

a) Include erection drawings, plans, sections, details and connection details.

2) Identify materials of construction, shop coatings and third party accessories.

2. Product technical data (for fabrications not delegated design) including:
   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Manufacturer's installation instructions.
   c. Provide manufacturer's standard allowable load tables for the following:
      1) Grating and checkered plate.
      2) Castings, trench covers and accessories.
      3) Modular framing systems.
3. Delegated Design Professional’s “Instruments of Service” Submittals:
   a. Design drawings sealed and signed by delegated design professional, including:
      1) Design drawings deemed appropriate and necessary by delegated design professional.
      2) Show or indicate necessary details establishing the method of fastening throughout system and attachments to supporting primary structure [including anchorage to concrete as required].
      3) Coordinate drawings and details with delegated design professional’s calculations required in this Section.
      4) At option of Contractor or fabricator, design drawings may be combined with the Shop Drawings required in this Section, although delegated design professional’s seal and signature is required on the Shop Drawings in the event of a combined Submittal.
   b. Design specifications, sealed and signed by delegated design professional.
   c. Certification of compliance in accordance with Section 01 35 73 - Delegated Design Procedures, including:
      1) List of design loads and load combinations used to design structural systems and components.
      2) List of loads transmitted to the supporting structural elements.
      3) Compliance with project performance and design criteria specified in the Contract Documents.
      4) Expressly indicate where structural element reaction forces to Engineer-designed supporting elements or existing construction differ from reaction forces indicated in the Contract Documents.

B. Informational Submittals:
1. Certifications
   a. NACE certification of surface preparation.
   b. NACE certification of paint application.

2. Supplier's Instructions:
    a. Fabricator's instructions for handling, storing, and installing structural elements furnished.
    b. Galvanizing repair paint manufacturer's installation instructions.
3. Qualifications Statements:
    a. NACE inspector qualifications.
    b. Delegated design professional.
    c. Fabricator, when requested by Engineer, including:
        1) Qualifications and experience.
        2) Qualifications of welders to be employed in fabricating the structural elements for the Project.
        3) Qualifications of welders to be employed during erection of the structural elements for the Project.
    d. Installer, when requested by Engineer, including fabricator's approval of installer.
4. Delegated design Shop Drawings approved by delegated design professional:
    a. Detailed structural elements erection drawings, shop details, erection detail.
    b. Indicate member type, location, spacing, size, and gauge of members; method of attachment to supporting members; and necessary erection details.
    c. Show and indicate supplemental bracing, strapping, splices, bridging, accessories, and details necessary for proper installation.
    d. Structural element Placement Diagram: Diagram showing and indicating assumed location of each structural element and references the corresponding structural element design drawing.
5. Delegated design product data approved by delegated design professional:
    a. Fabricator's published product data for each type of structural element and accessory required.
    b. Expressly indicate compliance with applicable reference standards. If not addressed in fabricator's published information, submit as special certification addressing compliance with reference standards indicated in this Section.
    c. Published product data for galvanizing repair paint.
6. Delegated design calculations in accordance with Section 01 35 73 - Delegated Design Procedures:
    a. Complete set of design calculations, indicating:
        1) Basis of design, including a list of codes and standards used for design.
        2) List of design loads and load combinations.
        3) Design moments, shear forces, and axial compression/tension forces.
        4) Design of connections, including splices, if required.
        5) Bridging and bracing design, including attachments to trusses and anchorage to supporting structural elements, if required.

6) Special requirements, if any.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Applicable construction codes including building code, are indicated in Section 01 42 00 - References.

B. Qualifications:

1. Welders:
   a. Each welder employed on the Work shall possess current, valid certification in accordance with AWS D1.1/D1.1M and AWS B2.1/B2.1M.
   b. Upon Engineer's request, submit documentation of welders' qualifications, in accordance with requirements of this provision.
2. Fabricator shall have minimum of 10 years of experience in fabrication of metal items specified.
3. Engineer for contractor-designed systems and components: Professional structural engineer licensed in the State of [_____].
4. NACE certified inspector shall have minimum of two years of experience performing inspections as indicated.
   a. Have a current Level III coating inspector certification.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and handle fabrications to avoid damage.

B. Store above ground on skids or other supports to keep items free of dirt and other foreign debris and to protect against corrosion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Abrasive stair nosings (embedded in concrete stairs):
   a. American Safety Tread.
   b. Balco.
2. Headed studs and deformed bar anchors:
   a. Nelson Stud Welding Div., TRW Inc.
   b. Stud Welding Products, Inc.
3. Mechanical anchor bolts:
   a. See Section 03 15 19.
4. Epoxy adhesive anchor bolts:
   a. See Section 03 15 19.

5. Concrete screw anchors:
    a. See Section 03 15 19.
6. Castings, trench covers and accessories:
    a. Neenah Foundry Co.
    b. Deeter Foundry Co.
    c. Barry Craft Construction Casting Co.
    d. McKinley Iron Works.
7. Aluminum ladders:
    a. Any manufacturer capable of meeting the requirements of this Specification Section.
8. Galvanizing repair paint:
    a. Aervoe Industries, Inc.
    b. ZRC Products.
9. Modular framing system:
    a. Unistrut Building Systems.
    b. B-Line Systems.
    c. Kindorf.
    d. Superstrut.
10. Ladder safety extension post:
    a. Bilco.

2.2 MATERIALS

A. Steel:

1. Structural:
    a. W-shapes and WT-shapes: ASTM A992, Grade 50.
    b. All other plates and rolled sections: ASTM A36.
2. Pipe: ASTM A53, Types E or S, Grade B or ASTM A501.
3. Structural tubing:
    a. ASTM A500, Grade B (46 ksi minimum yield).
4. Bolts, high strength:
    a. ASTM F3125, Grade A325.
5. Nuts, high strength:
    a. ASTM A563.
6. Washers (hardened):
    a. ASTM F436.
    b. Provide two (2) washers with all bolts.
7. Bolts and nuts (unfinished):

a. ASTM A307, Grade A.

8. Welding electrodes: AWS D1.1, E70 Series.
9. Steel forgings: ASTM A668.

B. Iron:

1. Ductile iron: ASTM A536.
2. Gray cast iron: ASTM A48 (minimum 30,000 psi tensile strength).
3. Malleable iron: ASTM A47, ASTM A197.

C. Stainless Steel:

1. Stainless steel in welded applications: Low carbon 'L' type.
2. Minimum yield strength of 30,000 psi and minimum tensile strength of 75,000 psi.
   a. Bars, shapes: ASTM A276, Type [304].
   b. Tubing and pipe: ASTM A269, ASTM A312 or ASTM A554, Type 304 or 316.
   c. Strip, plate and flat bars: ASTM A666, Type 304 or 316.
   d. Bolts and nuts: ASTM F593, Type 304 or 316.
   e.
3. Minimum yield strength of 25,000 psi and minimum tensile strength of 70,000 psi.
   a. Strip, plate and flat bar for welded connections, ASTM A666, Type 304L or 316L.
4. Welding electrodes: In accordance with AWS for metal alloy being welded.

D. Aluminum:

1. Alloy 6061-T6 or Alloy 6061-T6, 32,000 psi tensile yield strength minimum.
   a. ASTM B221 and ASTM B308 for shapes including beams, channels, angles, tees and zees.
   b. Weir plates, baffles and deflector plates, ASTM B209.
2. Alloy 6063-T5 or T6, 15,000 psi tensile yield strength minimum.
   a. ASTM B221 and ASTM B429 for bars, rods, wires, pipes and tubes.
3. ASTM B26 for castings.
4. ASTM F468, alloy 2024 T4 for bolts.
5. ASTM F467, alloy 2024 T4 for nuts.
6. Electrodes for welding aluminum: AWS D1.2, filler alloy 4043 or 5356.

E. Washers: Same material and alloy as found in accompanying bolts and nuts.

F. Embedded Anchor Bolts:

1. See Specification Section 03 15 19.

G. Mechanical Anchor Bolts and Adhesive Anchor Bolts:

1. See Specification Section 03 15 19.

H. Headed Studs: ASTM A108 with a minimum yield strength of 50,000 psi and a minimum tensile strength of 60,000 psi.

I. Deformed Bar Anchors: ASTM A1064 with a minimum yield strength of 70,000 psi and a minimum tensile strength of 80,000 psi.

J. Iron and Steel Hardware: Galvanized in accordance with ASTM A153/A153M when required to be galvanized.

K. Galvanizing Repair Paint:

1. High zinc dust content paint for regalvanizing welds and abrasions.
2. ASTM A780.
3. Zinc content: Minimum 92% in dry film.
4. ZRC "ZRC Cold Galvanizing" or Aervoe " Crown Cold Galvanize Coating 93% Zine Rich."

L. Dissimilar Materials Protection: See Specification Section 09 96 00.

2.3 MANUFACTURED UNITS

A. Ladders:

1. General:
   a. Fully welded type.
      1) All welds to be full penetration welds, unless otherwise specified.
   b. All ladders of a particular material shall have consistent construction and material shapes and sizes unless noted otherwise on the Drawings.
   c. Design ladder in accordance with OSHA Standards, ANSI A14.3, ASCE 7 and the building code.
   d. Ladders shall be designed to support a minimum concentrated live load of 300 pounds at any point to produce the maximum stress in the member being designed.
      1) Apply additional 300 pound loads for each section of ladder exceeding 10 feet.
   e. Maximum allowable stresses per AA ADM 1.
   f. Maximum lateral deflection: Side rail span/240 when lateral load of 100 pounds is applied at any location.
2. Material:
   a. Aluminum.
   b. Finish:
      1) Mill.
3. Rails:
   a. Round pipe or rectangular tubing:
      1) Round pipe:
         a) 1-1/2 inches nominal diameter.

b) Schedule 80.

2) Rectangular tubing:

a) Cross-section: 3 by 2 inches maximum.

b) Thickness: 0.125 inches minimum.

b. Spacing:

1) Minimum clear distance between rails to be 18 inches.

2) Step-through ladder extensions: 24 inches, clear minimum, 30 inches maximum.

3) Ladders equipped with ladder safety system: 36 inches clear.

c. Provide cap at exposed top and bottom of side rails.

1) Provide weep holes as necessary to prevent the accumulation of moisture within hollow members.

d. Extend side rails of step-through ladders a minimum of 42 inches above the landing.

4. Rungs:

a. Minimum 1 inch diameter or 1 inch square solid bar.

1) Integral non-slip finish on all sides.

a) Non-slip finish: Coarse knurling or extruded serrations.

b) Shop or field-applied grit tape and cap type non-slip finishes are not acceptable.

b. Rungs shall penetrate inside wall of side rails.

1) Do not extend rungs beyond the outside face of the side rail.

2) Provide fillet weld all around rung at inside face of side rail and plug weld at outside face of side rail.

c. Rung spacing:

1) Equally spaced not less than 10 inches and not more than 14 inches as measured between the centerlines of the rungs.

a) Ladder rungs and steps in elevator shafts shall be spaced not less than 6 inches and not more than 16.5 inches as measured between the centerlines of the rungs.

2) Top rung shall be level with landing or platform.

a) Where top of ladder terminates at grating cover, floor access door, roof hatch or similar condition; locate top rung as close as practicable to, but not more than 6 inches below, adjacent walking surface.

5. Brackets:

a. Angle or bent plate brackets welded to side rails:

1) 3/8 inches by 2-1/2 inches by length required.

2) Provide punched holes for 3/4 inches bolts or anchors.

3) Minimum distance from centerline of rung to wall or any obstruction: 7 inches.

4) Maximum spacing: [4] [6] feet OC.

b. For floor supported ladders, provide 3/8 by 2-1/2 by 4 inches rectangular bracket or 3/8 by 6 by 6 inches square plate welded to rails with punched holes for 3/4 inches bolts.

1) Provide wall brackets on floor supported units if vertical run is over 4 feet.

6. Landings:

a. Construct landing, railing and all supports of same material as the ladder.

b. Design live load for landing platform and supporting structure:

1) [100] PSF, uniform load.

2) [300] LBS concentrated load on 4 inches square area.

3) All components to be adequate for the uniform load or the concentrated load, whichever requires the stronger component.

4) Maximum deflection: 1/300 of span under a superimposed live load of 100 psf.

c. Grating:

1) Per this Specification Section.

d. Structural support: Channel or tubular sections with bracing, plates, angles, etc., to support guardrail and grating and to support landing from the side of the [structure] [building wall].

1) Weld or bolt all connections using [stainless steel] [galvanized] bolts, nuts and washers.

e. Guardrails:

1) Match ladder side rails.

a) Space intermediate rails equally between top rail and top of kickplate.

2) Provide 4 inches high x 3/8 inches thick toeboard each side of landing.

7. Landing and Ladder Gates:

a. Constructed of same material and sizes as the railing system.

b. Hinges:

1) Stainless steel.

2) Heavy-duty, self-closing.

c. Gate stop:

1) [Aluminum] [Galvanized steel] [Stainless steel].

8. Ladder safety extension post:

a. Telescoping tubular [aluminum] [galvanized steel] [stainless steel] section that automatically locks into place when fully extended.

b. Non-ferrous corrosion-resistant spring and hardware.

c. Factory assembled with all hardware necessary for mounting to ladder.

d. Bilco "LadderUp" safety post.

9. Deflector plate:
    a. For aluminum ladders: Minimum 0.0625 inches aluminum plate, ASTM B209.
    b. For stainless steel ladders: Minimum 0.0625 inches stainless steel plate, ASTM A666.
    c. For steel ladders: Minimum 0.0625 inches steel plate, ASTM A6.
    d. Profile as shown on Drawings.
    e. Fabricate to shapes and sizes required to meet OSHA Standards.

B. Bollards:

1. 8 inches diameter extra strength steel pipe, ASTM A53.
    a. Galvanized.
    b. See Specification Section 09 96 00 for painting requirements.

C. Abrasive Stair Nosings:

1. Exterior cast-in-place concrete stairs:
    a. One piece cast aluminum with wing anchors.
    b. Diamond abrasive pattern.
    c. Babcock Davis "BSTCA-C3W".
2. Interior stairs:
    a. Two component consisting of an embedded subchannel and an abrasive tread plate [with integral photoluminescent strip].
    b. Subchannel: 6063-T5 extruded aluminum.
        1) Complete with concrete anchors.
    c. Tread plate:
        1) 6063-T5 extruded aluminum.
        2) Solid epoxy abrasive filler.
            a) Color: [Safety yellow] [Black] [Gray] [To be selected by Engineer].
    d. [Balco "DXH-330"] ["DXH-330-PL-100"].
    e. Finish: Mill.
3. Length:
    a. Concrete stairs and landings:
        1) 4 inches less than overall stair width.
        2) Where tread mounted railing post occurs, hold nosing back 4 inches clear from railing centerline.
    b. Concrete filled metal pan stairs: Full length of tread.
    c. Concrete landings at metal stairs: 4 inches less than clear width between stringers.

D. Metal Stairs:

1. Treads: [Grating] [Checkered plate] as specified.

a. Provide integral corrugated non-slip nosing.

2. Risers:
   a. Grating treads:
      1) Solid plate welded to trailing edge of tread or landing.
      2) Minimum 3/16 inches thick by 4 inches high.
   b. Checkered plate treads: Solid checkered plate riser integral with tread.
3. Landings:
   a. [Grating] [Checkered plate] as specified.
   b. Provide integral corrugated non-slip nosing at edge acting as stair tread/nosing.
4. Design live load for landing platform and supporting structure:
   a. [100] PSF, uniform load.
   b. [300] LBS concentrated load [on 4 inches square area].
   c. All components to be adequate for the uniform load or the concentrated load, whichever requires the stronger component.
   d. Maximum deflection: 1/300 of span under a superimposed live load of 100 psf.
5. Design, fabricate, and install in compliance with NAAMM and applicable codes.
   a. NAAMM AMP 510:
      1) Exterior at site structures and equipment: Industrial Class.
      2) Interior or exterior at buildings: Service Class.
6. Handrails and guardrails: Refer to Specification Section [05 52 23] [05 52 43].
7. Material:
   a. [Aluminum.] [Steel: ASTM A36, [galvanized after fabrication] [prime painted].]

E. Stairs, Concrete Filled Steel Pan:

1. Fabricated as indicated.
   a. ASTM A36 steel.
2. Treads: Minimum 14 GA pans with self-furring metal lath welded in pan.
3. Risers: Minimum 14 GA.
4. Landings: minimum 10 GA pans with angle supports as required to support loading indicated and concrete.
   a. Provide self-furring metal lath reinforcing welded in the pan.
5. Design live load for landing platform and supporting structure:
   a. [100] PSF, uniform load.
   b. [300] LBS concentrated load [on 4 inches square area].
   c. All components to be adequate for the uniform load or the concentrated load, whichever requires the stronger component.

d. Maximum deflection: 1/300 of span under a superimposed live load of 100 psf.

6. Design, fabricate, and install in compliance with NAAMM and applicable codes.
   a. NAAMM AMP 510: [Commercial Class] [Architectural Class].
   b. ICC A117.1.
7. Nosings:
   a. Abrasive nosings as specified.
   b. Coordinate riser height to compensate for thickness of nosing.
8. Handrails and guardrails: Refer to Specification Section [05 52 23] [05 52 43].
9. Galvanize entire assembly after fabrication.

F. Steel Checkered Plate:

1. Provide galvanized checkered plate and edge supports.
2. Conform to ASTM A786.
   a. Diamond pattern: No.3 (large) or No.4 (medium).
   b. Use one pattern throughout Project.
   c. Material: 36 ksi minimum yield strength.
3. Design live load (unless noted otherwise on Drawings):
   a. 100 psf, uniform load.
   b. 300 pounds concentrated load on 4 inches square area.
   c. All components to be adequate for the uniform load or the concentrated load, whichever requires the stronger component.
   d. Maximum deflection: 1/300 of span under a superimposed live load of 50 psf.
4. Reinforce as necessary with steel angles welded to underside of checkered plate.
5. Plate sections:
   a. Maximum 3 feet wide.
   b. Minimum 1/4 inches thick.
   c. Maximum 100 pounds per section if required to be removable.
6. Provide joints at center of all openings unless shown otherwise.
   a. Reinforce joints and openings with additional angles to provide required load carrying capacity.
7. Unless shown otherwise, frame for opening with steel checkered plate cover:
   a. Steel support angles:
      1) 3 by 2 by 1/4 inches minimum size with long leg vertical.
      2) 5/8 inches diameter adhesive anchor bolts spaced at maximum of 24 inches on-center along each side with not less than two anchor bolts per side.
   b. Steel concrete insert seats:

1) 2 by 2 by 1/4 inches minimum size.

2) Auto-welded studs or strap anchors, ASTM A108 at 18 inches on-center with not less than two studs or anchors per side.

c. Drill and tap frame to receive 3/8 inches diameter fasteners at not more than 24 inches on-center with not less than two fasteners per side.

1) Fasteners: Flat countersunk cap screws, ASTM F835.

a) Galvanized, ASTM A153/A153M.

G. Aluminum Checkered Plate:

1. Conform to ASTM B632.
   a. Diamond pattern: Use one pattern throughout Project.
   b. Material: Type 6061-T6 or 6005-T6.
2. Design live load:
   a. 100 psf, uniform load.
   b. 300 pounds concentrated load on 4 inches square area.
   c. All components to be adequate for the uniform load or the concentrated load, whichever requires the stronger component.
   d. Maximum deflection: 1/300 of span under a superimposed live load of 50 psf.
3. Reinforce as necessary with aluminum angles.
4. Plate sections:
   a. Maximum 3 feet wide.
   b. Minimum 1/4 inches thick.
   c. Maximum 100 pounds per section if required to be removable.
5. Provide joints at center of all openings unless shown otherwise.
   a. Reinforce joints and openings with additional angles to provide required load carrying capacity.
6. Unless shown otherwise, frame for openings with aluminum checkered plate cover:
   a. Aluminum support angles:
      1) 3 by 2 by 1/4 inches minimum size with long leg vertical.
      2) 5/8 inches diameter adhesive anchor bolts spaced at maximum of 24 inches on-center along each side with not less than two anchor bolts per side.
   b. Aluminum concrete insert seats:
      1) 2 by 2 by 1/4 inches minimum size.
      2) Auto-welded studs or strap anchors at 18 inches on-center with not less than two studs or anchored per side.
   c. Drill and tap frame to receive 3/8 inches diameter fasteners at not more than 24 inches on-center with not less than two fasteners per side.
      1) Fasteners: Stainless steel flat countersunk cap screws: ASTM F879.

H. Aluminum Grating:

1. NAAMM MBG 531.
2. Bearing bars: Rectangular, 1-1/2 by 3/16 inches at 1-3/16 inches on-center spacing OR I-bar, 1-1/2 inches deep with minimum 1/16 inches thick bar and minimum 1/4 inches flange width at 1-3/16 inches on-center spacing (unless noted otherwise on Drawings).
3. Cross bars:
   a. Welded, swaged or pressure locked to bearing bars:
   b. Maximum 4 inches/OC spacing.
4. Top edges of bars: Grooved or serrated.
5. Finish: Mill, standard.
6. Clips and bolts: Stainless steel.
7. Seat angles: Aluminum or stainless steel

I. Steel Grating:

1. NAAMM MBG 531.
2. Bearing bars:
   a. Rectangular 1-1/2 by 3/16 inches unless otherwise noted on Drawings.
   b. Maximum 1-3/16 inches on-center spacing.
3. Cross bars:
   a. Welded, swagged or pressure locked to bearing bars.
   b. Maximum 4 inches on-center spacing.
4. Top edges of bars: Serrated or grooved.
5. Removable grating sections: Not wider than 3 feet and not more than 100 pounds.
6. Finish:
   a. Galvanized.
   b. Clips and bolts: [Stainless steel] [Galvanized].
   c. Seat angles: Galvanized steel.
7. Ends and perimeter edges: Banded.
8. Openings through grating: Reinforced to provide required load carrying capacity and banded with 4 inches high toe plate.
9. Provide joints at openings between individual grating sections.

J. Heavy-Duty Castings, Trench Covers, and Accessories:

1. Prefabricated, [cast iron ASTM A48] [or ductile iron ASTM A536] [or cast aluminum ASTM B26].
2. Design load: AASHTO HS-20 wheel loading for indicated span.
3. Machine horizontal mating surfaces.

K. Access Cover:

1. Tank type manhole frame and solid lid: ASTM A48 or ASTM A536, cast iron.
2. Unless shown otherwise, design of cover shall be such that top of frame extends several inches above slab to prevent surface water from entering tank.
3. Equip lid with four stainless steel screws to secure lid to frame.

L. Loose Lintels:

1. Steel, ASTM A36 or ASTM A572 Grade 50, sizes as indicated on Drawings.
2. Hot-dip galvanized per ASTM A123/A123M.

M. Modular Framing System:

1. Materials:
   a. Steel: ASTM A1011, carbon steel, Grade 33.
      1) Hot-dipped galvanized, ASTM A123 or ASTM A153.
   b. Aluminum: ASTM B221 or ASTM B209.
   c. Stainless steel: ASTM A666.
   d. Fiberglass: See Specification Section 06 82 00.
2. Channels and inserts:
   a. Steel or stainless steel: Minimum 12 GA.
   b. Aluminum: Minimum 0.080 inches.
   c. Channels to have one side with a continuous slot with in-turned lips.
      1) Width: 1-5/8 inches.
      2) Depth and configuration as necessary for loading conditions.
3. Fittings: Same material as system major components.
4. Fasteners:
   a. Nuts: Toothed groves in top of nuts to engage the in-turned lips of channel.
   b. Bolts: Hex-head cap screws.
   c. Same material as system major components.
5. End caps:
   a. At each exposed end of each piece mounted on walls, or guardrails, or suspended from framing 7 feet or less above the floor or platform.
      a) Plastic for all exposed ends 7 feet or more above floor or platform.
      b) Plastic or metallic for all other exposed ends.
6. Schedule:
   a. Interior wet areas: [Aluminum] [Stainless steel].
      1) Including the following rooms or areas:
   b. Interior corrosive areas: [Fiberglass] [Stainless steel].
      1) Including the following rooms or area:

c. Exterior areas: [Aluminum] [Stainless steel].

d. All other areas not listed above: Hot-dipped galvanized steel.

7. Provide dissimilar materials protection in accordance with Specification Section 09 96 00.

8. Repair all cut ends or otherwise damaged areas of galvanized steel in accordance with ASTM A780.

2.4 FABRICATION

A. Verify field conditions and dimensions prior to fabrication.

B. Form materials to shapes indicated with straight lines, true angles, and smooth curves.

1. Grind smooth all rough welds and sharp edges.

a. Round all corners to approximately [1/32 - 1/16] inches nominal radius.

C. Provide drilled or punched holes with smooth edges.

1. Punch or drill for field connections and for attachment of work by other trades.

D. Weld Shop Connections:

1. Connections subject to the following visual and welding requirements:

a. Fabricator

1) Fabricator shall have QC program and procedures in place to avoid cross contamination of stainless-steel products with carbon steel products and material if shop fabricates products other than stainless steel.

b. Weld Procedures

1) Weld procedures shall be qualified for all positions that will be welded, qualified by testing in accordance with applicable welding codes AWS D1.1, D1.2 and D1.6 requirements.

2) Procedure Qualification Record (PQR) shall document all essential variables to perform consistent quality welds. PQR shall include maximum heat input per pass and shall be tested for CVN properties, macro hardness, and macro/micro hardness testing.

2. Welds shall be continuous fillet type unless indicated otherwise.

3. Full penetration butt weld at bends in stair stringers and ladder side rails.

4. Weld structural steel in accordance with AWS D1.1 using Series E70 electrodes conforming to AWS A5.1/A5.1M.

5. Weld aluminum in accordance with AWS D1.2.

6. Weld stainless steel in accordance with AWS D1.6 [and NiDI 11 007].

7. All headed studs to be welded using automatically timed stud welding equipment.

8. Grind smooth welds that will be exposed.

9. Make provisions to prevent carbon steel/free iron contamination of stainless steel surfaces (i.e., contact between carbon steel or iron and stainless steel component). Do not use cutting/grinding/drilling tools, wire brushes, or wire wheels on stainless steel that have been previously used on carbon steel or iron. Do not support or hang stainless steel weldments or fixtures with carbon steel cables or dunnage.
10. Passivate stainless steel items and stainless steel welds after they have been ground smooth, in accordance with ASTM A380/A380M.
11. Passivation Requirements:
    a. For components/assemblies to be used only in indoor conditioned spaces:
        1) No post-fabrication passivation treatments are required for external corrosion control.
    b. Components for use in environments other than indoor conditioned spaces, shall be subjected to a post-fabrication passivation treatment in accordance with ASTM A380. Following cleaning/passivation, the passivated area shall be evaluated for the effectiveness of cleaning/passivation per one of the Tests for Free Iron shown in Section 7 of ASTM A380 (e.g., Water-Wetting and Drying test, Copper Sulfate test, etc.).

E. Conceal fastenings where practicable.

F. Fabricate work in shop in as large assemblies as is practicable.

G. Tolerances:

1. Rolling:
    a. ASTM A6.
    b. When material received from the mill does not satisfy ASTM A6 tolerances for camber, profile, flatness, or sweep, the Contractor is permitted to perform corrective work by the use of controlled heating and mechanical straightening, subject to the limitations of the AISC Specification.
2. Fabrication tolerance:
    a. Member length:
        1) Both ends finished for contact bearing: 1/32 inches.
        2) Framed members:
            a) 30 feet or less: 1/16 inches.
            b) Over 30 feet: 1/8 inches.
    b. Member straightness:
        1) Compression members: 1/1000 of axial length between points laterally supported.
        2) Non-compression members: ASTM A6 tolerance for wide flange shapes.
    c. Specified member camber (except compression members):
        1) 50 feet or less: -0/+1/2 inches.
        2) Over 50 feet: -0/+1/2 inches (+1/8 inches per 10 feet over 50 feet).

3) Members received from mill with 75% of specified camber require no further cambering.

4) Beams/trusses without specified camber shall be fabricated so after erection, camber is upward.

5) Camber shall be measured in fabrication shop in unstressed condition.

d. At bolted splices, depth deviation shall be taken up by filler plates.

1) At welded joints, adjust weld profile to conform to variation in depth.

2) Slope weld surface per AWS requirements.

e. Finished members shall be free from twists, bends and open joints.

1) Sharp kinks, bends and deviation from above tolerances are cause for rejection of material.

H. Fabricate grating, checkered plate, stairs, ladders and accessories using aluminum [prime painted steel] [galvanized steel] [stainless steel] unless shown otherwise on Drawings.

1. Finish:

a. Mill, unless noted otherwise.

b. Coat surfaces in contact with dissimilar materials.

1) See Specification Section 09 96 00.

I. Fabricate grating in accordance with NAAMM MBG 531.

1. Maximum tolerance for difference in depth between grating depth and seat or support angle depth: 1/8 inches.

2. Distance between edge of grating and face of embedded seat angle or face of wall or other structural member: 1/4 inches.

a. Tolerance: NAAMM MBG 531.

3. Removable sections: Not wider than 3 feet and not heavier than 100 pounds.

4. Ends and perimeter edges: Banded, with alternate bearing bars welded to band.

a. Provide full depth banding unless noted otherwise.

b. Banding at trenches and sumps to be 1/4 inches less than grating depth to allow for drainage.

5. Openings through grating: Reinforced to provide required load carrying capacity and banded with 4 inches high toe plate.

6. Provide joints at openings between individual grating sections.

7. Fabricate grating so that bearing bars and cross bars in adjacent sections are aligned.

J. Fabricate checkered plate and miscellaneous metals in accordance with NAAMM AMP 555.

1. Workmanship: Class 2 [Class 1] [Class 3] unless noted otherwise.

K. See Specification Section 09 96 00 for preparation and painting of ferrous metals and other surfaces.

2.5 SOURCE QUALITY CONTROL

A. Surface Preparation:

1. Refer to Specification Section 09 96 00 for surface preparation requirements.
2. All miscellaneous metal fabrication item surfaces shall be observed and approved, prior to application of shop-applied coatings, by a NACE Certified Coatings Specialist (CIP-[3]) with at least 4 years of experience in similar inspections.
    a. Inspection shall be performed to determine depth of blast profile and cleanliness of surface.
    b. Fabricator shall reblast and or re-clean surfaces as required until acceptable.

B. Shop Applied Coating Application:

1. Refer to Specification Section 09 96 00 for coating requirements.
2. After surface has been accepted in writing by NACE certified coatings inspector, fabricator may proceed with application of coatings.
3. Application of coatings shall be observed and certified by NACE certified coatings inspector.

C. Shop Inspection and Testing:

1. Employ and pay for the services of a qualified independent testing agency to inspect and test all structural steel work for compliance with Contract Documents.
2. Contractor responsible for testing to qualify shop and field welders and as needed for Contractor's own quality control to ensure compliance with Contract Documents.
3. Independent testing agency shall have a minimum of five years performing similar work and shall be subject to Owner's approval.

D. Responsibilities of Testing Agency:

1. Inspect shop and field welding in accordance with AWS Code including the following non-destructive testing:
    a. Visually inspect all welds.
    b. In addition to visual inspection, test 50% of full penetration welds and 20% of fillet welds with liquid dye penetrant or mag particle.
    c. Test 20% of liquid dye penetrant tested full penetration welds with ultrasonic or radiographic testing.
    d. For all surfaces intended to be immersed or intended to be water tight:
        1) 100% of all fillet welds shall be PT tested to ensure water-tight surfaces are free of surface defects that would create areas for MIC.
        2) 100% of all completed SS welds and material shall be passivated in accordance with ASTM A380/A380M.
2. Inspect high-strength bolting in accordance with the RCSC Specification for Structural Joints Using High-Strength Bolts, Section 9.
    a. Verify direct tension indicator gaps, if applicable.

3. Inspect structural steel which has been erected.
4. Inspect stud welding in accordance with AWS Code.
5. Prepare and submit inspection and test reports to Engineer.
    a. Assist Engineer to determine corrective measures necessary for defective work.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide items to be built into other construction in time to allow their installation.

1. If such items are not provided in time for installation, cut in and install.

B. Prior to installation, inspect and verify condition of substrate.

C. Correct surface defects or conditions which may interfere with or prevent a satisfactory installation.

1. Field welding aluminum is not permitted unless approved in writing by Engineer.

3.2 INSTALLATION

A. Set metal work level, true to line, plumb.

1. Shim and grout as necessary.

B. Contractor is solely responsible for safety.

1. Construction means and methods and sequencing of work is the prerogative of the Contractor.
2. Take into consideration that full structural capacity of many structural members is not realized until structural assembly is complete; e.g., until slabs, decks, and diagonal bracing or rigid connections are installed.
3. Partially complete structural members shall not be loaded without an investigation by the Contractor.
4. Until all elements of the permanent structure and lateral bracing system are complete, temporary bracing for the partially complete structure will be required.

C. Adequate temporary bracing to provide safety, stability and to resist all loads to which the partially complete structure may be subjected, including construction activities and operation of equipment is the responsibility of the Contractor.

1. Plumb, align, and set structural steel members to specified tolerances.
2. Use temporary guys, braces, shoring, connections, etc., necessary to maintain the structural framing plumb and in proper alignment until permanent connections are made, the succeeding work is in place, and temporary work is no longer necessary.
3. Use temporary guys, bracing, shoring, and other work to prevent injury or damage to adjacent work or construction from stresses due to erection procedures and operation of erection equipment, construction loads, and wind.

4. Contractor shall be responsible for the design of the temporary bracing system and must consider the sequence and schedule of placement of such elements and effects of loads imposed on the structural steel members by partially or completely installed work, including work of all other trades.
    a. If not obvious from experience or from the Drawings, confer with the Engineer to identify those structural steel elements that must be complete before the temporary bracing system is removed.
5. Remove and dispose of all temporary work and facilities off-site.

D. Examine work-in-place on which specified work is in any way dependent to ensure that conditions are satisfactory for the installation of the work.

1. Report defects in work-in-place which may influence satisfactory completion of the work.
2. Absence of such notification will be construed as acceptance of work-in-place.

E. Field Measurement:

1. Take field measurements as necessary to verify or supplement dimensions indicated on the Drawings.
2. Contractor responsible for the accurate fit of the work.

F. Check the elevations of all finished footings or foundations and the location and alignment of all anchor bolts before starting erection.

1. Use surveyor's level.
2. Notify Engineer of any errors or deviations found by such checking.

G. Framing member location tolerances after erection shall not exceed the frame tolerances listed in the FIELD QUALITY CONTROL Article in PART 3 of this Specification Section.

H. Erect plumb and level; introduce temporary bracing required to support erection loads.

I. Use light drifting necessary to draw holes together.

1. Drifting to match unfair holes is not allowed.

J. Welding:

1. Comply with AWS D1.1, AWS D1.2, and AWS D1.6 (as applicable for the material welded) and requirements of this Section’s “Fabrications” Article in “Part 2 - Products”.
2. When joining two sections of steel of different ASTM designations, welding techniques shall be in accordance with a qualified AWS D1.1 procedure.
3. 100% of all completed stainless steel welds and material shall be passivated in accordance with ASTM A380/A380M.

K. Shore existing members when unbolting of common connections is required.

1. Use new bolts for rebolting connections.

L. Clean stored material of all foreign matter accumulated prior to the completion of erection.

M. Bolt Field Connections: Where practicable, conceal fastenings.

N. Field Welding:

1. Follow AWS procedures.
2. Grind welds smooth where field welding is required.
3. 100% of all completed stainless steel welds and material shall be passivated in accordance with ASTM A380/A380M.

O. Field cutting grating or checkered plate to correct fabrication errors is not acceptable.

1. Replace entire section.

P. Remove all burrs and radius all sharp edges and corners of miscellaneous plates, angles, framing system elements, etc.

Q. Unless noted or specified otherwise:

1. Connect steel members to steel members with 3/4 inches diameter ASTM F3125, Grade A325 high strength bolts.
2. Connect aluminum to aluminum with 3/4 inches diameter stainless bolts.
3. Connect aluminum to structural steel using 3/4 inches diameter stainless steel bolts.
    a. Provide dissimilar metals protection.
4. Connect aluminum and steel members to concrete and masonry using stainless steel mechanical anchor bolts or adhesive anchor bolts unless shown otherwise.
    a. Provide dissimilar materials protection.
5. Provide washers for all bolted connections.
6. Where exposed, bolts shall extend a maximum of 3/4 inches and a minimum of 1/2 inches above the top of installed nut.
    a. If bolts are cut off to required maximum height, threads must be dressed to allow nuts to be removed without damage to the bolt or the nuts.

R. Install and tighten ASTM F3125, Grade A325 high-strength bolts in accordance with the AISC 325, Allowable Stress Design (ASD).

1. Provide hardened washers for all Grade A325 bolts.
    a. Provide the hardened washer under the element (nut or bolt head) turned in tightening.

S. After bolts are tightened, upset threads of ASTM A307 bolts or anchor bolts to prevent nuts from backing off.

T. Secure metal to wood with lag screws of adequate size with appropriate washers.

U. Do not field splice fabricated items unless said items exceed standard shipping length or change of direction requires splicing.

1. Provide full penetration welded splices where continuity is required.

V. Provide each fabricated item complete with attachment devices as indicated or required to install.

W. Anchor such that work will not be distorted nor fasteners overstressed from expansion and contraction.

X. Set beam and column base plates accurately on nonshrink grout as indicated on Drawings.

1. See Division 03 Specification Sections for non-shrink grout and anchorage.
2. Set and anchor each base plate to proper line and elevation.
    a. Use metal wedges, shims, or setting nuts for leveling and plumbing columns and beams.
        1) Wedges, shims and setting nuts to be of same metal as base plate they support.
        2) Tighten nuts on anchor bolts.
    b. Fill space between bearing surface and bottom of base plate with nonshrink grout.
        1) Fill space until voids are completely filled and base plates are fully bedded on wedges, shims, and grout.
    c. Do not remove wedges or shims.
        1) Where they protrude, cut off flush with edge of base plate.
    d. Fill sleeves around anchor bolts solid with non-shrink grout.

Y. Tie anchor bolts in position to embedded reinforcing steel using wire.

1. Tack welding prohibited.
    a. Coat projecting bolt threads and nuts with heavy coat of clean grease.
2. Anchor bolt location tolerance:
    a. Per Section 03 15 19.

Z. Install bollards as detailed on Drawings.

1. Fill pipe with concrete and round off at top.

AA. Provide abrasive stair nosings in each tread and landing of all concrete stairs and at each concrete stair landing having metal stair structure attaching to the concrete landing.

1. Center stair nosings in stair width.

BB. Accurately locate and place frames for openings before casting into floor slab so top of plate is flush with surface of finished floor.

1. Keep screw holes clean and ready to receive screws.

CC. Attach grating to end and intermediate supports with grating saddle clips and bolts.

1. Maximum spacing: 2 feet on-center with minimum of two per side.
2. Attach individual units of aluminum grating together with clips at 2 feet on-center maximum with a minimum of two clips per side.

DD. Coat aluminum surfaces in contact with dissimilar materials in accordance with Specification Section 09 96 00.

EE. Repair damaged galvanized surfaces in accordance with ASTM A780.

1. Prepare damaged surfaces by abrasive blasting or power sanding.
2. Apply galvanizing repair paint to minimum 6 mils DFT in accordance with manufacturer's instructions.

FF. Anchor ladder to concrete structure with minimum 3/4 inches stainless steel anchor bolts with minimum 6 inches embedment.

GG. Anchor ladder to masonry structure with minimum 3/4 inches stainless steel anchor bolts with minimum 6 inches embedment.

1. When anchoring into masonry, fill masonry cores with grout at anchor locations and each masonry core within 8 inches of anchor
2. When anchoring into cavity wall construction, provide minimum 6 inches embedment into concrete or masonry back-up wall.
    a. At each anchor location, provide sleeve between back face of veneer and cavity face of concrete or masonry back-up wall.
    b. Cut cavity insulation as required and seal around sleeve.
        1) Sleeve to be 1 inch diameter schedule 40 stainless steel tubing, TP-304L, ASTM A269.
            a) Minimum wall thickness to be .065 inches.
        2) Continuously weld 4 by 4 by 1/4 inches Type 304 stainless steel, ASTM A666 flange onto each end of pipe.
            a) Drill 1 inch hole in flange to match pipe.
            b) Attach sleeve to concrete or masonry back-up with 1/4 inches concrete screw anchors.
        3) Grout solid, area around bolt where bolt penetrates veneer.
        4) Accurately locate sleeves to align with bolt locations on ladder.

HH. Anchor ladder to metal stud walls using minimum 1/2 inches stainless steel bolts, nuts and washers.

1. Verify that stud wall has been provided with adequate backing to accept ladder anchors.

II. Install ladder safety extension post in accordance with manufacturer's instructions.

1. Mount device opposite the climbing side.
2. Provide ladder safety extension device for all ladders unless noted otherwise.

JJ. Mount ladder fall protection system with rail offset from ladder side rail approximately 3 inches.

KK. Install factory pre-fabricated stairs in location indicated in the Contract Documents and approved submittals.

3.3 FIELD QUALITY CONTROL

A. Tolerances shall meet structural requirements of Specification Section 05 12 00 for erecting items of structural nature.

B. Tolerances (unless otherwise noted on the Drawings):

1. Frame placement, after assembly and before welding or tightening.
   a. Deviation from plumb, level and alignment: 1 in 500, maximum.
   b. Displacement of centerlines of columns: 1/2 inches maximum, each side of centerline location shown on Drawings.

3.4 CLEANING

A. After fabrication, erection, installation, or application, clean all miscellaneous metal fabrication surfaces of all dirt, weld slag and other foreign matter.

B. Provide surface acceptable to receive field applied paint coatings specified in Specification Section 09 96 00.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for Metal Fabrications shall be included in the measurement for Structural Steel.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in Metal Fabrications, shall be considered as included in contract prices paid for the various items of work involved, and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 09 96 00
HIGH PERFORMANCE INDUSTRIAL COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. High performance industrial coatings (HPIC).
2. Any other coating, thinner, accelerator, inhibitor, etc., specified or required as part of a complete System specified in this Specification Section.
3. Minimum surface preparation requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
   a. B499, Standard Test Method for Measurement of Coating Thicknesses by the Magnetic Method: Nonmagnetic Coatings on Magnetic Basis Metals.
   b. D3359, Standard Test Methods for Rating Adhesion by Tape Test.
   c. D4258, Standard Practice for Surface Cleaning Concrete for Coating.
   d. D4259, Standard Practice for Abrading Concrete.
   e. D4261, Standard Practice for Surface Cleaning Concrete Masonry Units for Coating.
   f. D4262, Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
   g. D4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
   h. D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
   i. D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
   j. D6132, Standard Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an Ultrasonic Gage.
   k. D6677, Standard Test Method for Evaluating Adhesion by Knife.
   l. D7091, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.
   m. D7234, Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
   n. E337, Standard Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures).
   o. F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
   p. F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
2. Environmental Protection Agency (EPA).
3. International Concrete Repair Institute (ICRI):

a. 310.2, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

4. National Association of Pipe Fabricators (NAPF):
   a. 500-03, Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings:
      1) 500-03-04, Abrasive Blast Cleaning for Ductile Iron Pipe.
      2) 500-03-05, Abrasive Blast Cleaning for Cast Ductile Iron Fittings.
5. NSF International (NSF).
   a. 61, Drinking Water System Components - Health Effects.
6. The Society for Protective Coatings (SSPC):
   a. PA 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements.
   b. SP 1, Solvent Cleaning.
   c. SP 2, Hand Tool Cleaning.
   d. SP 3, Power Tool Cleaning.
   e. SP 16, Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.
7. The Society for Protective Coatings/ NACE International (SSPC/ NACE):
   a. SP 5/ NACE No. 1, White Metal Blast Cleaning
   b. SP 6/ NACE No. 3, Commercial Blast Cleaning.
   c. SP 7/ NACE No. 4, Brush-off Blast Cleaning.
   d. SP 10/ NACE No. 2, Near-White Blast Cleaning.
   e. SP 13/ NACE No. 6, Surface Preparation of Concrete.

B. Qualifications:
1. Coating manufacturer's technical representative shall be a NACE Certified Coatings Inspector, Level 3 minimum.
2. Applicators shall have minimum of 10 years of experience in application of similar products on similar project.
   a. Provide references for minimum of three different projects completed in last five years with similar scope of work.
   b. Include name and address of project, size of project in value (coating) and contact person.
3. NACE inspector shall be NACE Certified Coatings Inspector Level 3 minimum and shall have minimum of five years of experience of conducting inspections and tests as indicated in this Specification Section.

C. Miscellaneous:
1. Furnish coating through one manufacturer unless noted otherwise.

D. Deviation from specified MIL thickness or product type is not allowed without written authorization of Engineer.

E. Material shall not be thinned unless approved, in writing, by coating manufacturer's technical representative.

1.3 DEFINITIONS

A. Applicator:

1. Applicator is the person actually installing or applying the product in the field, at the Project site, or at an approved shop facility.

B. Approved Factory Finish: Finish on a product in compliance with the finish specified in the Specification Section where the product is specified or in Specification Section 01 61 03.

C. Appurtenant Surface: Accessory or auxiliary surface attached to or adjacent to a surface indicated to be coated.

D. Corrosive Environment:

1. Immersion in or subject to:
   a. Condensation, spillage or splash of a corrosive material such as water, wastewater or chemical solution.
   b. Exposure to corrosive caustic or acidic agent, chemicals, chemical fumes, chemical mixture, or solutions.
   c. For purposes of this Specification Section, corrosive environments include:
      1) Outdoor areas not otherwise identified as highly corrosive.
      2) Piping galleries.
      3) Surfaces within 2 feet of high-water level.

E. Outdoor Atmosphere or Surface: utdoor atmosphere or surface exposed to weather and/or direct sunlight.

F. Finished Area: A room or area that is listed in or has finish called for on Room Finish Schedule or is indicated on Drawings to be coated.

G. Holiday:

1. A void, crack, thin spot, foreign inclusion, or contamination in the coating that significantly lowers the dielectric strength of the coating.
2. May also be identified as a discontinuity or pinhole.

H. HPIC: High performance industrial coatings.

1. Epoxies, urethanes, vinyl ester, waterborne vinyl acrylic emulsions, acrylates, silicones, alkyds, acrylic emulsions and any other coating listed as a HPIC.

I. Indoor Atmosphere or Surface: Indoor atmosphere or surface not exposed to weather and/or direct sunlight.

J. Immersion Service:

1. Any surface immersed in water or some other liquid.
2. Surface of any pipe, valve, or any other component of the piping system subject to frequent wetting.
3. Surfaces within two feet above high-water level in water bearing structures.

K. Piping System: Pipe, valves, fittings and accessories.

L. Surface Hidden from View:

1. Within pipe chases.
2. Between top side of ceilings and underside of floor or roof structures above.

M. Vapor Space: Interior space within tankage, closed structures, or similar elements that is above the low liquid line and subject to the accumulation of fumes, vapor and/or condensation.

1.4 SUBMITTALS

A. Certifications:

1. Applicator experience qualifications.
    a. No submittal information will be reviewed until Engineer has received and approved applicator qualifications.
2. NACE inspector certification.
3. NACE inspector experience qualifications.
4. Certification that High Performance Coating Systems proposed for use have been reviewed and approved by a NACE Certified Coatings Inspector employed by the coating manufacturer.
    a. Submittals not including this certification will be returned without review.

B. Shop Drawings:

1. Product technical data including:
    a. Acknowledgement that products submitted meet requirements of standards referenced.
    b. Manufacturer's surface preparation instructions.
    c. If products being used are manufactured by Company other than listed in the MATERIALS Article of this Specification Section, provide complete individual data sheet comparison of proposed products with specified products including:
        1) Application procedure.
        2) Coverage rates.
        3) Certification that product is designed for intended use and is equal or superior to specified product.
    d. Contractor's written plan of action for containing airborne particles created by blasting operation and location of disposal of spent contaminated blasting media.
    e. Coating manufacturer's recommendation on abrasive blasting.
    f. Coating manufacturer's technical representative's written statement attesting that applicator has been instructed on proper preparation, mixing and application procedures for coatings specified.
    g. Manufacturer's recommendation for universal barrier coat.
    h. Manufacturer's recommendation for providing temporary or supplemental heat or dehumidification or other environmental control measures.
2. Manufacturer's statement regarding applicator instruction on product use.

C. Samples:

1. Manufacturer's full line of colors for Engineer's preliminary color selection.
2. After preliminary color selection by Engineer provide two, 3 x 5 inches samples of each final color selected.

D. Informational Submittals:

1. Approval of application equipment.
2. Applicator's daily records:
    a. Submit daily records at end of each week in which coating work is performed unless requested otherwise by Engineer's on-site representative.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver in original containers, labeled as follows:

1. Name or type number of material.
2. Manufacturer's name and item stock number.
3. Contents, by volume, of major constituents.
4. Warning labels.
5. VOC content.

B. Store materials in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 degrees F.

1.6 PROJECT CONDITIONS

A. Pre-application Conference:

1. Prior to commencement of surface preparation or coating application, the Contractor shall convene a pre-application conference with all affected parties, including but not limited to: the applicator, coating manufacturer's technical representative, Owner's representative, and Engineer's representative(s).
2. The meeting shall discuss all aspects of the Project including but not limited to:
   a. Schedule.
   b. Material storage and handling.
   c. Examination of surfaces to be coated.
   d. Protection of surfaces not to be coated.
   e. Surface preparation.
   f. Coating application:
      1) Environmental conditions for application of coatings.
      2) Temporary environmental controls.
   g. Field quality control requirements:
      1) Manufacturer's technical representative responsibilities.
      2) Contractor performed testing.
         a) Instrumentation requirements.
         b) Frequency of testing.
         c) Record keeping.
      3) NACE inspector performed testing.

B. Verify that atmosphere in area where coating is to take place is within coating manufacturer's acceptable temperature, humidity and sun exposure limits.

1. Provide temporary heating, shade and/or dehumidification as required to bring area within acceptable limits.
   a. Provide temporary dehumidification equipment properly sized to maintain humidity levels required by coating manufacturer.
   b. Provide clean heat with heat exchanger type equipment sufficient in size to maintain temperature on a 24 hour basis.
      1) Vent exhaust gases to outdoor environment.
      2) No exhaust gases shall be allowed to vent into the space being coated or any adjacent space.
2. Do not apply coatings in snow, rain, fog or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. High Performance Industrial Coatings:
    a. Carboline Protective Coatings.
    b. PPG.
    c. The Sherwin-Williams Company.
    d. Tnemec.
    e. AkzoNobel.

B. "Or-Equal" Submittals:

1. Materials by other manufacturers are acceptable provided that they are established as being compatible with and of equal quality to the coatings of the manufacturers listed.
2. Provide satisfactory documentation from the proposed "or-equal" manufacturer that proposed materials meets or exceeds the following:
    a. Is of the same generic resin.
    b. Requires comparable surface preparation.
    c. Has comparable application requirements.
    d. Meets the same VOC levels or better.
    e. Provides the same finish and color options.
    f. Is suitable for the intended service.
    g. Resistance to abrasion and physical damage.
    h. Resistance to chemical attack.
    i. Resistance to UV exposure.
    j. Ability to recoat in future.
    k. Dry film thickness per coat.
        1) Where manufacturer’s product data sheet indicates a minimum MIL thickness per coat that is greater than specified herein, MIL thickness for entire coating system shall be increased proportionately.
    l. Minimum and Maximum time between coats.
    m. Compatibility with other coatings.
    n. Temperature limitations in service and during application.
    o. Type and quality of recommended undercoats and topcoats.
    p. Ease of application.
    q. Ease of repairing damaged areas.
    r. Stability of colors.
3. The cost of all testing and analyzing of the proposed substitute materials shall be borne by the CONTRACTOR.

2.2 MATERIALS

A. Coatings used for indoor finishes shall meet the requirements of the building code.

B. Coatings shall comply with the VOC limits of EPA.

C. For unspecified materials such as thinner, provide manufacturer's recommended products.

D. High Performance Industrial Coatings:

COATING CODE	GENERIC DESCRIPTION	MANUFACTURER	
		TNEMEC	SHERWIN WILLIAMS
AAE	Acrylic/Acrylate Emulsion	Series 180 WB Tneme-Crete	Cement Plex 875
AREC	Abrasion-Resistant Epoxy Coating	Series 435 Perma-Glaze	Duraplate 5900
AAP	Aliphatic Acrylic Polyurethane	Series 1095 Endurashield	Acrolon Ultra
AP	Acrylic Polymer	Series 1029 Enduratone	Pro Industrial Acrylic Coating
CRM	Cementitious Repair Mortar	Series 217 MortarCrete	Cemtec Silatec MSM
CRU	Corrosion Resistant Urethane	Series 290 CRU	Polylon HP
DFA	Dry-fall Acrylic	Series 115 Uni-Bond DF	DFA Dry Fall Acrylic
EBF	Epoxy Block Filler	Series 1254 Epoxoblock WB	Kem Cati Coat HS
ESF	Epoxy Surfacer/Filler	Series 215 Surfacing Epoxy	Steel Seam FT 910
EMM	Epoxy Modified Cementitious Mortar	Series 218 MortarClad	Duraplate 2300
EF	Epoxy Flooring	Series 237 Power-Tread	GP3746
GFRE	Glass Flake Reinforced Epoxy	Series 142	Sher-Glass FF
HRE	H2S-Resistant Epoxy	Series 132 Protuff Mastic	Duraplate 235
HREM	H2S-Resistant Epoxy Mortar	Series 434 Perma-Shield H_2S	Duraplate 5900 Mortar
MIO	MIO Polyurethane	Series 1 Omnithane	Corothane 1 milesO
MPE	Multi-Purpose Epoxy	Series N69 Hi-Build Epoxoline II	Macropoxy 646

COATING CODE	GENERIC DESCRIPTION	MANUFACTURER	
		TNEMEC	SHERWIN WILLIAMS
MTEP	Moisture-Tolerant Epoxy Primer	Series 201 Epoxoprime	Corobond 100

COATING CODE	GENERIC DESCRIPTION	MANUFACTURER	
		TNEMEC	SHERWIN WILLIAMS
PVA	PVA Drywall Primer	Series 51 PVA Sealer	ProMar 200 Zero VOC Interior Latex Primer
SCN	Secondary Containment Novolac	Series 282	Cor Cote HCR
SCE	Secondary Containment Epoxy	Series 237SC Chembloc	Cor Cote HP
SCEP	Secondary Containment Epoxy Primer	Series 206SC Chembloc	GP3552
STEP	Surface-Tolerant Epoxy Primer	Series 135 Chembuild	Macropoxy 646
UHSE	Ultra-High Solids Epoxy (NSF 61)	Series 22 Epoxoline	Duraplate UHS
VEP	Vinyl Ester Primer	Series 251SC Chembloc	Corobond Vinyl Ester Primer
VESC	Vinyl Ester Secondary Containment	Series 252SC Chembloc	Cor Cote VEN FF
PVA	PVA Drywall Primer	Series 51 PVA Sealer	ProMar 200 Zero VOC Interior Latex Primer
SCN	Secondary Containment Novolac	Series 282	Cor Cote HCR
ZRU	Zinc-Rich Urethane	Series 94-H_20 Hydro-Zinc	Corothane 1 Galvapak

E. High Temperature Coatings:

COATING CODE	GENERIC DESCRIPTION	MANUFACTURER		
		PPG	TNEMEC	SHERWIN WILLIAMS
HTZRP	High Temperature Zinc Rich Primer	Dimetcote 9 Series	Series 1505 Endura-Heat ZR	Zinc Clad II Plus

2.3 COATING SYSTEMS:

A. The following tables indicate coating systems by material and environment unless a specific application is indicated.

B. Ferrous Metals (Structural and Miscellaneous Metals):

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Indoor atmospheric	SSPC-SP 6/ NACE No. 3	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE
Indoor atmospheric (corrosive environment)	SSPC-SP 10/ NACE No. 2, min. 2 mil anchor profile	2.5 to 3.5 mil ZRU	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE
Immersion - Wastewater	SSPC-SP 10/ NACE No. 2	3.0 to 4.0 mil MPE		12 to 16 mil GFRE
Immersion - Wastewater (abrasion resistant)	SSPC-SP 10/ NACE No. 2 min. 3 mil anchor profile	15 to 20 mil AREC		15 to 20 mil AREC
Immersion - non NSF	SSPC-SP 10/ NACE No. 2	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE
Immersion - NSF	SSPC-SP / NACE No.1	4.0 to 5.0 mil NSFE	4.0 to 5.0 mil NSFE	4.0 to 5.0 mil NSFE
Outdoor atmospheric	SSPC-SP 6/ NACE No. 3	2.5 to 3.5 mil ZRU	3.0 to 5.0 mil MPE	2.5 to 3.5 mil AAP
Outdoor atmospheric	SSPC-SP 6/ NACE No. 3	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	2.5 to 3.5 mil AAP

C. Galvanized Steel:

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Indoor atmospheric	SSPC-SP 16	4.0 to 6.0 mil STEP		2.0 to 3.0 mil MPE
Immersion - non NSF	SSPC-SP 16	4.0 to 6.0 mil STEP	2.0 to 3.0 mil MPE	2.0 to 3.0 mil MPE
Outdoor atmospheric	SSPC-SP 16	4.0 to 6.0 mil STEP		2.5 to 3.5 mil AAP
Field cut pipe threads	SSPC-SP 3	4.0 to 6.0 mil STEP	Coat per exposure above	Coat per exposure above

D. Non Ferrous Metals, including piping:

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Dissimilar Materials Protection	SSPC-SP 2	4.5 to 5.5 mil MPE		
Indoor atmospheric	SSPC-SP 2	3.0 to 4.0 mil MPE		3.0 to 4.0 mil MPE
Vapor space at covered clarifiers, digesters and similar structures	SSPC-SP 10/ NACE No. 2 min. 3 mil anchor profile	5 to 7 mil HRE		30 to 40 mil AREC
Immersion - Wastewater (abrasion resistant)	SSPC-SP 16			40 to 45 MIL AREC
Immersion - non NSF	SSPC-SP 16	3.0 to 4.0 mil MPE		5.0 to 6.0 mil MPE
Outdoor atmospheric	SSPC-SP 2	4.0 to 6.0 mil MPE		2.5 to 3.5 mil AAP

E. Ferrous Piping:

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Indoor atmospheric	SSPC-SP 6/ NACE No. 3	2.5 to 3.5 mil ZRU	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE
Vapor space at covered clarifiers, digesters and similar structures	SSPC-SP 10/ NACE No. 2 min. 3 mil anchor profile	5 to 7 mil HRE		30 to 40 mil AREC
Immersion - Wastewater	SSPC-SP 10/ NACE No. 2	3.0 to 4.0 mil HRE		12 to 16 mil GFRE
Immersion - Wastewater (abrasion resistant)	SSPC-SP 10/ NACE No. 2, min 3 mil anchor profile	15 to 20 mil AREC		15 to 20 mil AREC
Immersion - non NSF	SSPC-SP 5/ NACE No.1	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Immersion - NSF	SSPC-SP 5/ NACE No.1	4.0 to 5.0 mil MPE	4.0 to 5.0 mil MPE	4.0 to 5.0 mil MPE
Outdoor atmospheric	SSPC-SP 10/ NACE No. 2	2.5 to 3.5 mil ZRU	4.0 to 6.0 mil MPE	2.5 to 3.5 mil AAP
Outdoor atmospheric	SSPC-SP 10/ NACE No. 2	2.5 to 3.5 mil ZRU	3.0 to 4.0 mil MPE	2.5 to 3.5 mil AAP

F. Ductile Iron Piping:

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Indoor atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE
Vapor space at covered clarifiers, digesters and similar structures	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	5 to 7 mil HRE		30 to 40 mil AREC
Immersion - Wastewater	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil HRE		12 to 16 mil GFRE
Immersion - Wastewater (abrasion resistant)	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	15 to 20 mil AREC		15 to 20 mil AREC
Immersion - non NSF	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE

Outdoor atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil MPE	3.0 to 4.0 mil MPE	2.5 to 3.5 mil AAP

G. Concrete:

1. For repair of deteriorated existing concrete, provide additional surface preparation as specified in PREPARATION article in this Specification Section.

Environment/ Application	Surface Preparation	Filler/Surfacer	Prime Coat	Intermediate Coat(s)	Finish Coat
Walls, ceilings, and appurtenant surfaces Indoor atmospheric	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	ESF and/or EMM as necessary to fill holes and depressions	100 to 150 square feet/GAL MPE		100 to 150 square feet/GAL MPE
Indoor floors	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	ESF as necessary to fill holes and depressions	175 to 225 square feet/GAL EF clear	200 to 250 square feet/GAL EF pigmented	200 to 250 square feet/GAL EF pigmented
			[broadcast slip-resistant aggregate into wet intermediate coat on walking surfaces]		
Indoor Safety Striping	SSPC-SP 13/ NACE No. 6 ICRI CSP 3	ESF and/or EMM as necessary to fill holes and depressions			6.0 to 8.0 mil EF Pigmented
Indoor Secondary Containment	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	ESF and/or EMM as necessary to fill holes and depressions	Horizontal Surfaces		
			6.0 to 8.0 mil MTEP	10 to 12 mil SCN with slip-resistant aggregate broadcast to refusal	10 to 12 mil SCN
			Vertical Surfaces		
			6.0 to 8.0 mil MTEP	6.0 to 8.0 mil SCN	6.0 to 8.0 mil SCN

Environment/ Application	Surface Preparation	Filler/Surfacer	Prime Coat	Intermediate Coat(s)	Finish Coat

Environment/ Application	Surface Preparation	Filler/Surfacer	Prime Coat	Intermediate Coat(s)	Finish Coat
Immersion - non NSF	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	1/16 to 1/4 inches EMM			16 to 20 mil UHSE
Immersion - Wastewater (Abrasion Resistant)	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	1/16 to 1/4 inches EMM	1/8 inches HREM		15 to 25 mil AREC
Immersion - Wastewater - Clarifier Launders	SSPC-SP 13 NACE No. 6 ICRI CSP 5	1/16 to 1/4 inches EMM	60 to 80 mil REC		30 to 45 mil AREC
Vapor space at covered clarifiers, digesters and similar structures	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	1/16 to 1/4 inches EMM			30 to 45 mil AREC
Outdoor atmospheric Corrosive Environment	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	ESF and/or EMM as necessary to fill holes and depressions	150 to 175 square feet/GAL AAE		150 to 175 square feet/GAL AAE
Indoor Secondary Containment Non-Corrosive	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	ESF and/or EMM as necessary to fill holes and depressions	Horizontal Surfaces		
			6.0 to 8.0 mil MTEP	10 to 12 mil SCN	10 to 12 mil SCN
			Vertical Surfaces		
			6.0 to 8.0 mil MTEP	2 coats 6.0 to 8.0 mil SCN	2.0 to 3.0 mil CRU
Outdoor - Secondary Containment Corrosive	SSPC-SP 13/ NACE No. 6 ICRI CSP 5	ESF and/or EMM as necessary to fill holes and depressions	6.0 to 8.0 mil MTEP	60 to 80 mil SCEP Fiberglass mat Saturated with 8.0 to 12 mils SCE	10 to 12 mil SCE 20. to 3.0 mil CRU

PART 3 - EXECUTION

3.1 ITEMS TO BE COATED

A. Outdoor Surfaces, including but not limited to:

1. Concrete:

a. Components of concrete tankage:

1) Coat interior surfaces of tankage.
2) Walls, columns, beams:
a) Coat from 1 foot below low water level to top of component.
3) Troughs, launders, weirs.
4) Underside of concrete walkways within 2 feet of high water level.

b. Secondary containment enclosures.
c. Chemical fill stations.
1) Paving where indicated on Drawings.
2) Spill containment sumps.

2. Pumps and motors.
3. Ferrous metal tankage.
4. Ferrous metal process equipment.
a. Clarifier mechanisms.
b. Equipment bridges.
c. Gates and operators.
5. Structural steel:
a. Columns, beams and bracing.
b. Field welded connections of factory coated structural steel.
6. Miscellaneous galvanized steel surfaces:
a. Pipe Bollards.
b. Embed Plates.
c. Loose lintels.
d. Steel components of concrete lintels.
e. Items specifically noted on Drawings to be coated.
7. Appurtenant surfaces attached to or adjacent to a surface indicated to be coated:
a. Conduit, boxes, covers and supports.

B. Indoor Areas:
1. Refer to Room Finish Schedule on Drawings.
a. If space is scheduled to be coated, coat all appurtenant surfaces within the space unless specifically noted otherwise. Appurtenant surfaces include but are not limited to:
1) Columns.
2) Equipment pads.
3) Equipment supports.
4) Underside of roof or floor decks above:
a) Including semi-exposed or concealed from view unless noted otherwise.
5) Conduit, boxes, covers and supports.
6) Miscellaneous ferrous metal surfaces.
2. Concrete:
a. Components of concrete tankage:
1) Walls, columns, beams:
a) Coat from 1 foot below low water level to top of component.
2) Troughs, launders, weirs.

3.2 ITEMS NOT TO BE COATED

A. General: Do not coat items listed in this Article, unless noted otherwise.

B. Items with Approved Factory Finish: These items may require repair of damaged coated areas or coating of welded connections.

C. Electrical Equipment.

D. Moving parts of mechanical and electrical units where coating would interfere with the operation of the unit.

E. Code labels, equipment identification or rating plates and similar labels, tagging and identification.

F. Contact surfaces of friction-type structural connections.

G. Stainless Steel Surfaces, except:

1. Dissimilar metals in immersion service.
2. Piping where specifically noted to be coated.
3. Banding as required to identify piping.

H. Aluminum Surfaces, except:

1. Where specifically shown in the Contract Documents.
2. Where in contact with concrete.
3. Where in contact with dissimilar metals.
4. Appurtenant surfaces as described in the ITEMS TO BE COATED article.

I. Fiberglass Surfaces, except:

1. Fiberglass piping where specifically noted to be coated.
2. Piping supports where specifically noted to be coated.
3. Appurtenant surfaces as described in the ITEMS TO BE COATED article.

J. Mechanical piping scheduled to be insulated.

K. Galvanized Steel Items, unless specifically noted to be coated.

L. Architectural Finishes:

1. Outdoor concrete indicated to receive another finish.
2. Precast concrete surfaces, unless specifically indicated to be coated.
3. Prefinished masonry surfaces:
    a. Pre-colored masonry (outdoor face).
        1) Interior face shall be coated where scheduled.
    b. Burnished (ground face) concrete masonry.
    c. Prefaced masonry.
    d. Face brick.
    e. Glass masonry.
4. Plastic laminate.
5. Solid surface material.
6. Standing and running trim.
7. Fiberglass fabrications.
8. Anodized aluminum.

9. PVDF coated metals.
10. Factory finished doors and frames.
11. Aluminum windows, curtainwall and storefront framing systems.
12. Finish hardware.
13. Glass and glazing.
14. Ceramic, porcelain, quarry tile or natural stone.
15. Acoustical materials.
16. Building specialties.
17. Louvers.
18. Casework and countertops.
19. Pipe insulation and jacketing.
20. Standing seam metal roof, fascia, trim, soffit and accessories.

3.3 EXAMINATION

A. Concrete:

1. Test pH of surface to be coated in accordance with ASTM D4262.
   a. If surface pH is not within coating manufacturer's required acceptable range, use methods acceptable to coating manufacturer as required to bring pH within acceptable range.
   b. Retest pH until acceptable results are obtained.
2. Verify that moisture content of surface to be coated is within coating manufacturer's recommended acceptable limits.
   a. Test surface to be coated in accordance with ASTM D4263 to determine the presence of moisture.
      1) If moisture is detected, test moisture content of surface to be coated in accordance with ASTM F1869 or ASTM F2170.
      2) Provide remedial measures as necessary to bring moisture content within coating manufacturer’s recommended acceptable limits.
      3) Retest surface until acceptable results are obtained.

3.4 PREPARATION

A. General:

1. Prepare surfaces to be coated in accordance with coating manufacturer's instructions and this Specification Section unless noted otherwise in this Specification Section.
   a. Where discrepancy between coating manufacturer's instructions and this Specification Section exists, the more stringent surface preparation shall be provided unless approved otherwise, in writing, by the Engineer.
2. Remove all dust, grease, oil, compounds, dirt and other foreign matter which would prevent bonding of coating to surface.
3. Adhere to manufacturer's recoat time surface preparation requirements.
   a. Surfaces that have exceeded coating manufacturer's published recoat time and/or have exhibited surface chalking shall be prepared prior to additional coating in accordance with manufacturer's published recommendations.
      1) Minimum SSPC-SP 7/ NACE No. 4 unless otherwise approved by Engineer.

B. Protection:

1. Protect surrounding surfaces not to be coated.
2. Remove and protect hardware, accessories, plates, fixtures, finished work, and similar items; or provide ample in-place protection.
3. Protect code labels, equipment identification or rating plates and similar labels, tagging and identification.

C. Prepare and coat before assembly all surfaces which are inaccessible after assembly.

D. Ferrous Metal:

1. Prepare ductile iron pipe in accordance with pipe manufacturer's recommendations and NAPF.
   a. All piping, pumps, valves, fittings and any other component used in the water piping system that requires preparation for coating shall be prepared in accordance with requirements for immersion service.
   b. Prepare all areas requiring patch coating in accordance with recommendations of manufacturer and NAPF.
   c. Remove bituminous coating per piping manufacturer, coating manufacturer and NAPF recommendations.
      1) The most stringent recommendations shall apply.
2. Complete fabrication, welding or burning before beginning surface preparation.
   a. Chip or grind off flux, spatter, slag or other laminations left from welding.
   b. Remove mill scale.
   c. Grind smooth rough welds and other sharp projections.
3. Solvent clean in accordance with SSPC-SP 1.
4. Restore surface of field welds and adjacent areas to original surface preparation.

E. Galvanized Steel and Non-ferrous Metals:

1. Solvent clean in accordance with SSPC-SP 1 followed by brush-off blast clean in accordance with SSPC-SP 16 to remove zinc oxide and other foreign contaminants.
   a. Provide uniform 1 mil profile surface.

F. Concrete:

1. Cure for minimum of 28 days.
2. Concrete surfaces shall be cleaned in accordance with ASTM D4258.
3. Abrasive blast concrete surfaces in accordance with ASTM D4259 and SSPC-SP 13/ NACE No. 6.
   a. Provide profile per ICRI 301.2 as listed in MATERIALS article of this Specification Section.
4. Test pH and moisture content in accordance with EXAMINATION article in this Specification Section.

3.5 APPLICATION

A. General:

1. Thin, mix and apply coatings by brush, roller, or spray in accordance with manufacturer's installation instructions.
   a. Application equipment must be inspected and approved in writing by coating manufacturer.
2. Temperature and weather conditions:

a. Do not coat surfaces when surface temperature is below 50 degrees F unless product has been formulated specifically for low temperature application and application is approved in writing by Engineer and coating manufacturer's technical representative.
b. Avoid coating surfaces exposed to hot sun.
c. Do not coat damp surfaces.
d. Apply coating to concrete or masonry surfaces in descending temperatures, in accordance with coating manufacturer's application instructions.

3. Apply materials under adequate illumination.
4. Provide complete coverage to MIL thickness specified.
   a. Thickness specified is dry MIL thickness.
5. Evenly spread to provide full, smooth coverage.
   a. All coating systems are "to cover."
      1) In situations of discrepancy between manufacturer's square footage coverage rates and MIL thickness, MIL thickness requirements govern.
   b. When color or undercoats show through, apply additional coats until coating is of uniform finish and color.
   c. Finished coating system shall be uniform and without voids, bugholes, holidays, laps, brush marks, roller marks, runs, sags or other imperfections.
6. If so directed by Engineer, do not apply consecutive coats until Engineer has had an opportunity to observe and approve previous coats.
7. Work each application of material into corners, crevices, joints, and other difficult to work areas.
8. Provide coating manufacturer’s recommended details at all terminations, penetrations, embedments, cracks, joints and changes in substrate direction.
9. Avoid degradation and contamination of blasted surfaces and avoid inter-coat contamination.
   a. Clean contaminated surfaces before applying next coat.
   b. Intercoat surface cleanliness shall be inspected and approved by the Engineer prior to application of each coat.
10. Smooth out runs or sags immediately, or remove and recoat entire surface.
11. Allow preceding coats to dry before recoating.
    a. Recoat within time limits specified by coating manufacturer.
    b. If recoat time limits have expired re-prepare surface in accordance with coating manufacturer's printed recommendations.
12. Allow coated surfaces to cure prior to allowing traffic or other work to proceed.
13. Coat all aluminum in contact with dissimilar materials.
14. When coating rough surfaces which cannot be backrolled sufficiently, hand brush coating to work into all recesses provided that the maximum DFT is not exceeded.
15. Backroll surfaces if coatings are spray applied.

B. Employ services of coating manufacturer's technical representative to ensure that field-applied coatings are compatible with factory-applied or existing coatings.
   1. Certify through material data sheets.
   2. Perform test patch.
      a. Prepare existing coating surface to receive specified coating system.

b. Apply coating to a minimum 1 square feet area and allow to cure in accordance with manufacturer's recommendations.

c. Evaluate adhesion to existing coating:

1) Concrete or Masonry substrates: ASTM D4541.

2) All other substrates: ASTM D6677 and ASTM D3359 (X-cut method).

3. If field-applied coating is found to be not compatible, require the coating manufacturer's technical representative to recommend, in writing, product to be used as barrier coat, thickness to be applied, surface preparation and method of application.

a. Perform test patch as described above.

4. At Contractor's option, coatings may be removed, surface re-prepared, and new coating applied using appropriate coating system listed in the MATERIALS Article, Coating Systems paragraph of this Specification Section.

a. All damage to surface as result of coating removal shall be repaired to original condition or better by Contractor at no additional cost to Owner.

C. Prime Coat Application:

1. Apply structural steel and miscellaneous steel prime coat in the factory.

a. Finish coats shall be applied in the Shop.

b. Prime coat referred to here is prime coat as indicated in this Specification.

1) Prime coating applied in factory (shop) as part of Fabricator's standard rust inhibiting and protection coating is not acceptable as replacement for specified prime coating.

c. Application of all factory-applied coatings(s) on structural steel and miscellaneous steel shall be continually observed and certified by NACE coatings inspector.

2. Prime all surfaces indicated to be coated.

a. Apply prime coat in accordance with coating manufacturer's written instructions and as written in this Specification Section.

3. Prime ferrous metals embedded in concrete to minimum of 1 inch below exposed surfaces.

4. Apply zinc-rich primers while under continuous agitation.

5. Brush or spray bolts, welds, edges and difficult access areas with primer prior to primer application over entire surface.

6. Touch up damaged primer coats prior to applying finish coats.

a. Restore primed surface equal to surface before damage.

7. All surfaces of steel lintels and steel components of concrete lintels used in wall construction shall be completely coated with both prime and finish coats prior to placing in wall.

D. Finish Coat Application:

1. Apply finish coats in accordance with coating manufacturer's written instructions and in accordance with this Specification Section; manufacturer instructions take precedent over these Specifications.

2. Touch up damaged finish coats using same application method and same material specified for finish coat.

a. Prepare damaged area in accordance with the PREPARATION Article of this Specification Section.

3.6 COLOR CODING

A. Color code piping in accordance with the SCHEDULE Article of this Specification Section.

3.7 FIELD QUALITY CONTROL

A. Application Deficiencies:

1. Surfaces showing runs, laps, brush marks, telegraphing of surface imperfections or other defects will not be accepted.
2. Surfaces showing evidence of fading, chalking, blistering, delamination or other defects due to improper surface preparation, environmental controls or application will not be accepted.
    a. Epoxy surfaces showing evidence of chalking or amine blush shall be prepared and recoated as follows:
        1) Solvent clean surfaces in accordance with SSPC-SP1 and abrasive blast in accordance with SSPC-SP7/ NACE No. 4.
        2) Recoat with intermediate and finish coats in accordance with coating system specified herein.

B. Provide protection for coated surfaces.

1. Surfaces showing soiling, staining, streaking, chipping, scratches, or other defects will not be accepted.

C. Contractor Performed Testing:

1. Provide ongoing testing and inspection, including but not limited to the following:
    a. Measurement and recording of environmental conditions as specified herein.
    b. Measurement and recording of substrate conditions as specified herein.
    c. Thickness Testing:
        1) Wet film thickness during application in accordance with ASTM D4414.
        2) Dry Film Thickness (DFT) in accordance with SSPC-PA 2.
        3) Engineer may measure coating thickness at any time during project to assure conformance with these Specifications.

D. Instrumentation:

1. Provide instrumentation as necessary to measure and record atmospheric and substrate conditions, including but not limited to:
    a. Dry Film Thickness Gauge:
        1) Ultrasonic: ASTM D6132.
        2) Magnetic: ASTM B499.
    b. Wet Film Thickness Gauge: ASTM D4414.
    c. Sling Psychrometer: ASTM E337.
    d. Surface Temperature Gauge.
    e. Anemometer.
    f. Moisture Meter.
    g. Adhesion test apparatus:
        1) Steel: ASTM D4541.
        2) Concrete: ASTM D7234.

E. Maintain Daily Records:

1. Record the following information during application:
   a. Date, starting time, end time, and all breaks taken by applicators.
   b. Air temperature.
   c. Relative humidity.
   d. Dew point.
   e. Moisture content and pH level of concrete or masonry substrates prior to coating.
   f. Surface temperature of substrate.
   g. Provisions utilized to maintain work area within manufacturer's recommended application parameters including temporary heating, ventilation, cooling, dehumidification and provisions utilized to mitigate wind-blown dust and debris from contaminating the wet coating.
   h. For outdoor coating, also record:
      1) Sky condition.
      2) Wind speed and direction.
   i. Record environmental conditions, substrate moisture content and surface temperature information not less than once every 4 hours during application.
      1) Record hourly when temperatures are below 50 degrees F or above 100 degrees F.
2. Record the following information daily for the coating manufacturer's recommended curing period:
   a. Date and start time of cure period for each item or area.
   b. For outdoor coating, also record:
      1) Sky conditions.
      2) Wind speed and direction.
      3) Air temperature.
         a) Dry Bulb.
         b) Wet Bulb.
      4) Relative humidity.
      5) Dew point.
      6) Surface temperatures.
   c. Record environmental conditions not less than once every 4 hours.
      1) Record hourly when temperatures are below 50 degrees F or above 100 degrees F.
   d. Provisions utilized to protect each item or area and to maintain areas within manufacturer's recommended curing parameters.
3. Format for daily record to be computer generated.

F. Provide wet paint signs.

3.8 CLEANING

A. Clean coating spattered surfaces.
   1. Use care not to damage finished surfaces.

B. Upon completion of coating, replace hardware, accessories, plates, fixtures, and similar items.

C. Remove surplus materials, scaffolding, and debris.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. High Performance Coating will be measured by the square foot.

4.2 PAYMENT

A, The contract price paid per square foot for High Performance Coating shall include full compensation for complying with the requirements of this section for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in High Performance Coatings as shown on the plans, as specified in these specifications and as directed by the Engineer.

END OF SECTION

SECTION 31 23 00
EXCAVATION AND FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Earthwork shall conform to the provisions in Section 300, “Earthwork,” of the SSPWC, the Technical Specifications, and the General and Special Conditions. All references to "roadway," highway," or "roadbed" in the SSPWC shall be considered applicable to the trackway. Roadway excavation and roadway embankment shall include "trackway."

B. Valve boxes, manhole covers, and drainage structures within the limits of any grading operation shall be adjusted to proposed finish grade.

C. Embankment materials shall be free from organic and otherwise deleterious materials and as provided in Section 300, “Earthwork,” of the SSPWC.

D. Surplus excavated material shall become the property of the Contractor and shall be disposed of outside the right-of-way in conformance with Federal, State, and local regulations.

E. Potholing shall commence prior to excavation to confirm existing conditions.

1.2 REFERENCES

A. City of San Diego Standard Specifications (Green Book), Current Edition

B. City of San Diego Standard Specifications, Supplement to Green Book (White Book), Current Edition

C. City of San Diego Standard Plans, Current Edition

D. San Diego Regional Standard Plans, Current Edition

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions

PART 2 - PRODUCTS

2.1 IMPORTED SOIL

A. Import materials shall have a liquid limit of 25 or less, a plasticity index of 12 or less, and be well graded with no greater than 30-percent of the particles passing the No. 200 sieve and no particles greater than 6-inches in maximum dimension. Import materials shall be non-corrosive in accordance with the following corrosive limits as provided in Section 8.1 of the Caltrans Corrosion Guidelines, Version 2.0, 2012:

1. Minimum resistivity must be greater than 2000 ohm-cm, CT 643
2. Chloride concentration must be less than 250 ppm, CT 422
3. Sulfate concentration must be less than 500 ppm, CT 417
4. pH must be between 5.5 and 10.0, CT 643

PART 3 - EXECUTION

3.1 HAZARDOUS WASTE IN EXCAVATION

A. If the Contractor encounters hazardous waste in excavation, as defined by Section 25117 of the Health and Safety Code, the Contractor shall immediately notify the Engineer in writing. Excavation in and around the suspected hazardous material shall be suspended until the Engineer authorizes it to be resumed. The limits of excavation shall be as directed by the Engineer. If such suspension delays the current controlling operation, the Contractor will be granted an extension of time as provided in Section 3.32, "Time for Completion and Liquidated Damages," of the Standard Construction Agreement and General Conditions.

B. If such suspension delays the current controlling operation more than 2 working days, the delay will be considered a right-of-way delay and the Contractor will be compensated for each such delay as provided in Section 3.32, "Time for Completion and Liquidated Damages," of the Standard Construction Agreement and General Conditions.

C. MTS reserves the right to use other forces for exploratory work to identify and determine the extent of such material and for removing hazardous material from such area.

D. If hazardous material is encountered the Contractor shall mobilize employees with the herein designated safety and remediation training within 24 hours of the Contractor, MTS or third party determining a hazardous or contaminated soils condition exists in an excavation. The Contractor shall have the trained employees available prior to the start of any hazardous material excavation and at the direction of the Engineer, the Contractor shall include a hazmat training as a scheduled task in the Contract Schedule. No additional working days shall be granted for the Contractor's inability to provide and mobilize trained workers within the 24-hour time limit.

E. The employees shall be trained through an OSHA approved Hazardous Waste Operations and Emergency Response Standard (Hazwoper) 40 Hour Training class or have a Hazwoper refresher course within one year prior to the date the work is to be performed; and possess a certificate showing successful completion of the Hazwoper training. OSHA accepted Hazwoper training shall conform to all Federal, State, and Local requirements (including those specified in 29 CFR 1910.120. In addition, workers shall have additional hands-on training in use of the Personal Protective Equipment (PPE) required for their jobsite(s) in accordance with 29 CFR 1910.120.

F. Voids resulting from excavation of hazardous material shall be backfilled in accordance with Section 300-3, "Structure Excavation and Backfill," of the SSPWC and as specified in the Technical Specifications. Backfill material shall comply with Article 2. 1, "Imported Soil."

3.2 TRENCH EXCAVATION AND BACKFILL

A. Excavating and backfilling for trenches shall conform to the provisions in Section 306, "Underground Conduit Construction," of the SSPWC. Trench backfill material shall be per Table 201-1.1.2 of the SSPWC.

B. Open trenches and excavations shall be covered or barricaded to protect pedestrians and vehicles in accordance with Section 01 00 00, “3.15 Temporary Traffic Control Devices,” of the Technical Specifications. Following excavation Contractor shall minimize exposure of public to open trenches.

C. Trench excavation and shoring requirements adjacent to the existing rail shall comply with Section 7.0, “Railroads,” of the Caltrans’ California Trenching and Shoring manual to determine railroad live loading lateral pressure for shoring design. Shoring shall be designed to accommodate LRV loads as shown in the LRV Loading Diagram of MTDB’s LRT Design Criteria. All shoring within a 1 to 1 influence line from the end of the railroad ties shall be designed for a minimum Cooper E-80 load per bogie/axel.

D. Trench excavation through surface improvements shall be resurfaced in accordance with Section 32 01 17, “Trench Resurfacing,” of the Technical Specifications.

E. All surplus excavation, from whatever source, shall be disposed of outside the railroad or highway right of way in conformance with Federal, State, and local regulations.

3.3 TESTING EXCAVATED MATERIAL

A. Excavated soil may be tested for potential use as fill material in compliance with Article 2. 1, “Imported Soil,” above. Contractor shall submit test results prior to placement. Where excavated soil is compliant Contractor shall stockpile or place excavated soil as required. Stockpiling of compliant excavated soil shall remain within limits of work or designated offsite area in accordance with Section 01 00 00, “3.7 Construction Staging Area,” of the Technical Specifications.

3.4 IMPORTED SOIL AS BACKFILL

A. Where excavated soil is insufficient or does not meet soil requirements for backfill Contractor shall import suitable backfill material complying with Article 2. 1, “Imported Soil,” above.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section, unless otherwise stated.

4.2 PAYMENT

A. Unless otherwise stated full compensation for complying with the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved, unless otherwise stated, and no additional compensation will be allowed,

therefore.

B. Payment for imported soil shall be in accordance with the provisions in Section 3.34, "Changes and Extra Work Payment," of the Standard Construction Agreement and General Conditions.

C. Payment for removal of hazardous waste in excavation, including training, obtaining any necessary permits, testing and analysis, disposal, and relevant disposal fees will be made in accordance with the provisions of Section 3.34, "Changes and Extra Work Payment," of the Standard Construction Agreement and General Conditions.

END OF SECTION

SECTION 31 23 24
FLOWABLE FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Flowable fill for:
   a. Structure backfill.
   b. Utility bedding.
   c. Utility backfill.
   d. Filling abandoned utilities.

1.2 QUALITY ASSURANCE

A. Reference Standards:

1. ASTM International (ASTM):
   a. C33, Standard Specification for Concrete Aggregates.
   b. C94/C94M, Standard Specification for Ready-Mixed Concrete.
   c. C150, Standard Specification for Portland Cement.
   d. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
   e. C403/C403M, Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
   f. C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
   g. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
   h. C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
   i. C1040, Standard Test Methods for Density of Unhardened and Hardened Concrete in Place By Nuclear Methods.
   j. D4832, Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.

1.3 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, manhole, tank, or cable.

B. Excavatable Flowable Fill: Lean cement concrete fill used where future excavation may be required, such as fill for utility trenches, bridge abutments, and culverts.

C. Non-excavatable Flowable Fill: Lean cement concrete fill used where future

excavation is not anticipated, such as fill below structure foundations and filling abandoned utilities.

1.4 SUBMITTALS

A. Manufacturer's Certificate: Certify that flowable fill meet or exceed specified requirements

B. Field Quality-Control Submittals:

1. Mix Design:
   a. Furnish flowable fill mix design for each specified strength.
   b. Furnish separate mix designs when admixtures are required for the following:
      1) Flowable fill Work during hot and cold weather.
      2) Air entrained flowable fill Work.
   c. Identify design mix ingredients, proportions, properties, admixtures, and tests.
2. Furnish test results to certify flowable fill mix design properties meet or exceed specified requirements.

C. Delivery Tickets:

1. Furnish duplicate delivery tickets indicating actual materials delivered to Project Site.

D. Qualifications Statements:

1. Submit qualifications for supplier.

1.5 QUALIFICATIONS

A. Supplier:

1. Company specializing in supplying products specified in this Section with minimum three years' experience.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Minimum Conditions: Do not install flowable fill during inclement weather or when ambient temperature is less than 40 degrees F.

1.7 FIELD MEASUREMENTS

A. Verify field measurements before installing flowable fill to establish quantities required to complete the Work.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

A. Furnish materials according to project standards.

B. Flowable Fill: Excavatable type.

2.2 MATERIALS

A. Portland Cement: ASTM C150 Type I - Normal; Type II - Moderate;Type III - High Early Strength.

B. Fine Aggregates: ASTM C33

C. Water: Clean and not detrimental to concrete.

2.3 ADMIXTURES

A. Manufacturers:

1. Per ready-mix supplier.

B. Chemical Admixture: ASTM C494/C494M.

1. Type A - Water Reducing.
2. Type B - Retarding.
3. Type C - Accelerating.
4. Type D - Water Reducing and Retarding.
5. Type E - Water Reducing and Accelerating.
6. Type F - Water Reducing, High Range.
7. Type G - Water Reducing, High Range and Retarding.

C. Fly Ash: ASTM C618 Class C or F obtained from residue of electric generating plant using ground or powdered coal.

2.4 MIXES

A. Mix and deliver flowable fill according to ASTM C94/C94M, Option C.

B. Flowable Fill Design Mix:

ITEM	EXCAVATABLE	NON-EXCAVATABLE
Cement Content	75 to 100 pound/CUYD (45.5 to 59.3 kg/CU M)	N/A
Fly Ash Content	None	N/A
Water Content	Per ready-mix supplier	N/A
Air Entrainment	0 to 35%	N/A
28-Day Compressive Strength	Maximum 100 psi. (690 kPa)	N/A
Unit Mass (Wet)	80 to 110 pcf (1 280 to 1 760 kg/CU M)	N/A

ITEM	EXCAVATABLE	NON-EXCAVATABLE
Temperature, Minimum at Point of Delivery	50 degrees F (10 degrees C)	N/A

C. Provide water content in design mix to produce self-leveling, flowable fill material at time of placement.

D. Design mix air entrainment and unit mass are for laboratory design mix and source quality control only.

2.5 SOURCE QUALITY CONTROL

A. Test and analyze properties of flowable fill design mix and certify results for the following:

1. Design mix proportions by weight of each material.
2. Aggregate: ASTM C33 for material properties and gradation.
3. Properties of plastic flowable fill design mix including:
    a. Temperature.
    b. Slump.
    c. Air entrainment.
    d. Wet unit mass.
    e. Yield.
    f. Cement factor.
4. Properties of hardened flowable fill design mix including:
    a. Compressive strength at one day, seven days, and 28 days. Report compressive strength of each specimen and average specimen compressive strength.
    b. Unit mass for each specimen and average specimen unit mass at time of compressive strength testing.

B. Prepare delivery tickets containing the following information:

1. Project designation.
2. Date.
3. Time.
4. Class and quantity of flowable fill.
5. Actual batch proportions.
6. Free moisture content of aggregate.
7. Quantity of water withheld.

PART 3 - EXECUTION

3.1 EXAMINATION

3.2 VERIFY EXCAVATION IS DRY.PREPARATION

A. Support and restrain utilities to prevent movement and flotation during installation of flowable fill.

B. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before fill hardens.

C. Protect utilities and foundation drains to prevent intrusion of flowable fill.

3.3 INSTALLATION

A. Fill, Bedding, and Backfill:

a. When required, place flowable fill under water using tremie procedure.

b. Do not place flowable fill through flowing water.

1. Place flowable fill in lifts to prevent lateral pressures from exceeding structural capacity of structures and utilities.
2. Place flowable fill evenly on both sides of utilities to maintain alignment.
3. Place flowable fill to elevations indicated on Drawings without vibration or other means of compaction.

B. Filling Abandoned Utilities:

1. Verify pipes and conduits are not clogged and are sufficiently empty to permit gravity installation of flowable fill for entire length indicated to be filled.
2. Seal lower end of pipes and conduits by method to contain flowable fill and to vent trapped air caused by filling operations.
3. Place flowable fill using method to ensure there are no voids.
   a. Fill pipes and conduits from high end.
   b. Fill manholes, tanks, and other structures from grade level access points.
4. After filling pipes and conduits seal both ends.

3.4 FIELD QUALITY CONTROL

A. Perform testing according to ASTM C94/C94M.

1. Take samples for tests for every 150 cubic yards (115 CU M) of flowable fill, or fraction thereof, installed each day.
2. Sample, prepare and test four compressive strength test cylinders according to ASTM D4832. Test one specimen at three days, one at seven days, and two at 28 days.
3. Measure temperature at point of delivery when samples are prepared.

B. Perform in place penetration (density) tests using hand held penetrometer to measure penetration resistance of hardened flowable fill according to ASTM C403.

C. Defective Flowable Fill: Fill failing to meet the following test requirements or fill delivered without the following documentation.

1. Test Requirements:
    a. Minimum temperature at point of delivery.
    b. Compressive strength requirements for each type of fill.
2. Documentation: Duplicate delivery tickets.

3.5 CLEANING

A. Remove spilled and excess flowable fill from Project Site.

B. Restore facilities and Site areas damaged or contaminated by flowable fill installation to existing condition before installation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Flowable Fill shall be measured by the cubic yard. Quantity shall be confirmed by submittal of weigh tickets for all flowable fill material used on the project.

4.2 PAYMENT

A. The contract price paid per cubic yard for Flowable Fill shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in Flowable Fill, complete in place, including sawcutting, removing and disposing of pavement and base materials, as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the material and work requirements for asphalt paving to be furnished and place to the lines, grades, and dimensions in accordance with the Plans, Specifications and as directed by the Engineer.

B. Asphalt paving shall include street paving, track paving, and street rehab paving.

1.2 REFERENCES

A. City of San Diego Standard Specifications (Green Book), Current Edition

B. City of San Diego Standard Specifications (White Book), Current Edition

C. City of San Diego Standard Plans, Current Edition

D. San Diego Regional Standard Plans, Current Edition

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions, and shall include the following:

1. Compliance: Asphalt concrete mix and Materials, test reports, Manufacturer or Supplier's certification that Materials delivered to site are in compliance with Specifications.
2. Product Data: Submit to the Engineer the manufacturer's standard drawings or catalog cuts, and Certificate of Conformance for materials that are specified.
3. Field quality – test reports.

B. Submit for approval, mix designs for D2 PG 64-10 and B PG 64-10 asphalt concrete.

PART 2 - PRODUCTS

2.1 BITUMINOUS MATERIAL

A. Hot Mix Asphalt (HMA)

1. Base Course:
   a. Base course shall be Grade B-PG 64-10 and shall conform to Section 203-6, “Asphalt Concrete,” of the SSPWC.
2. Wearing (Surface) Course:
   a. Wearing course shall be Grade D2-PG 64-10 and shall conform to Section 203-6, “Asphalt Concrete,” of the SSPWC.

B. Coatings

1. Prime Coat:
    a. Prime coat shall be Grade SC-250
2. Tack Coat:
    a. Tack coat shall be Grade PG 64-10

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

A. After demolition and removal of existing paved areas per 02 41 13.13 “Paving Removal,” of the Technical Specifications, the ground shall be leveled and proof-rolled to 95-percent compaction. The subgrade shall be graded to the elevations shown on the Plans. Where grade is below planned grade, approved available material selected from excavation shall be added until the appropriate grade is met. Approved material shall comply with 31 23 00, “Excavation and Fill,” of the Technical Specifications.

B. Where the subgrade preparation extends into areas where subgrade material is unsuitable to meet compaction requirements or contains organic material, Contractor shall remove all unsuitable material to a depth of 3-feet below finished grade in accordance with the Section 300-2.2 “Unsuitable Material,” of the SSPWC. Imported fill shall be placed where required and compacted to 90-percent relative compaction. 6-inches of Class 2 Base shall be placed above the imported fill and compacted to 95-percent relative compaction. Contractor shall allow time for Engineer to perform quality assurance testing of the imported fill and Class 2 Base prior to placing finish paving. The volume of such excavation and fill will be measured and paid for be in accordance with the provisions in Section 3.34, "Changes and Extra Work Payment,” of the Standard Construction Agreement and General Conditions.

3.2 ASPHALT PAVING INSTALLATION

A. Asphalt concrete paving shall be of the type indicated and placed to the limits shown on the plans.

B. Geotextile fabric shall be installed between the Asphalt Paving and the existing ballast and ties or subgrade, as specified on the contract drawings.

C. Placement of asphalt concrete shall be in accordance with Section 302-5, “Asphalt Concrete Pavement,” of the SSPWC. The first two lifts shall consist of base course paving. Wearing course shall be 2-inches minimum. A wearing course paving mix shall be provided when only a single lift is required.

D. Placement and compaction of asphalt around the new panels, rubber rail interface, and rail shall be done with special care to avoid damaging or covering the panels, rubber rail interface, or rail.

E. Should it become necessary to remove and dispose of material from the prepared earthen subgrade and to again prepare the subgrade to accommodate a thicker pavement structure than assumed on the Plans, the volume of such excavation will be measured and paid for be in accordance with the provisions in Section 3.34, "Changes and Extra Work Payment,” of the

Standard Construction Agreement and General Conditions.

F. Should it become necessary to add earthen embankment to the prepared subgrade and to again prepare the subgrade to accommodate a thinner pavement structure than assumed on the Plans. The volume for such embankment and prepared subgrade shall be measured and paid for be in accordance with the provisions in Section 3.34, "Changes and Extra Work Payment," of the Standard Construction Agreement and General Conditions.

G. All asphalt concrete surfaces including patches and overlays, and all existing adjacent area(s) visibly disturbed by the Contractor's operations, as determined by the Engineer, shall receive a seal coat.

H. Seal coat for asphalt concrete surfaces within roadways and streets including bus lanes shall be a fog seal coat in accordance with Section 37-4.02, "Fog Seals," of the Caltrans Standard Specifications and as specified in these special provisions.

3.3 FINISHING ROADWAY

A. The work performed in connection with finishing roadway shall conform to the provisions of Section 301, “Treated Soil, Subgrade Preparation, and placement of Base Materials,” of the SSPWC, and Section 3.28, “Protection of Work and Property,” of the Standard Construction Agreement and General Conditions and these specifications.

B. All references to “Roadway” or “Highway” shall be considered applicable to transit and railway facilities.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Install HMA Pavement shall be measured by the ton, determined as provided in Section 302-5.9, “Measurements and Payment,” of the SSPWC. Quantity shall be confirmed by submittal of weigh tickets for all asphalt concrete material used on the project.

4.2 PAYMENT

A. The contract price paid per ton for Install HMA Pavement shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in HMA including subgrade preparation, tack coats, mixing, placing, shaping, compacting, seal coats, and finishing the HMA, complete in place, as specified in the SSPWC and these Technical Specifications, and as directed by the Engineer.

END OF SECTION

SECTION 32 13 13
CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the material and work requirements for concrete paving to be furnished and place to the lines, grades, and dimensions in accordance with the Plans, Specifications and as directed by the Engineer.

1.2 REFERENCES

A. City of San Diego Standard Specifications (Green Book), Current Edition

B. City of San Diego Standard Specifications, Green Book Supplement (WhiteBook), Current Edition

C. City of San Diego Standard Plans, Current Edition

D. San Diego Regional Standard Plans, Current Edition

E. ASTM International

1. ASTM C150 Standard Specification for Portland Cement
2. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete
3. ASTM C928 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions, and shall include the following:

1. Compliance: Concrete mix and Materials, test reports, Manufacturer or Supplier's certification that Materials delivered to site are in compliance with Specifications.
2. Product Data: Submit to the Engineer the manufacturer's standard drawings or catalog cuts, and Certificate of Conformance for joint filler or other materials, which are specified to conform to publications referenced under “Materials” in this Section.
3. Field quality – test reports.
4. Expansion and control joint layout plan for concrete paving locations indicated on the contract drawings.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall be 560 C 3250 in accordance with Section 201-1, “Portland

Cement Concrete," of the SSPWC. Where Contractor proposed the use of a pumper for concrete placement the concrete shall be 560 C 3250P.

2.2 BOND BREAKER

A. Multi-purpose 10 mil (min.) polyethylene sheeting or approved equal.

PART 3 - EXECUTION

3.1 CONCRETE PAVING

A. Installation shall not commence until track installation and track stabilization have been completed and accepted by MTS and the Engineer.

B. Concrete pavement shall be of the type indicated and placed over track ballast material within trackway system and adjoining areas to the limits shown on the plans.

C. Prior to placement of concrete a bond breaker shall be placed over ballast, ties, track fasteners, and rail as shown on the plans.

D. Placement of concrete pavement shall be in accordance with 302-6, "Portland Cement Concrete Pavement," of the SSPWC.

E. Placement and finishing of concrete around the track work shall be done with special care to avoid damaging or covering the rails. The Contractor shall protect the head surface of the rail during the concrete pour using tape or another approved method such that this protection can be completely removed once the concrete has set.

F. Concrete shall receive a smooth trowel finish.

G. Concrete reinforcement shall be in accordance with Section 03 05 00, "Concrete" of the Technical Specifications and the Plans.

H. Expansion joints placement within the trackway slab shall match the expansion joint placement of the adjacent sidewalk construction. Control joints shall be placed such that their placement matches that of the adjacent sidewalk construction.

I. Pavement shall have a compressive strength of 2400psi 12 hours after placement.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Concrete Paving shall be measured for payment by the cubic yard. Quantities measured for payment will be calculated on the basis of the dimensions shown on the plans not by quantity placed.

4.2 PAYMENT

A. The contract price paid per cubic yard for Concrete Paving shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Concrete Paving including bond breaker, concrete reinforcement, joint layout and

installation, and finishing the Concrete Paving, complete in place, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This work includes furnishing materials, labor, transportation, services, and equipment necessary for the application of traffic striping, curb and pavement markings, at the locations shown on the Plans and as specified in these Technical Specifications.

1.2 REFERENCE

A. City of San Diego Standard Specifications (Green Book), Current Edition

B. City of San Diego Standard Specifications (White Book), Current Edition

C. State of California, Department of Transportation, Standard Plans, Current Edition.

D. State of California, Department of Transportation, Standard Specifications, Current Edition.

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions, and shall include the following:

1. Product Data: Submit manufacturer’s data cuts sheets, installation procedures, and routine maintenance.
2. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratories to qualify that materials proposed for use in the Project are in compliance with all regulatory requirements and meet or exceed the properties indicated in the specifications.

1.4 QUALITY ASSURANCE

A. Provide striping and marking material, and markers as produced by single manufacturers with a minimum of three (3) years of experience in the manufacturing of specific items.

1.5 DELIVERY, STORAGE AND HANDLING

A. In general, all materials shall be delivered, stored and handled in a manner that protects them from damage, moisture, dirt and intrusion of foreign materials. When applicable ordering and delivery of materials shall be planned according to the work progress to minimize storage on site, where there are higher possibilities of damages, deterioration, or security issues of materials.

B. Materials delivered shall be checked against the specifications and approved samples.

PART 2 - PRODUCTS

2.1 TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS

A. All traffic striping including traffic lines shall be painted, unless stated otherwise.

B. All pavement markings including arrows, symbols, words, limit lines, and crosswalks shall be painted.

PART 3 - EXECUTION

3.1 TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS

A. Where striping joins existing striping, as shown on the plans, the Contractor shall begin and end the transition from the existing striping pattern into or from the new striping pattern a sufficient distance to ensure continuity of the striping pattern.

B. Repaint existing striping/marking shall require two (2) coats.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Unless otherwise indicated Pavement Markings shall be measured as lump sum. Pavement Markings (by Type) shall be measured in accordance with the SSPWC.

4.2 PAYMENT

A. The contract lump sum price paid for Pavement Markings shall include furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved removing, applying of all Pavement Markings, and all other incidentals as shown on the plans, as a specified in these specifications and as directed by the Engineer.

END OF SECTION

SECTION 34 01 23.13
EQUIPMENT REMOVAL AND SALVAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the furnishing of all labor, materials and equipment necessary and incidental to the demolition and removal of miscellaneous items within the project limits of work shown on the drawings; including but not limited to existing wheel truing machines, rail, ties, and ballast from the site. Equipment shown to be salvaged or found in a condition acceptable for construction shall be salvaged.

B. Work under this section shall include but shall not be limited to:

1. Removal and disposal or salvage of existing rail and ties.
2. Removal and disposal of existing wheel truing machines.
3. Protection of all MTS and adjacent property and infrastructure from damage and pollution during demolition and removal activities.

C. Any existing materials lying within the track construction limits, including boulders, construction debris, rubbish, and all other undesirable materials shall be removed and disposed of under this Section.

1.2 PROJECT CONDITIONS

A. The Contractor shall be responsible for visiting and examining the project site to assess and determine the extent of demolition, associated work, debris removal, disposal and general work to be done under this Section.

B. On-site burning of demolition materials will not be permitted.

C. Demolition work shall not preclude the operation of vehicular traffic, including LRV operations.

D. Provide continuous noise and dust abatement as required and prevent disturbances and nuisances to the public, workers, and the occupants of adjacent premises and the surrounding areas. Dampen areas affected by demolition operations as necessary to prevent dust nuisance and as directed by the Engineer.

1.3 REFERENCES

A. The Contractor shall comply with provisions of all local, state and federal regulations, codes, specifications, and standards and the most recent edition, including all addenda, of the following codes, specifications, standards, and recommended practices, except as otherwise indicated:

CPUC	California Public Utilities Commission Caltrans
Caltrans	Standard Specifications
SDRSD	San Diego Regional Standards Drawings and Regional Supplement Amendments
AREMA	American Railway Engineering and Maintenance of Way Association
FRA	Federal Railroad Administration
OSHA	Occupational Safety and Health Standards of the U.S. Department of Labor
CAL/OSHA	State of California – Division of Occupational Safety and Health (DOSH)
ANSI	American National Standards Institute, ANSI A10.6, “Safety Requirements for Demolition.”

B. For the Wheel Truing Machines, comply with the following:

EPA (40 CFR Parts 260-273): Applicable due to the machine containing regulated hazardous waste (hydraulic oil, metal debris).

RCRA (Resource Conservation and Recovery Act): Waste characterization is required to determine if materials are hazardous.

TSCA (Toxic Substances Control Act): Applies if PCBs are present in older hydraulic fluids or electrical components.

Local/State Regulations: Must consult with state environmental protection agency and local waste disposal authorities for specific disposal and transport requirements.

1.4 SUBMITTALS

A. Submit the following:

1. Specific demolition and removal plan for existing rail, and ties. Include how demolition is coordinated with construction of the new trackwork and structures.
2. Specific demolition and removal plan for existing wheel truing machines. Include how demolition is coordinated with the MTS LRV storage yards and maintenance facilities.
3. Equipment, haul routes and disposal sites to be used in the demolition and disposal work. Include the access routes to the project sites through the MTS LRV storage yards.
4. Provide a copy of written permission of property owners receiving disposal material including a clause holding MTS harmless.
5. Provide a copy of manifests showing delivery of disposed materials in accordance with the Plan and permit conditions.
6. Provide a copy of Certification that all demolished materials removed from the site have been disposed of in accordance with applicable laws and regulations and Contract Documents.
7. A schedule of values for all removal and demolition work.

B. Copies of required permits and certifications shall be submitted to the Engineer prior to performing work required permits and certifications.

1.5 SAFTEY AND PROTECTION

A. Contractor shall verify that any water or electrical system involved in the removal work is de-energized. Coordinate with the utility company to have water service meters, electrical power lines, and electrical power meter devices removed as needed.

B. Protect buildings and structures on adjacent properties, and other items that are to remain. Contractor shall repair damages at the Contractor's expense.

C. Provide, erect, and maintain barriers, barricades, lighting, and guardrails as required protecting the MTS personnel, the general public and workers.

D. Protect pipelines, wires, cables, electrical panels, and conduits located above or below ground if such items are to remain. Damage to said items if caused by actions or omissions of Contractor shall be repaired at the Contractor's expense.

E. Cease operation and notify Engineer immediately if the work appears to endanger life, facilities, or property. Do not resume operations until safe conditions have been restored.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. All temporary or permanent materials as required for the proper execution of the work of this section shall be provided by the Contractor

PART 3 - EXECUTION

3.1 GENERAL

A. Perform work in accordance with applicable Federal, State, County, and City Building Codes and Regulations. The work shall meet safety standards and requirements including those of CAL/OSHA. The Contractor shall have at the work site copies of applicable extracts of CAL/OSHA Construction Safety Orders and General Industrial Safety Orders.

B. Control dust to meet the Air Quality Management District regulations.

C. Items not shown on the Contract Documents or mentioned in these Provisions, which are encountered during the Contractor's operations, shall be brought to the attention of the Engineer. The Engineer will determine the disposition of the items.

D. Should the Contractor decide to move any large items intact off the site, arrangements for permits, clearances, and utilities shall be the Contractor's responsibility.

E. Remove from site vermin infested and harmful materials. Dispose of such items in accordance with applicable regulations so as not to endanger the health of workers, tenants, or the public.

F. Burning of material on site shall not be permitted.

G. All debris shall be removed and handled to prevent entering the drainage and sewage systems.

H. Items shown on the Contract Documents or identified within these Provisions to be salvaged shall be protected from damage and stored for reuse. Any material salvaged for others shall be inventoried, and a notice shall be provided to the Engineer within five (5) days stating the type of material, the quantity salvaged, the condition, the storage protection, and the location of the material.

3.2 PRELIMARY WORK

A. Inspect and protect structures and facilities to remain and prevent movement and damage during construction work.

B. Prior to demolition, verify that all utility companies have been notified and service has been disconnected as required.

C. Construct necessary safety signs, barricades, fences, ramps, and walks to protect pedestrians, and vehicular traffic.

D. If required, call Underground Service Alert at (800) 422-4133 to obtain a Dig Alert ID number 48 hours in advance of start of excavation.

E. If required, call “Call Before You Dig” at (800) AT-FIBER (283-4237) for information on fiber-optic cables. MTS maintenance staff shall be notified and the contractor shall coordinate with MTS staff to locate its existing facilities prior to commencing work.

3.3 TRACK AND TIES REMOVAL

A. Perform demolition and removal of all trackwork within the right-of-way in accordance with an approved Demolition Plan, meeting the minimum safety requirements of CAL-OSHA, ANSI, and governing agencies.

B. The Contractor shall remove and dispose of all existing track materials including but not limited to rail, ties, OTM; except where noted otherwise on the drawings or directed by the Engineer. Salvaged track material found to be in acceptable condition per the Engineer, may be used in temporary application for shoofly construction.

3.4 WHEEL TRUING MACHINE REMOVAL

A. Decommissioning. Contractor is responsible for decommissioning existing wheel truing machines.

B. Waste Characterization. Prior to removal and disposal of equipment, the contractor shall:
   1. Sample hydraulic fluid for classification (e.g., flammability, toxicity).
   2. Analyze sludge/metal debris for heavy metals (lead, chromium, etc.).
   3. Test for contamination from flood exposure (e.g., biological or chemical agents).
   4. Complete the Waste Profile Sheet, required by hazardous waste handlers.

C. Disposal Strategy. The decommissioning of the wheel truing machines shall include:
   1. Drain Fluids: Remove and containerize hydraulic oil for recycling or hazardous waste disposal.
   2. Remove Debris: Vacuum or shovel metal filings and sludge. Store in sealed, labeled containers.
   3. Clean Exterior Surfaces: Decontaminate surfaces to prevent further fluid release during lifting and transport.

D. Demolition/Disassembly (if applicable).
   1. If equipment is too large to lift whole, segments may be divided into manageable parts.
   2. Cut using cold methods (e.g., saws, shears) to prevent ignition of residues.
   3. Label and segregate waste streams (metal, electrical, fluid-contaminated parts).

E. Transportation.
   1. Contractor shall use a licensed hazardous waste transporter.
   2. All waste manifests shall be in compliance with EPA Hazardous Waste.

F. Manifest System.
   1. Equipment and waste shall be transported to:
      a. Certified Scrap Metal Recycler (for clean steel parts), or
      b. TSDF (Treatment, Storage, and Disposal Facility) for hazardous waste components.

G. Safety Protocols.
   1. Hazardous Materials Handling: Contractor shall use PPE (gloves, respirators, goggles); ensure SDS (Safety Data Sheets) are available.
   2. Lockout/Tagout (LOTO): Contractor, in coordination with MTD, shall ensure all electrical/hydraulic energy sources are de-energized and tagged.
   3. Confined Space Entry: The pit may qualify as a permit-required confined space. Follow OSHA 29 CFR 1910.146 protocols.
   4. Rigging and Lifting: Contractor shall prepare a lift plan and include certified riggers and rated equipment used for heavy loads.

5. Contractor shall be responsible for decommissioning wheel truing machines, including coordinating with MTS operations within Building A and C, including LRV storage yards adjacent to each building.

3.5 UTILITIES

A. The Contractor shall coordinate work of this section with utility companies and agencies and procedures including the regulatory requirements as specified in Section 5-1.17, “Notification to Utility Owners.”

3.6 BACKFILL OF DEMOLITION EXCAVATIONS

A. Excavations created by demolition activities shall be backfilled to adjacent existing grade as prescribed in Division III, Section 19, “Earthwork.”

PART 4 - MEASUREMENT AND PAYMENT

A. Equipment Removal and Salvage shall be measured as Lump sum.

4.2 PAYMENT

A. The contract lump sum price paid for Equipment Removal and Salvage shall include furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved removing, salvaging and disposing of all equipment, including wheel truing machines, and all other incidentals as shown on the plans, as a specified in these specifications and as directed by the Engineer.

Additionally, the lump sum price paid for the wheel truing machine removals shall include the removal of the 115 RE rail attached to the machines and disposal of all residual liquids (water, hydraulic fluids, oils, etc.) located within each pit.

END OF SECTION

SECTION 34 11 13
TRACK RAILS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes specifications for the manufacturing, testing, inspection, fabricating, shipping, unloading, and stockpiling of steel rail as specified herein.

1.2 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. The American Railway Engineering and Maintenance-of-Way Association (AREMA), Current Edition
    a. AREMA Manual for Railway Engineering (AREMA Manual)
    b. Portfolio of Trackwork Plans
2. Association of American Railroads (AAR)
    a. AAR: Manual of Standards and Rec. Practices
3. ASTM International
    a. ASTM A578/A578M Standard Specification for Straight-Beam Ultrasonic Examination of Rolled Steel Plates for Special Application
    b. ASTM E10 Standard Test Method for Brinell Hardness of Metallic Materials
    c. ASTM E164 Standard Practice for Contact Ultrasonic Testing of Weldments
4. American Welding Society (AWS):
    a. AWS B2.1: Standards for Welding Procedures and Performance Qualifications
    b. AWS D1.1: Structural Welding Code

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions.

B. Submit the following:

1. Product Data: Submit the following product data for each rail section:
    a. Steel manufacturing process.
    b. Hydrogen elimination process
    c. Heat treatment process, as applicable
    d. Alloy rail chemical composition

e. Production records and production test results. These records and test results shall be provided at the time of shipment of associated rails.

2. Submit Test Program Plan and test results as required under the program.
3. Mill Certificates: Submit mill certifications complete with the following data with each shipment:
   a. Rail section and type.
   b. Heat number.
   c. Number of pieces in each heat.
   d. Chemical analysis.
   e. Brinell hardness readings.
   f. Macrotech test results.
   g. Ultrasound test results.
4. Method for hydrogen elimination.
5. Method for head hardening premium rail.
6. Description of the ultrasonic testing procedures, and certifications for the testing personnel. Hard copy results for rails with rejectable discontinuities.
7. Method of identifying the rail.
8. Method of handling, loading, shipping, unloading and stockpiling the running rail not later than 30 days before shipment. Include working drawings showing the rail stocking arrangement.
9. Ultrasonic Technician qualification certification for the individuals conducting the testing at least 30 days before the commencement of the in-plant inspection.

1.4 QUALITY ASSURANCE

A. Develop and maintain a quality control program regulating methods, procedures, and processes to ensure compliance with standards of quality as specified herein. Program shall comply with Article 3.20 of Section 01 00 00 General Requirements.

B. Test Program Plan

1. Provide a test program plan including a product flow chart identifying the approach for accomplishing each of the specified rail inspections and tests. Make available at rail mill a detailed narrative for each test and inspection describing the test set-up; equipment and instrumentation used; procedure implemented; and the anticipated, as well as acceptable, test results. Include drawings showing the relationship of the rail and significant components of the test equipment, as necessary, to describe the test set-up and procedure. Include in the test program plan the test sequencing.
2. Include key equipment specifications and calibration methods as requested for testing equipment used to perform rail testing and inspection in the test program plan. Indicate the calibration certificates to be submitted with the test reports.

3. Include the identity and qualifications of personnel performing rail testing and inspection and certification records for personnel performing nondestructive testing.
4. Include a description list of the testing facilities.
5. Include the proposed format for reporting test data.
6. Include the projected schedule for submittals of test procedures, test executions, and test results reports.
7. After approval of the test program plan, the proposed changes shall be approved by the Contractor Quality Control (QC) or its designee before implementing the change.
8. Perform tests and analyses specified in Chapter 4, Part 2, of the AREMA Manual and submit the results in accordance with this Section.

C. Testing Facilities

1. Perform rail inspection and testing at the rail mill using qualified manufacturer's personnel. The rail mill will use the equipment for the rail testing and inspection described herein. Rail testing and inspection equipment, and personnel, will be subject to approval by the Contractor QC or its designee. The Contractor QC or its designee, or an independent witness designated by the Contractor QC or its designee, will monitor the operations at the rail plant to ensure that the inspections and tests are being performed in accordance with accepted procedures and in compliance with these Specifications.

D. Qualification of Testing Personnel

1. Use personnel performing tests and inspections who are qualified for such Work by virtue of previous experience or training.
2. Use personnel performing nondestructive testing who are qualified and certified in accordance with the American Society for Nondestructive Testing Recommended Practice No. SNT-TC-1A. Only persons certified for NDT Level I, and Working under a NDT Level II person or persons certified for NDT Level II, may perform nondestructive testing.

E. Testing Equipment

1. Use testing equipment that is in good operating condition, of adequate capacity and range, and accurately calibrated, certified and traceable to recognized national standards such as the National Institute of Standards and Technology. Calibrate testing equipment in accordance with the accepted Quality Assurance Plan.

F. Test Report

1. The rail mill's standard, computer-generated, test reports may be used upon review and acceptance by the Contractor QC or its designee. Supplemental reports may be required by the Contractor QC or its designee, to provide additional information. Submittal list shows requirements.

2. MTS Notification – Notify MTS and Contractor QC or their designee in writing not less than five (5) Working Days (WD's) in advance of dates scheduled for any tests or inspections. MTS and contractor QC or their designee retain the right to witness the tests.
3. Whether or not the Engineer inspects or tests any materials, the Contractor shall not be relieved from any responsibility regarding defects or other failures to meet the Contract requirements, nor shall such inspection or testing by the Engineer be considered as a guarantee of acceptance of any material that may be delivered later.

G. Tolerances

1. Manufacturing tolerances and Dimensions to conform to the AREMA Manual "Specifications for Steel Rails".
2. Workmanship to conform to AREMA Manual, Chapter 4, Section 2.1.13, "Workmanship."

1.5 DELIVERY, STORAGE AND HANDLING

A. General: In accordance with AREMA Paragraph 2.1.16 and the following

1. Delivery:
   a. Rail to be used for this Contract to be installed by this Contract shall be delivered directly to the Contractor's own storage facilities at or near the job site.
2. Load, unload, handle, and store rail by accepted methods to prevent kinking, bending, nicking, or otherwise damaging the rail. Comply with AREMA and the following:
   a. In unloading operations, do not drop rails, place each length of rail with the head up and with sufficient support under the base.
   b. Do not subject individual rail bundles to excessive static loading.
   c. Avoid sudden impact or dynamic loading and prevent high stressing arising from point or line loading.
   d. Avoid excess cantilever of the rail and beyond the slinging points to prevent permanent bending and excessive stressing of the rail.
      1) Single point slinging of straight rails longer than 39 feet is prohibited.
      2) Locate slinging points at uniform lengths along the load so that rails are always supported in a horizontal position. Spanner beams are recommended.
3. Rail Grappling Equipment:
   a. Rail support, handling, clamping, or pinch rollers shall be contoured properly to match the rail profile and thus avoid localized point or line contact.
   b. Chains and Slings:
      1) The use of chains and wires that may cause surface damage is not allowed.

2) Use only slings that do not cause surface damage or notching. Terylene or nylon strapping is recommended, with an additional sleeve where the sling is in contact with the rail. Flat-profile chain link slings with a protective sleeve are also recommended.

4. Always use sufficient timber dunnage and take particular care when extracting slings from around rail lifts in order to ensure they are not “ripped out.”

5. Sort pre-curved rail according to each track curve and load, deliver and stockpile same track curve rails together in the same tiers.

   a. Do not stockpile or store rail within public right-of-way, unless approved otherwise. Stockpile standard rails and high-strength rails separately and with the branding facing on one side only.

B. Stockpile rail head up and according to rail type. Place separators between each tier. Support rail a maximum distance between supports of 25 feet. Stack rail a maximum of ten tiers high.

PART 2 - PRODUCTS

2.1 RAIL

A. 115 RE rail where specified shall be high strength head hardened steel rail conforming to AREMA Volume 1, Chapter 4, Section 2.1, Specifications for Steel Rails.

B. Furnish rails with blank ends unless otherwise noted.

PART 3 - EXECUTION

3.1 MANUFACTURE

A. Conform to AREMA Manual, Chapter 4, Section 2.1.2, “Manufacture.”

B. Conform to AREAMA Manual, Chapter 4, Section 2.1.7, “Hydrogen Elimination.”

3.2 RAIL CUTTING AND END PREPARATION

A. Rails used for electric-flash butt welds shall have their ends saw-cut or abrasive disc-cut clean and square by means of accepted equipment.

B. Torch cutting of rail is prohibited.

C. The head and base of the rail for a length of approximately six inches from welding end shall have mill scale removed down to bright metal.

D. All burrs shall be removed from the area where the welding current carrying electrodes contact on the head and base of the rail.

E. Holes will not be permitted in the rail, except as approved by the Engineer.

3.3 RAIL WELDING – N/A

3.4 TESTING

A. Brinell Hardness Test - Perform in accordance with AREMA Manual, Chapter 4, Section 2.1.3.2, Surface Hardness" and 2.1.3.3, "Internal Hardness of High Strength Rail."

B. Ultrasonic Testing - Determine the internal condition of the rails by nondestructive testing in accordance with AREMA Manual, Chapter 4, Section 2.1.8, "Ultrasonic Testing."

C. Manual ultrasonic testing - In accordance with AREMA Manual Chapter 4, Section 2.1.17.2, "Manual Ultrasonic Testing."

D. Tensile Test – Perform in accordance with AREMA Manual Chapter 4, Section 2.1.3.4, "Tensile Properties."

E. Brinell Hardness Test – Perform in accordance with Per AREMA Manual Chapter 4, Section 2.1.3.3, “Internal Hardness of High-Strength Rail.”

F. Macro Etch Test - Perform in accordance with AREMA Manual Chapter 4, Section 2.1.9, “Interior Condition/Macro Etch Standards.”

G. Defective Rail - Rework, retreat, cut-back or reject rails failing to meet the requirements of these Specifications in accordance with the AREMA Manual.

H. Track Rails shall be installed in accordance with Section 34 72 13, “Railway Line Construction”.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Track Rails shall be measured by the track foot, as shown on the plans. Quantities measured for payment will be calculated on the basis of the dimensions shown on the plans.

4.2 PAYMENT

A. The contract price paid per track foot for Track Rails shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in Track Rails, as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

END OF SECTION

SECTION 34 11 19
TRACK RAIL JOINTS

PART 1 - GENERAL

1.1 SUMMARY

A. Description:

1. This Section includes requirements for furnishing, fabricating, delivering, installation, and testing of bonded (“glued”) insulated rail joints for 115 RE rail specified.
2. Insulated rail joints will include both shop fabricated plug rails and kits designed for field assembly and installation. Insulated joints outside limits of special trackwork shall be furnished as plug rails.
3. Insulated rail joints that are internal to a special trackwork unit shall be furnished by the special trackwork fabricator as a part of the special trackwork layout.

B. Section Includes:

1. Installers
2. Assembly Preparation
3. Joint Assembly
4. Joint Installation
5. Field Quality Control

1.2 REFERENCES

A. Association of American Railroads (AAR):

1. AAR – Signal Manual Assembly and Testing of Insulating Track Fittings, Part 14.5.1

B. American National Standards Institute (ANSI):

1. ANSI B1.1 – Unified Inch Screw Threads (UN and UNR Tread Form)
2. ANSI B18.2.1 – Square and Hex Bolts and Screws (Inch Series)

C. American Railway Engineering and Maintenance of Way Association (AREMA), Current Edition:

1. AREMA Publication – Manual for Railway Engineering, Chapter 4 Section 3.8 Specification for Bonded Insulated Rail Joints
2. AREMA Portfolio of Trackwork Plans – AREMA Standard Plan No. 1005 – Beveling of Rail Ends for Special Trackwork
3. AREMA Signal Manual Part 14.5.1

D. ASTM International (ASTM):

1. ASTM F3125 – Standard Specification for High Strength Structural Bolts, Steel, and Alloy Steel, Heat Treated, 120 ksi and 150 ksi Minimum Tensile Strength
2. ASTM B633 – Electrodeposited Coatings of Zinc on Iron and Steel Strength
3. ASTM D257 – DC Resistance or Conductance of Insulating Materials
4. ASTM D1002 – Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)
5. ASTM F436 – Hardened Steel Washers

E. American Society of Mechanical Engineers (ASME)

1. ASME B18.16.6 – Prevailing Torque Locknuts

F. Steel Structures Painting Council (SSPC):

1. SSPC-SP 10 – Near-White Metal Blast Cleaning

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.09, “Submittals,” of the Standard Construction Agreement and General Conditions, and shall include the following:

1. Submit the following information:
   a. Shop Drawings
      1) Bonded (glued) insulated joints for field fabrication in 115 RE rail.
      2) Shop-fabricated bonded (glued) insulated joint 115 RE plug rails.
   b. Methods and Procedures
      1) Manufacturer’s quality plan for manufacture of bonded (glued) insulated joint components, including adhesive.
      2) Manufacturer’s instructions, including installation methods and procedures for 115 RE rail.
      3) Proposed procedure for maintaining the specified weld gap in the continuous welded rail during field installation of bonded (glued) joint rail plugs.
      4) Proposed procedure for positioning insulated and welded joints on concrete crosstie and direct fixation fasteners, where applicable.
   c. Qualifications of the selected independent testing laboratory and testing personnel.
      1) Test Results:
         a) Test results for bonded (glued) insulated joint testing for 115 RE rail.
         b) Proposed alternate methods of dynamically testing bonded (glued) insulated joints in accordance with Article 2.03A.3 herein.

1.4 QUALITY ASSURANCE

A. Perform laboratory testing as specified herein at the expense of the Contractor and at no additional cost to MTS.

B. Use a certified independent testing laboratory experienced in performing all tests required by this Section to perform, or witness testing and certify the results.

C. Manufacturer Certification: Manufacturer of the insulated joints shall have a quality control program for manufacturing the bonding adhesive used in the bonded insulated joints, including how it is regulated, maintained, and monitored.

D. Before permanently installing bonded insulated joints, prequalify each installation crew and its foreman by testing two samples of bonded joints in accordance with the longitudinal compression test specified herein. Except as allowed in Article 2.03 prepare the test samples in track. Perform the bonded insulated joints tests with two samples using high strength rail.

E. Failure of a test sample disqualifies the responsible foreman or crew for permanent installation Work. Assign a new foreman or crew and repeat procedure and test.

F. Use equipment that is specifically designed to fasten proprietary bolts in bonded (glued) joint installation. Use the same equipment for field installation of bonded (glued) joints and for assembling test samples.

PART 2 - PRODUCTS

2.1 GENERAL

A. Bonded insulated rail joints shall comply with the requirements of the AREMA Manual for Railway Engineering, Chapter 4, Section 3.8, Specification for Bonded Insulation Rail joints, except as modified by this Section.

B. Insulated rail joints shall be furnished as factory-fabricated insulated joint plug rails unless the location of the joint makes it impractical to provide anything other than a field fabricated insulated joint.

C. Insulated joint plug rail shall be furnished at a minimum length of 19’-6” unless specified otherwise.

2.2 BONDED INSULATED JOINTS

A. The following requirements apply to all types of joint bars:

1. Provide joint bars a minimum of 36-inches long, with six (6) holes, shaped to fit 115 RE rail.
2. Locate holes as shown and specified in the AREMA Manual for Railway Engineering, Volume 1, Chapter 4 Rail, Sections 3.2 Joint Bars and Assemblies and 3.3 Rail Drillings, Bar Punchings and Bolts. Deburr the holes after drilling.
3. Provide bolt diameters in accordance with the manufacturer’s requirements according to kit and rail size standards.

B. Bonded (“Glued”) Insulated Joints

1. Furnish bonded (glued) insulated joints complete with joint bars; end posts, bushings, washers, hex head bolts and nuts, and adhesive as recommended by the manufacturer and in accordance with the Association of American Railroads (AAR) Part 14.5.1.
2. Adhesives shall be in accordance with ASTM D1002 Strength Properties of Adhesives (Metal to Metal).
3. Joint Bars: Provide joint bars for bonded (glued) insulated joints that make full face contact with the configuration of 115 RE rail and fabricated from quenched carbon steel as specified in the AREMA Manual for Railway Engineering, Volume 1, Chapter 4 Rail, Section 3.4 Specifications for Quenched Carbon-Steel Joint Bars, Microalloyed Joint Bars and Forged Compromise Joint Bars. The bonded joint bar clearance envelope for 115 RE rail is shown on Figure 34 11 19.13-1.
    a. Provide joint bar lengths within plus or minus 1/8-inch of the dimension shown on the shop drawings.
    b. Ensure that those portions of the joint bars adjacent to the tangent rail are straight to within a tolerance of plus or minus 1/32-inch.
    c. Joint bars to be installed in curved closure rails may be pre-curved to suit turnout radius to eliminate potential tangent characteristics.
    d. Fabricate the inside face of the joint bars smooth with no stamping or branding, and pre-bond the insulating material to the joint bar face.
4. Insulating Materials: Comply with AREMA and meet the electrical testing specified herein.
5. End Posts: Provide 3/I6-inch thick end posts, and do not allow them to project below the base of the rail.
6. Adhesive: Provide adhesive that is within its shelf life at the time of use and has been stored in accordance with the adhesive manufacturer’s recommendations.
7. Rail used in the fabrication of bonded insulated joint plugs shall be high strength rail complying with Section 34 11 13, “Track Rails”.
8. Bolts: Fasten glued insulated joints together with six (6) hex head bolts that meet the chemical composition and mechanical property requirements of ANSI B1.1 and B.18.2.1, ASTM F3125 and ASME B18.16.6, as applicable.

C. Bolt tension: As specified by the manufacturer.

1. Provide bolt hole sizes in accordance with the glued (bonded) insulated joint manufacturer’s recommendation.
2. If a bolt hole diameter is larger than 13/16-inches, place ASTM F436 hardened washers between the joint bars and bolt head and nut.
3. Bolts, nuts and washers to be coated in accordance with ASTM B633
4. “Pin bolts” are not permitted.

2.3 SOURCE QUALITY CONTROL

A. Bonded (“glued”) Insulated Joint Qualification Testing Requirements:

1. Do not begin testing before shop drawings and installation procedures have been reviewed by the Engineer.
2. Test three bonded (glued) insulated joints.
3. Test two (2) glued insulated joints as specified in Article 2.03B herein.
4. Test the remaining glued insulated joint as specified in Articles 2.03C, 2.03D, 2.03E, and 2.03F herein.
5. Other methods of testing the joint dynamically may be submitted to the Engineer for review.
6. Should the joint assembly fail to meet the requirements of this Article, the insulated joint design will not be accepted.

B. Longitudinal Compression Test: Comply with AREMA.

C. Electrical Resistance Test: Comply with AREMA and ASTM D257.

D. Electrical Impedance Test:

1. Electrical Impedance Test Procedure:
   a. Apply a potential of 50 volts (AC) to the rail across the joint.
   b. Increase the frequency from 20 hertz to 10 kilohertz in ten (10) equal increments and hold each frequency for three (3) minutes.
   c. Measure the impedance after three (3) minutes for each frequency increment with an accuracy of plus or minus 2-percent and record the impedance for each frequency in accordance with ASTM D257 and AREMA Signal Manual Part 14.5.1.
2. Acceptance Criteria:
   a. The minimum impedance for frequencies between 20 Hz and 10 KHz with 50 volts AC shall be 10,000 ohms.

E. High-Potential Test: Comply with AREMA.

F. Dynamic Testing: Comply with AREMA Rolling Load Test.

G. Additional Follow Up Testing: The same bonded (“glued”) joint that has passed the electrical resistance test, electrical impedance test, and dynamic testing shall be submitted to the follow up testing as citied below:

1. Follow-up Testing Procedure:
   a. Repeat the electrical resistance and impedance tests specified in Article 2.3C and Article 2.3D herein.
   b. After completion of the electrical resistance and impedance tests, subject the joint assembly to the longitudinal, compression test as specified in Article 2.03B herein.

c. Saw cut the joint as specified to adapt the section to the requirements stated in the test.

2. Acceptance Criteria:

a. The test results of the follow-up tests shall be within the acceptance criteria specified for each of those tests discussed in Article 2.03 herein.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Crew Qualifications:

1. Before fabricating bonded (“glued”) joints, each crew performing such work must be pre-qualified.
2. Pre-qualify each crew and its foreman by testing two samples of bonded (“glued”) joints fabricated by the crew.
   a. For field installation crews, fabricate the joints in track to simulate actual joint installation, and then cut the joints out of the track.
   b. Test the joints in accordance with one (1) the high-potential test specified in Article 2.3E herein, and then two (2) longitudinal compression test specified in Article 2.3B herein.
3. Failure of a test sample disqualifies the foreman and, at the discretion of the Engineer, the entire crew, or crewmembers.
4. If foreman or crew personnel are disqualified, assign a new foreman and crew personnel and repeat the qualification procedure.
5. Acceptance of a crew’s previous qualifications for fabrication of bonded insulated rail joints is at the discretion of the Engineer.
6. Crews used to manufacture shop-fabricated insulated joint plug rails shall comply with the same pre-qualification requirements as field crews.

3.2 ASSEMBLY PREPARATION

A. Calibrate bolt-tightening equipment.

B. Provide holes in the rail to match joint bars as required.

C. All insulated joints shall be fabricated with high strength rail. End hardening is not required.

D. Bevel rail ends as shown on AREMA Standard Plan No. 1005 - Beveling of Rail Ends for Special Trackwork.

E. Clean the end 21 inches of the web, bottom of head, and top of base of each rail of upset branding, foreign materials, loose rust, and scale to near white metal in accordance with SSPC-SP 10.

1. Grind all raised mill marking within the 21-inch distance flush with the web.

3.3 JOINT ASSEMBLY

A. Prepare rail ends as described in Article 3.02 herein.

B. Install bonded (“glued”) joints in accordance with the manufacturer’s instructions and the following:

1. Alternate the direction of bolt insertion.
2. Ensure that there is no contact between joint bars and bolts.

3.4 JOINT INSTALLATION

A. Install bonded (“glued”) insulated joints at the locations required by the signal system.

1. Ensure that the center of the joint is approximately centered between rail supports.
2. Ensure that there is no contact between insulated joint bars and the rail fastening assemblies of crossties or direct fixation fasteners.

3.5 FIELD QUALITY CONTROL

A. Once the bonded insulated joint has been installed in track, test the resistivity across the insulating components of the joint to verify that the AREMA acceptance criteria cited by reference of Article 2.3C herein, are met.

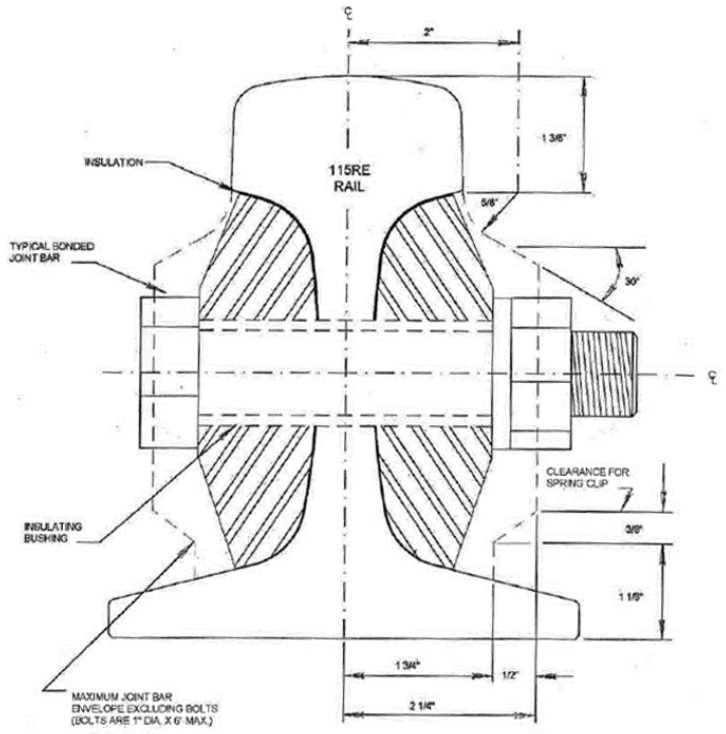


Figure 1 - Bonded Joint Bar Clearance Envelope

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. The quantity for Insulated Joint (19’-6” Plug), shall be measured for payment per each as shown on the plans.

4.2 PAYMENT

A. The contract priced paid per each for Insulated Joint (19’-6” Plug) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals; and for doing all the work involved in installing Insulated Joint Plugs, complete in place, including testing, in accordance with the Plans and as directed by the Engineer.

END OF SECTION

SECTION 34 11 26.13
TRACK RAIL BALLAST

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes specifications for the furnishing, testing, handling, transporting, and installing mineral aggregate for track ballast and infill ballast as indicated on the Contract Drawings, and Project Specifications.

1.2 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

B. American Railway Engineering and Maintenance-of-Way Association (AREMA), Current Edition:

1. AREMA Manual for Railway Engineering (AREMA Manual)
2. American Society for Testing and Materials International (ASTM)
3. ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
4. ASTM C117 Standard Test Method for Materials Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing
5. ASTM C127 Standard Test Method for Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
6. ASTM C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
7. ASTM C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
8. ASTM C142/C142M Standard Test Method for Clay Lumps and Friable Particles in Aggregates
9. ASTM C535 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
10. ASTM D4791 Standard Test Method for Flat Particles, Elongated Particles or Flat and Elongated Particles in Coarse Aggregate
11. D3744, Standard Test Method for Aggregate Durability Index.
12. D3042, Standard Test Method for Insoluble Residue in Carbonate Aggregates
13. E11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves.
14. FRA: 49 CFR Part 213, Track Safety Standards, most current and addenda, Federal Railroad Administration

15. California Public Utilities Commission General Orders
16. SANDAG LRT Design Criteria Manual

1.3 SUBMITTALS

A. Submittals shall conform to Section 3.09 “Submittals,” of the Standard Construction Agreement and General Conditions.

B. Submit the following:

1. Materials: Representative samples of ballast, of not less than 150 pounds, for gradation and other required test shall be taken from each source of ballast and tested as specified herein. Each shipment of ballast shall be accompanied by a certification as specified.
2. Compliance Report: Certified results of the test required to demonstrate conformance with this specification shall be provided to the Engineer prior to any material being shipped.
3. Plan for Transporting, Handling, and Placing
    a. The Contractor shall submit to the Engineer a plan for transporting, handling, and placing of ballast.

1.4 QUALITY CONTROL AND ASSURANCE

A. Provide laboratory certification that ballast material meets the specifications of this Section.

B. If Contractor observes ballast material not suitable for work or not in compliance with this part, the Engineer shall be notified within three (3) hours of discovery of condition.

C. The product delivered shall be from the same source from which samples were tested and found to conform to the Specification and shall be of the same type and quality of that which was tested.

1.5 DELIVERY, STORAGE AND HANDLING

A. Prepared ballast shall be handled in such a manner that it is kept clean and free from segregation, and when delivered, the ballast shall be clean and free from rubbish or any substance which might foul the ballast. Blending, stockpiling, and other production and handling operations shall be managed by the Contractor to minimize segregation of finished product. Stockpiling operations shall minimize breakage or excessive fall in stockpiling operations. The movement of wheeled or tracked machines over stockpiled or installed materials shall be limited.

PART 2 - PRODUCTS

2.1 GENERAL

A. Ballast shall consist of crushed stone which is comprised of angular fragments resulting from crushing, by mechanical means, the following types of rocks quarried from undisturbed, consolidated deposits: Granite, Traprock, or Quartzite. No crushed gravel shall be allowed.

2.2 GRADATION REQUIREMENTS

A. Ballast shall conform to AREMA Volume 1, Chapter 1, Section 2.4.4, Standard No. 4A ballast unless otherwise noted. Gradation test shall be determined in accordance with ASTM C-136, utilizing square opening sieves conforming to ASTM Specifications E-11.

B. The percentage passing each sieve shall fall within the following limits:

Sieve Size	Sieve Opening	Percent Passing by Weight
2-1/2"	2.50"	100
2"	2.0"	90 - 100
1-1/2"	1.50"	60 - 90
1"	1.0"	10 - 35
3/4"	0.75"	0 - 10
1/2"	0.50"	-
3/8"	0.375"	0 - 3
No. 4	0.187"	-

2.3 QUALITY REQUIREMENTS

A. Ballast shall be quarried crushed rock with fractured faces composed of hard, strong and durable particles, free from injurious amounts of deleterious substances, containing no carbonates or slag, and conforming to the following requirements of these Specifications. No crushed limestone, dolomites, or gravels shall be allowed.

B. The Contractor shall select his ballast source to produce ballast in accordance with these Specifications. Do not change material or source of supply without prior approval of the Engineer.

C. Material qualities shall be as follows:

Property	Minimum	Maximum	Test Method
Percent material passing No. 200	--	1.0 percent	ASTM C 136 ASTM C 117
Bulk specific Gravity – Rock	2.60	--	ASTM C 127

Property	Minimum	Maximum	Test Method
Absorption - Rock	--	1.0 percent	ASTM C 127
Clay lumps and friable particles	--	0.5 percent	ASTM C 142
Degradation Granite Traprock Quartzite	 -- -- --	 35% 25% 30%	ASTM C 535 or ASTM C131
Soundness – (Sodium Sulfate) – 5 cycles	--	2.5 percent	ASTM C 88
Flat or elongated particles	--	5 percent	ASTM D4791
Durability Test – Procedure A	65	--	ASTM D 3744
Sand Equivalent	50	—	California 217/ASTM D2419

1. Use ASTM C 535 for Ballast Standard Type 4A
2. All particles of the ballast shall have been broken by the crusher and have at least two fractured surfaces.

PART 3 - EXECUTION

3.1 GENERAL

A. Ballast shall be delivered to the Project site to specific location(s) as identified on the Contractor's Construction Area Work Plan, in the Project Specific Specifications as required for successful completion of the work or as directed by the Engineer, and installed in accordance with Section 34 72 13, "Railway Line Construction".

3.2 EXAMINATION

A. In-place ballast not meeting the requirements herein shall be replaced by the Contractor at no additional cost to MTS.

3.3 INSTALLATION

A. Ballast shall be installed in accordance with Section 34 72 13, "General Track Construction". Ballast shall not be placed, spread, compacted, tamped, and dressed until the subballast surface has been accepted by the Engineer prior to a joint inspection by the Contractor and the Engineer.

3.4 INSPECTION

A. Ballast is subject to inspection and testing by the Engineer at any time between quarry production and acceptance of track. Ballast that does not conform to these Specifications shall be rejected, and the Engineer will notify the Contractor to stop further ballast operations until the defective material has been removed and replaced.

3.5 FIELD QUALITY CONTROL

A. The Contractor shall provide a minimum of one (1) gradation test and one (1) test on material finer than No. 200 sieve for every 1,000 tons of ballast delivered to the jobsite to ensure uniformity and conformance with the requirements specified herein. The Engineer shall be given a report of the test results.

B. If during ballast installation, the source of ballast changes, the Contractor shall perform tests and inspections on the ballast at the new production site in accordance with these Specifications. The ballast shall have the same classification, quality, and grading as the former ballast used. Delivery to the site shall not commence until the Engineer has approved the new ballast source.

C. The Engineer may take additional samples of ballast. The Contractor shall assist and cooperate with the Engineer in taking such samples.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section, not otherwise provided for, shall be considered as included in contract prices paid for Railway Line Construction and various items of work involved, and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 34 11 33.13
CONCRETE TRACK CROSS TIES

PART 1 - GENERAL

1.1 SUMMARY

A. The Work specified in this Section consist of designing, manufacturing, testing, furnishing, delivering and stockpiling of serrated prestressed mono-block concrete crossties, complete with rail fastenings in accordance with SANDAG LRT Design Criteria Manual Article 3.2.6 Concrete Crossties and American Railway Engineering and Maintenance of Way Association (AREMA).

1.2 REFERENCES

This Section incorporates by reference the latest revisions of the following documents.

A. AASHTO - American Association of State Highway and Transportation Officials

B. ANSI – American National Standards Institute

C. AREMA – American Railway Engineering and Maintenance of Way Association, Current Edition

D. ASTM – ASTM International

1. ASTM A416 – Standard Specification for Uncoated Stress-Relieved Steel Wire for Prestressed Concrete
2. ASTM A536 – Standard Specification for Ductile Iron Castings
3. ASTM A881/A881M – Standard Specification for Steel Wire, Deformed, Stress-Relieved or Low-Relaxation for Prestressed Concrete Railroad Ties
4. ASTM C31/C31M – Standard Practice for Making and Curing Concrete Test Specimens in the Field
5. ASTM C33 – Standard Specification for Concrete Aggregates
6. ASTM C39/C39M – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
7. ASTM C78 – Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
8. ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)
9. ASTM C150 – Standard Specification for Portland Cement
10. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete
11. ASTM C295 – Standard Guide for Petrographic Examination of Aggregates for Concrete

12. ASTM C494/C494M – Standard Specification for Chemical Admixtures for Concrete
13. ASTM C586 – Standard Test Method for Potential Alkali Reactivity of Carbonate Rocks as Concrete Aggregates (Rock-Cylinder Method)
14. ASTM C1260 – Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
15. ASTM C1293 – Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction
16. ASTM D257 – Standard Test Methods for DC Resistance or Conductance of Insulating Materials
17. ASTM D395 – Standard Test Methods for Rubber Property – Compression Set
18. ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
19. ASTM D570 – Standard Test Method for Water Absorption of Plastics
20. ASTM D573 – Standard Test Method for Rubber – Deterioration in an Air Oven
21. ASTM D638 – Standard Test Method for Tensile Properties of Plastics
22. ASTM D648 – Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
23. ASTM D732 – Standard Test Method for Shear Strength of Plastics by Punch Tool
24. ASTM D785 – Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials
25. ASTM D1149 – Standard Test Methods for Rubber Deterioration-Cracking in an Ozone Controlled Environment
26. ASTM D1229 – Standard Test Method for Rubber Property – Compression Set at Low Temperatures
27. ASTM D2240 – Standard Test Method for Rubber Property – Durometer Hardness

E. SANDAG LRT Design Criteria Manual, Current Edition

1.3 DEFINITIONS

A. Crosstie: A transverse component of track system whose functions are the control of track gauge and the transmitting of rail loads to sub-structure. The concrete crossties that will be used in ballasted track will not require special finish of the concrete surface.

B. Embedded shoulder: A component of the rail fastening which is embedded in the concrete crosstie and provides anchoring for the rail clip. For the purpose of these Specifications, an embedded female insert will be considered as an embedded shoulder.

C. Flexural strength: Resistance to bending.

D. Lateral load: A load, or component of a load, at the gauge corner of the rail parallel to the longitudinal axis of the tie, and perpendicular to the rail.

E. Longitudinal load: A load along the longitudinal axis of a rail.

F. Negative bending: Bending of a concrete crosstie by application of load that produces tension or reduces compression in the top surface of the tie.

G. Positive bending: Bending of a concrete crosstie by application of a load that produces tension or reduces compression in the bottom surface of the tie.

H. Prestressing tendon: A strand, wire, or bar within a concrete member, which under tension, precompresses the concrete.

I. Prestressed tie: A tie utilizing precompressed concrete and prestressing tendons.

J. Pretensioned concrete tie: A prestressed concrete tie using pretension tendons to precompress concrete.

K. Pretensioning tendon (strand or wire): Steel strands, wires or bars which are stressed prior to the placement of concrete.

L. Rail clip: A component of the rail fastening assembly that clamps the base of running rail to the rail seat pad and the concrete tie.

M. Rail clip insulator: A component of the rail fastening assembly that provides electrical insulation between the rail and rail clip and embedded shoulder.

N. Rail fastening: A component or group of components of a track system which affixes the rail to the crosstie.

O. Rail seat: The area of the tie on which the running rail rests.

P. Rail seat pad: An elastomeric pad located between the running rail and the rail seat of the tie.

Q. Reinforcement or reinforcing steel: Steel, excluding prestressing tendons, introduced within a concrete tie to improve its structural strength and to control deflection and cracking.

R. Structural crack: A crack in the tensile face of the concrete tie, which increases in size under application of increasing load.

S. Vertical load: A load or vector component of a load, at right angle to a line joining the two rail seats of the tie and normal to the longitudinal axis of the rail.

1.4 SUBMITTALS

A. Submittals shall comply with Section 3.9, “Submittals” of the Standard Construction Agreement and General Conditions.

B. Shop Drawings of the concrete ties including information necessary for fabrication.

C. Tie dimensions, weights, tolerances, details, finishes, prestressing steel, fasteners, and other embedded items.

D. Procedures for installation and replacement of the fastener components.

E. Certified copies of tests including original calculations and interpretations of results.

F. Concrete mixes as determined by a registered professionally engineer by the State of California.

G. Method of attaching the embedded shoulder.

H. Data on the elastic rail clip.

I. Procedures for stockpiling, loading, and unloading ties.

1.5 QUALITY ASSURANCE

A. Quality assurance shall comply with Section 01 00 00-3.21.

1.6 DESIGN QUALIFICATIONS TEST

A. Design Qualification Tests may be waived by the Contractor QC providing that previous satisfactory qualification testing is provided.

B. After Shop Drawings of concrete crossties are accepted and rail seat pads and rail clip insulators have successfully completed design testing, produce a lot of at least 10 monoblock ties conforming to the Shop Drawings and these Specifications. The contractor QC or its designee will select at random four of these ties for laboratory testing. For design qualification testing of rail fastenings, furnish a section of concrete tie or an equivalent concrete tie block with rail seat and rail fastening assembly identical to the ties furnished for testing.

C. Do not start production of ties until the design tests have been passed and the Contractor QC or its designee has authorized production. The tie block and each of the four (4) ties submitted for testing will be measured and examined to determine their compliance with these Specifications. Upon satisfactory completion of this examination, subject the tie block and two ties, identified as Ties No. 1 and No. 2, to performance tests. The remaining two (2) ties, identified as Ties No. 3 and No. 4, will be retained by the Contractor QC or its designee for further test use and as a control for dimensional tolerances and surface appearance of ties subsequently manufactured.

D. Perform the complete test program specified in this article with rail insulators arranged for 4-feet 8 1/2-inch gauge.

E. Sequence of Design Tests: Tie No. 1.

1. Rail Seat Vertical Load Test, Positive: Described in Article 1.6H. Perform on Rail Seat A.
2. Center Negative Bending Moment Test: Described in Article 1.6HI.

3. Center Positive Bending Moment Test: Described in Article 1.6J.
4. Rail Seat Vertical Load Test, Positive: Described in Article 1.6H. Perform on Rail Seat B.
5. Bond Development, Tendon Anchorage, and Ultimate Load Test: Described in Article 1.6K. Perform on Rail Seat A.

F. Sequence of Design Tests: Tie No. 2

1. Embedded Shoulder Tests: Described in Article 1.6L. Perform on embedded shoulders.
2. Rail Fastening Uplift Test, Parts 1 and 2: Described in Article 1.6M. Perform on one rail seat.
3. Electrical Resistance and Impedance Tests: Described in Article 1.6N.

Sequence of Design Tests: Tie Block

4. Rail Seat Pad Test: Described in Article 1.6O.
5. Rail Fastening Uplift Test, Part 1: Described in Article 1.6M.
6. Rail Fastening Repeated Load Test: Described in Article 1.6P.
7. Rail Fastening Longitudinal Restraint Test: Described in Article 1.6Q.
8. Electrical Resistance and Impedance Tests: Described in Article 1.6N.
9. Rail Fastening Lateral Restraint Test: Described in Article 1.6R.
10. Rail Seat Pad Test: Described in Article 1.6O.

G. Rail Seat Vertical Load Test, Positive: With the tie supported and loaded per manufacturer test procedures, apply a load until the load P of 20.0 kips is obtained. Apply the load at a rate not greater than five kips per minute until a load of 20.0 kips is obtained. Use an illuminated five-power magnifying glass to locate cracks. If the measured structural crack on the tensile face is no longer than 1 inch, the requirements of this test will have been met.

H. Center Negative Bending Moment Test: With the tie supported and loaded per manufacturer test procedures, apply a load increasing at a rate not greater than five (5) kips per minute until the load P of 9.6 kips is obtained. Hold this load for at least three (3) minutes; during this period, inspect to determine if cracking occurs. Use an illuminated five-power magnifying glass to locate cracks. If the measured structural crack on the tensile face is no longer than 1 inch, the requirements of this test will have been met.

I. Center Positive Bending Moment Test: With the tie supported and loaded per manufacturer test procedures, apply a load increasing at a rate not greater than five (5) kips per minute until the load P of 5.9 kips is obtained. Hold this load for at least three (3) minutes; during this period, inspect to determine if cracking occurs. Use an illuminated five-power magnifying glass to locate cracks. If the measured structural crack on the tensile face is no longer than 1-inch, the requirements of this test will have been met.

J. Bond Development, Tendon Anchorage, and Ultimate Load Test: Test pretensioned ties for bond development and ultimate strength. With the tie supported and loaded per manufacturer test procedures, at rail seat A, apply a load increasing at a rate not greater than five (5) kips per minute until a load of 40 kips is obtained. If there is no more than 0.001-inch tendon slippage determined by an extensometer reading to 1/10,000-inch suitably attached to the end of the tie, the requirements of this test will have been met. Then increase the load until ultimate failure of the tie occurs and record the maximum load obtained.

K. Embedded Shoulder Tests

1. Pull-Out Test: Perform on each shoulder per manufacturer test procedures. Apply an axial load of eight (8) kips to each shoulder separately. Hold this load for at least three (3) minutes; during this period, inspect to determine if there is any slippage of the shoulder or any cracking of the concrete. The shoulder shall not slip and there shall be no cracks in the vicinity of the embedded shoulder wider than 0.003-inch. Inability of the shoulder itself to resist the eight (8) kips load without permanent deformation shall also constitute failure of this test.
2. Torque Test: Upon successful completion of the pull-out test, perform torque test on each shoulder per manufacturer test procedures. Apply a torque of 250 foot-pounds about the vertical axis of the shoulder by means of a calibrated torque wrench and a suitable attachment to the shoulder. Hold this torque for at least three (3) minutes. Ability of the shoulder to resist this torque without rotation, cracking of the concrete, or permanent deformation shall constitute passage of this test.

L. Rail Fastening Uplift Test

1. Secure an 18 to 20-inch piece of 115 RE rail to one rail seat using a complete rail fastening assembly per manufacturer test procedures. Apply an incremental load to the rail until the rail separates from the pad, the pad separates from the rail seat or a load P of ten (10) kips is reached, whichever occurs first. The load P shall be the measured load plus the unsupported tie weight plus the frame weight. Record the load P at which the rail separates from the pad, the pad separates from the rail seat or ten (10) kips is reached, whichever occurs first. Then release the load completely.
2. Apply a load of 1.5P or 10 kips, whichever is smaller. The shoulders shall not pull out or loosen in the concrete. Fractures within any component of the rail fastening will be unacceptable. The rail will not be released during the test.

M. Electrical Resistance Tests

1. Affix two short pieces of 115 RE rails to the tie using complete rail fastening assembly. Provide rail section lengths greater than the width of the tie. Place the tie upright in a bare (uncoated) metal trough with a minimum clearance of four inches between the walls of the trough. Level the trough and pour water into the trough, taking care to ensure the fastener components are not wetted. The water may be regular tap water with resistivity of 3,000 to 5,000 ohm-cm. Fill the trough with water to approximately 1-inch below the top of the tie, measured at the center of the rail. Maintain the water at this level for the duration of the tests.

2. After 48 hours, measure the resistance between the rails and the trough by applying a DC potential of 1,000 volts for a period of 15 minutes. The resistance measured shall be greater than 1,000,000 ohms.
3. Immerse the rail completely by increasing the water within the trough to cover the top of the rail. After a minimum of six (6) hours, with the full tie and rail covered, reduce the water level to 1-inch below the rail seat. Without drying the rail, within five minutes, repeat electrical resistance tests. The resistance measured shall be greater than 350,000 ohms.

N. Rail Seat Pad Test

1. Load the rail seat pad vertically using a rail section secured to the tie block by a complete rail fastening assembly.
2. Apply a static load, at a rate between three (3) and six (6) kips per minute, in increments of one (1) kip up to a maximum of 30 kips. For each load increment, measure and record the vertical pad deflection to the nearest 0.0001-inch. Plot the recorded values for vertical load versus deflection on a graph. Calculate the spring rate, as determined by the slope of the line connecting the points representing pad deflections at four (4) and 20 kips.
3. Release the load and record the pad deflection ten (10) seconds after load removal.
4. Meet the following requirements:
    a. Each pad shall return to within 0.002-inch of its original position ten (10) seconds after load removal.
    b. The final spring rate value for each pad, not to exceed 300,000 pounds per inch. The spring rate at 20 kips loading, not to exceed 650,000 pounds per inch.
    c. The spring rate values determined from initial tests conducted on three (3) pads, not to vary more than 15-percent.
    d. The spring rate values determined from final tests conducted on two (2) pads, not to vary more than 25-percent.

O. Rail Fastening Repeated Load Test

1. Remove the loose mill scale from an 18 to 20-inch section of new 115 RE rail by wiping with a cloth. Secure the rail to the rail seat in the tie block using a complete rail fastening assembly. Determine the load P. Determine the load as in the fastener uplift, in which case use a new set of rail clips for the repeated load test.

2. Secure the rail section to the rail seat in the tie block using a complete rail fastening. Per manufacturer test procedures, apply alternating downward and upward loads at an angle of 20 to the vertical axis of the rail at a rate not to exceed 300 cycles per minute for three million cycles. The rail shall be free to rotate under the applied loads. One cycle shall consist of a downward and an upward load. The magnitude of the upward load shall be 0.6P with P. If springs are used to generate the upward load, the downward load shall be 22 kips plus 0.6P. If a double-acting hydraulic ram is used to generate both the upward and downward load, provide a downward load of 22 kips.
3. This test may generate heat in elastomeric rail seat pads. Do not allow the temperature of such pads to exceed 140-degrees Fahrenheit. Heat build-up may be controlled by reducing the rate of application or by providing period of rest.
4. Rupture failure of any component of the fastener shall constitute failure of this test.

P. Rail Fastening Longitudinal Restraint Test: Following the performance of the rail fastening repeated load test above, and without disturbing the rail fastening, subject the rail fastening to a longitudinal restraint test. Apply a longitudinal load per manufacturer test procedures, in increments of 200 pounds. Take readings of longitudinal rail displacement after each increment. Readings of rail displacement shall be the average of the reading of two dial indicators reading to 0.001-inch, one (1) placed on each side of the rail with their plungers parallel to the longitudinal axis of the rail. Increase the load incrementally until a load of 2400 pounds is reached. Hold this load for at least 20 minutes. The rail shall not move more than 0.125-inch during the initial 10-minute period; and shall not move more than 0.005-inch during the second ten (10) minutes. The rail fastening shall be capable of meeting the requirements of this test in either direction. If these criteria are met, the tie and rail fastening will have passed this test.

Q. Rail Fastening Lateral Load Restraint Test

1. With a suitable length of new 115 RE rail affixed to the tie block in a manner appropriate to the rail fastening being tested, support and load the entire assembly per manufacturer test procedures. Fix the loading head against translation and rotation. Provide a 10-inch by 10-inch by 3/4-inch thick, five ply, exterior grade plywood wood block.
2. Apply a preload of 13 kips to the rail to seat the rail in the rail fastening. Upon release of the preload, take a zero reading on the dial indicators which measure rail translation. Apply load at a rate not to exceed five kips per minute until either 27 kips have been applied or the rail base has translated 1/8-inch, whichever occurs first. Inability of the rail fastening to carry the 27-kip load with 1/8-inch or less of rail translation shall constitute failure of this test. Complete failure of any component of the tie or rail fastening is cause for rejection.

3. With loads removed from the rail, place a roller nest between the fixed loading head and the wood block on the rail head. The roller nest shall not offer resistance to lateral motion of the rail head. After taking zero readings on the dial indicators, which measure gauge widening and rail translation, apply a load of 13.5 kips at a rate not to exceed five kips per minute. Rail rotation, gauge widening less rail translation, greater than 1/4-inch shall constitute failure of this test.

1.7 DESIGN QUALIFICATION TEST FOR RAIL SEAT PADS

A. Design Qualification Tests for rail seat pads may be waived by the Contractor QC providing that previous satisfactory qualification testing is provided.

B. Elastomer Pads (concrete ties)

1. Specimens: Perform the following tests on each of two specimens per manufacturer test procedures. Use a separate pair of specimens for each test. Prior to testing, condition specimens for at least seven days at 23-degrees Celsius and 50-percent relative humidity. Failure of either of the two specimens to meet requirements will be cause for rejection.
2. Hardness: Measure Shore A hardness in accordance with ASTM D2240. The reading on each pad to be between 60 and 70 durometers. Average the two readings and record the average for reference in production testing.
3. Tensile strength: Measured by ASTM D412; 1,700 psi, minimum.
4. Ultimate elongation: Measured by ASTM D412; 250 percent, minimum.
5. High temperature compression set: Using method B of ASTM D395, test for 22 hours at 70-degrees Celsius. The compression set shall not exceed 30-percent.
6. Compression set at minus 10C: Using ASTM D1229, test for 70 hours at minus 10 degrees Celsius. The compression set at 30 minute after release (t30 reading) shall not exceed 65-percent.
7. Accelerated aging: Using ASTM D573, age the elastomer for 96 hours at 70-degrees Celsius. Measure and record the change in hardness, tensile strength and ultimate elongation. The tensile strength shall not decrease more than 25-percent. The change in hardness measured on the durometer A scale shall not exceed ten (10) points.
8. Volume resistivity: Apply 100 volts DC for three (3) minutes. The volume resistivity, measured in accordance with ASTM D257 shall be at least 1 x 1012 ohm-centimeters at saturation.
9. Water absorption: Using ASTM D570, water absorption at saturation shall not be more than 2-percent.
10. Resistance to ozone cracking: Test the specimens in accordance with ASTM D1149 at a temperature of 40-degrees Celsius and an ozone concentration of 50 pphm. The elastomer shall exhibit no cracking when examined in accordance with ASTM D1149 at the end of a 100-hour exposure.

1.8 EXISTING DESIGNS

A. For existing concrete tie and fastener designs, qualification acceptance may be based on the submittal of appropriate certified data which will prove to the satisfaction of the Contractor QC or its designee that the design proposed will meet or exceed the requirements indicated. For an existing design to be acceptable, components of the tie, including the clip and the rail seat pad must have been tested as a unit. Submit the following for each proposed design:

1. Certified laboratory test result reports in such detail and format as to enable the Contractor QC or its designee to evaluate the information and ascertain that the tests and results are representative of the requirements indicated. If there is doubt as to the results or similarity of previous tests, the Contractor QC or its designee may order that some or all of the tests herein may be required before acceptance of the proposed design.
2. In addition to certified laboratory test result data, submit proof that an existing design has been satisfactorily subjected to service loading similar to or greater than that anticipated in the Contract for review by the Contractor QC or its designee. Proof in the form of letters from an authorized representative of the property where the ties have been installed will be acceptable.
3. Submit a detailed experience record of prestressed concrete tie design, production and field installations.

PART 2 - PRODUCTS

2.1 CONCRETE

A. Minimum 28-Day Design Compressive Strength: 7,000 psi. Secure samples in accordance with ASTM C172. Make and laboratory cure specimens in accordance with ASTM C31. Cure specimens made to check the adequacy of curing and protection of concrete entirely under production conditions. Test concrete cylinders for strength in accordance with ASTM C39. For each day of production, test not less than three cylinders.

B. Minimum 28-Day Flexural Strength: 600 psi. Make specimens in accordance with ASTM C31. Cure specimens to check the adequacy of curing and protection of concrete entirely under production conditions. Make strength tests on 6-inch by 6-inch by 20-inch beams in accordance with ASTM C78. For each day of production, test not less than one beam at 28 days.

C. Cement - Portland cement conforming to ASTM C150: Type II, or III.

D. Concrete Aggregates:

1. Provide both fine and coarse aggregates that meet the requirements of the AREMA specifications for aggregates in the AREMA Manual for Railway Engineering, Volume 2, Chapter 8 “Concrete Structures and Foundations,” Part 1 “Materials, Tests and Construction Requirements,” Section 1.3 “Aggregates.”
    a. Provide natural aggregates complying with ASTM C33, Class 4S.

1) Conduct a separate test for each type of cement at 3 and 6-month intervals.

2) Repeat the testing every six (6) months for each source.

b. Provide evidence that concrete containing aggregate from the proposed source has a satisfactory service history of at least five (5) years when used with cement content and alkali burden similar to the job mix.

1) This evidence must include structures requiring a Class 4S aggregate.

c. Provide aggregate having a maximum size of 3/4-inch.

d. If the coarse or fine aggregate is supplied in more than one (1) size, store each size separately.

e. Allow washed aggregate to drain in stockpiles before use.

f. Provide aggregate free from ice when used.

2. In addition to the requirements of ASTM C33, use an independent testing laboratory to conduct the following tests:

a. For each new source, conduct a petrographic examination in accordance with ASTM C295.

b. Evaluate potential alkali reactivity in accordance with ASTM C1293.

1) When there is insufficient time for testing in accordance with ASTM C1293, potential alkali reactivity may be evaluated by testing in accordance with ASTM C1260, but a test conforming to ASTM C1293 shall be started immediately and the results conveyed to the City immediately upon completion.

c. Test aggregates containing carbonate in accordance with ASTM C586 for evaluation of potential alkali carbonate reactivity.

E. Water Used In Mixing Concrete and Washing Aggregates:

1. Potable and free from harmful amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or steel.

2. Do not allow chloride ion concentrations in excess of 400-ppm.

3. Mortar test cubes with the proposed mixing water shall have 7-day and 28-day strengths equal to at least 90-percent of strengths of similar specimens made with distilled water. Strength test comparison shall be made on mortar, identical except for the mixing water, prepared and tested in accordance with ASTM C109.

F. Accelerating, Retarding, and Water-Reducing Admixtures: If used, provide water-reducing admixtures, water-reducing and retarding admixtures, and water-reducing accelerating admixtures conforming to ASTM C494/C494M.

1. Do not use admixtures containing chlorides.

2. Do not use fly ash and other mineral admixtures.

G. Mixing Water: Potable and free from harmful amounts of oils, acids, alkalis, salts,

organic materials, or other substances that may be deleterious to concrete or steel. Provide mixing water, including that portion of the mixing water contributed in the form of free moisture on aggregates that has a chloride ion content of less than 100 ppm. When required, test mixing water in accordance with AASHTO T26.

H. Admixtures

1. Accelerating, Retarding, and Water-reducing Agents: ASTM C494.
2. Do not use admixtures containing chlorides, fluorides, sulphites, nitrates, or aluminum powder.

I. Cement Content: 600 pounds per cubic yard, minimum.

J. Water-Cement Ratio: 0.40 maximum.

2.2 PRESTRESSING TENDONS

A. This Article specifies the types of prestressing tendons.

B. Wires for pretensioning tendons: conform to ASTM A421 or ASTM A881.

C. Standards for prestressing tendons shall conform to ASTM A416, with the following minimum properties:

1. Breaking strength: 23,000 pounds
2. Yield strength (1-percent extension): 19,550 pounds

D. Wires for prestressing tendons shall conform to ASTM A881.

E. Other means may be used, subject to review and acceptance of the Engineer or its designee.

F. Thoroughly clean all tendons with lubrication before application.

2.3 RAIL FASTENING ASSEMBLY

A. Rail Fastening Assembly shall conform to Section 34 11 36, Article 2.2, of these Technical Specifications.

2.4 TIE DIMENSIONS, CONFIGURATION, WEIGHT, AND TOLERANCES

A. Protrusions: Do not use sharp angles or protrusions which are easily damaged by handling or tamping.

B. Weight: 700 pounds, maximum for standard tie.

C. Length (Detailed dimensions as shown on plans)

1. Design length:
   a. 8-feet 3-inches.
   b. Various lengths for special trackwork

2. Manufacturing tolerances - Plus 1/2-inch, minus 1/8-inch.

D. Width (Detailed dimensions as shown on plan)

1. Design widths:

a. Minimum at ballast bearing area (bottom of tie): 10 3/8-inches.

b. Minimum at top surface from rail seat area to end of tie:

1) 7 1/4-inches

2) 10-inches for special trackwork ties

c. At all locations along the tie, the width at the bottom: At least equal to or greater than the width at the top.

2. Manufacturing tolerances: Plus or minus 1/8-inch.

E. Depth

1. Design depth:

a. 8-inches at rail seat; 6 1/4-inches minimum at center of tie,

b. 10-inches at rail seat plate for special trackwork ties.

2. Manufacturing tolerances: Plus 1/4-inch, minus 1/8-inch.

F. Track Gauge: Standard Transit Ties: 4-feet 8 1/2-inches.

G. Rail Cant:

1. Cant rail seats 1:40 toward centerline of tie. Cants between 1:35 and 1:45 will be permitted as tolerances.

2. Zero Cant through special trackwork.

H. Rail Seat Plane: Flat smooth surface within plus or minus 1/32-inch.

I. Differential Tilt of Rail Seats in the direction parallel to the rail of one rail seat to the other: Not exceed 1/16-inch over a width of six (6) inches.

J. Rail Seat Elevation: Two rail seats, same elevation from the bottom of the tie within plus or minus 1/16-inch.

K. Protrusion of Pretensioning Tendons: 1/8-inch maximum beyond the ends of the ties.

L. Concrete Cover for Prestressing Tendons, Ducts and Prestressing End Fittings.

1. Design dimension: 3/4-inch minimum cover. Use epoxy grout or other accepted material to cover the ends of tendons. Measure cover from outside of embedded items to surface of concrete.

2. Manufacturing tolerances for positioning prestressing tendons and for clear concrete protection (cover) and depth of prestressing tendons - Plus or minus 1/8-inch.

M. Surface Finish

1. Top surfaces: Present a smooth, uniform appearance. Except at the rail seat, a random scattering of surface voids will not be cause for rejection. Heavy concentrations of surface voids or evidence of improper mixing, vibrating or curing will be cause for rejection.
2. The ends of ties need not be flat planes or surfaces, but there shall be no evidence of tearing of the concrete where the prestressing strands emerge or of any void in contact with a strand.

N. Markings - Mark on top of ties with indented or raised letters to indicate the manufacturer, type of tie and year of manufacture or as shown on Contract Plans.

PART 3 - EXECUTION

3.1 CONCRETE QUALITY

A. Water content will be kept to a minimum consistent with the strength requirements and placement needs. Concrete mixes will be proportioned to produce a compressive strength of at least 7,000 psi measured at 28 days on standard 6-inch by 12-inch cylinders as specified in Article 2.1A.

B. Concrete strength at transfer will be adequate for the requirements of anchorages and will not be less than 4,000 psi.

3.2 PRESTRESSING TENDONS

A. Load - Applied in two increments. An initial load of approximately 1,000 pounds will be applied to the individual strands to straighten them, eliminate slack, and provide a starting or reference point for measuring elongation.

B. Prestressing force: Determined by measuring strand elongation and by checking jack pressure on a calibrated gage or using a calibrated dynamometer. Discrepancies exceeding five percent shall be investigated and corrected. Elongation requirements are to be taken from average load elongation curves for the steel used.

C. Strands may be stretched either individually or simultaneously. If strands are stretched simultaneously, provision must be made to induce approximately equal stress in each.

D. Transfer of force from bulkheads of the pretensioning and to the concrete will be carefully accomplished by gradual and simultaneous detensioning of all strands. Exposed strands shall be cut near the tie end. Projection of strands beyond ends of ties will be no more than 1/8-inch.

E. Minimum concrete cover for reinforcement: 3/4-inch.

F. Tolerance for the depth of reinforcing tendons: +/- 1/16-inch from design depth. Voids in concrete surrounding tendons will be cause for rejection.

3.3 PROPORTIONS OF CONCRETE MIX

A. Unless previous data is available to show that a concrete mix will be satisfactory for

the production concrete ties, establish concrete mix designs by test on trial batches to achieve required strengths.

B. Trial mixes using aggregate, water, cement and admixtures proposed for manufacture of concrete ties will be made using not less than three different water-cement ratios which will produce a range of strengths encompassing those specified in Article 3.1A. For each water-cement ratio, make, cure, and test not less than three specimens for each age.

3.4 REMOVAL OF TIES FROM FORMS AND FINISHING

A. Remove ties from forms in a manner preventing damage.

B. Finishing

1. Formed surfaces of the finished tie will have a uniformly dense surface. The surface of the rail seat will have a smooth finish and to be free from surface irregularities and air holes. Other surfaces - A smooth finish that may contain honeycomb not exceeding two percent of the surface and a maximum void diameter of 1/4-inch.
2. Bottom surface - A rough-broom finish.

3.5 MIXING, PLACING, AND CURING OF CONCRETE

A. Preparation for Placing Concrete

1. Before placing concrete, clean equipment for mixing concrete, remove debris from spaces to be occupied by the concrete, oil forms, and clean reinforcement of deleterious coatings. Inspect forms for alignment and tightness of joints, and accuracy of the position of bulkheads, prestressing steel, and inserts will be verified.
2. Proportioning of Component Materials
   a. Measure fine and coarse aggregates and cement by weight, based on a saturated surface dry condition corrected for free moisture.
   b. Measure water and liquid admixtures by weight or volume.
   c. Measurement of various components of concrete - Within the following limits:
      1) Cement, 1-percent
      2) Water, 1-percent
      3) Fine aggregate, 2-percent
      4) Coarse aggregate, 2-percent
      5) Cumulative aggregate, 2-percent
      6) Admixtures, 3-percent

3.6 PRODUCTION QUALITY CONTROL

A. After ties and fasteners have passed the design tests specified herein, and accepted

by the Contractor QC or its designee, further production of these items may proceed without further design testing. During production of accepted designs, the manufacturer shall perform quality-control tests to assure products are in compliance with these Specifications and the accepted design. Testing to be witnessed by the Contractor QC or its designee.

B. Daily Tests - Perform the following production quality-control tests prior to delivery on one tie selected at random from every 200 ties of the same design, or fraction thereof, produced each day. Test each tie with different rail clips, insulators, and rail seat pads. Randomly select fastener parts tested individually and selected from each production lot in proportion to the number of parts in that lot.

   1. Verify rail seat configuration and embedded shoulder location for compliance with Article 2.4.
   2. Perform the rail seat vertical load test with positive moment specified in Article 1.6.H.
   3. If the instant demolding process is used for transit ties, perform the tests specified in Article 1.5K. on all the shoulders on the tie.
   4. Perform the electrical resistance test specified in Article 1.6.N. Perform the test as a dry test only. Acceptance criteria will be as specified in Article 1.6.N.2.
   5. Elastomer Pad
      a. Batch control: A batch is defined as the rubber mixed, processed and cured together, not exceeding one (1) day's production. Keep the pads segregated by batch. Perform the following tests on two samples chosen from each batch at random. Use two different specimens for each test. If either of the two samples fails a test, the entire batch will be rejected or subjected to the test which the sample failed. Prior to testing, condition specimens for at least seven days at 23 degrees Celsius and 50 percent relative humidity.
      b. Hardness: When measured in accordance with ASTM D2240, the hardness shall be within plus or minus five durometers, Shore A, of the average recorded in Article 1.7.
      c. Tensile strength, ultimate elongation, high temperature compression set, volume resistivity and water absorption: Test as specified in Article 1.7.

C. Retesting: Should any test tie fail tests required by Article 3.6A, test two (2) additional ties from that same 200 tie lot. In the event either of these ties fails, either test or reject 100-percent of the remainder of the 200 tie lot.

D. Disposition of Test Ties: Ties that pass the testing requirements, have no cracks or only non-structural cracks, and are otherwise undamaged after testing will be considered acceptable for delivery.

E. Bond Development or Tendon Anchorage Test: Subject one tie selected at random from every 2,000 ties of the same design, or fraction thereof, to the bond development or tendon anchorage test specified in Article 1.6.K. A load rate exceeding five kips per minute may be applied. If the tie does not pass the test, test three additional ties selected at random. If any of the three additional ties do not

meet the requirements of Article 1.6.K, the entire lot may be rejected at the option of the Engineer or its designee.

F. Location for Inspection and Quality Control Testing: Quality control testing may be performed at any test facility, including such facilities at the manufacturer's plant, provided they meet the acceptance of the Contractor QC or its designee. Notify the Contractor QC or its designee in writing at least five Working days in advance of the dates scheduled for quality control tests. Testing may be observed by the Contractor QC or its designee.

3.7 SHIPPING AND HANDLING

A. Securely brace ties for transportation to prevent any movement that could cause damage. Ship ties in a horizontal position, braced with wooden spacer blocks so that the top surface or cast-in-place hardware does not contact ties loaded above. Do not load ties higher than the top of cars nor more than six layers deep. Do not drop or skid ties.

B. Package other parts to prevent damage during shipment and to facilitate handling. Package rail seat pads in sealed polyethylene sheets and place in solid covered containers. Do not mix different parts in the same package.

C. Within the area designated by the Contractor QC or its designee, store ties so that additional handling of the ties is unnecessary until the final distribution. Unload ties from the car or truck in a manner that will not damage the ties. Do not drop or skid the ties from the truck bed to the ground. Provide the necessary supports and spacers so that the ties will not contact the ground during storage and that the top surface or cast-in-place hardware does not contact the ties stacked above. Place supports and spacers at the rail seat areas of the ties. Stack each tie according to type.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section, not otherwise provided for, shall be considered as included in contract prices paid for Railway Line Construction and various items of work involved, and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 34 11 36
TRACK RAIL FASTENERS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section defines the requirements for the design, manufacture, supply, inspection, testing and delivery of elastic rail fasteners and cast-iron shoulders for use on concrete crossties on ballasted track.

1.2 REFERENCES

A. AREMA: 2014 Manual For Railway Engineering, American Railway Engineering and Maintenance of Way Association, Portfolio of Trackwork Plans, and Communications and Signals Manual

B. SANDAG LRT Design Criteria Manual

1.3 SUBMITTALS

A. Submittals shall comply with Section 3.9 “Submittals,” of the Standard Construction Agreement and General Conditions.

B. Submit the following:

1. Materials: Submit individual certifications that all materials furnished by the Contractor conform to the specified requirements.
2. Shop Drawings: Submit Shop Drawing and product data (6 Copies each) for the Engineers approval for trackwork items furnished by the contractor. All Shop Drawings shall be submitted in hard copy and PDF format, prior to fabrication. Acceptance of shop drawing does not relieve Manufacturer of requirements for functionality or defects or other failures to meet the Contract requirements.
3. Detail drawings for each fastening system specified herein.
4. Inspection and Test Plan and Procedures.
5. Packaging Procedures.
6. Clip hardness and toe load test procedures, including acceptance criteria.

1.4 QUALITY CONTROL AND ASSURANCE

A. Quality assurance/quality control shall be in accordance with the requirements of Section 01 00 00, Article 3.20, “Quality Control,” of the Technical Specifications.

PART 2 - PRODUCTS

2.1 RESILIENT RAIL FASTENING ASSEMBLY FOR CONCRETE TIES

A. Provided for use with 115 RE rail.

B. Include elastic rail clips, rail seat pads, embedded shoulder, and rail clip insulator with the rail fastening, comprised of as few components as economically and technically feasible for ease of assembly, disassembly, and maintenance. The rail clips, rail seat pads, and insulators shall be furnished by rail clip manufacturer and shall be compatible with concrete tie shoulders.

C. Furnish steel components except the embedded shoulder that are replaceable and reusable in the field by one man using either mechanical or hand tools, without adjusting the horizontal and vertical alignment of the rail.

D. Use only one type of rail clip throughout except rail clips for the rail joint bars need not be identical in design to those used on a standard rail, but have similar performance characteristics, be made by the same manufacturer, and be installed into identical shoulders as the standard rail clip. Provide rail clips for the joint bars that clear the envelope of the “D” Bar as manufactured by Allegheny or the Rib Bar as manufactured by Portec, Inc., or approved equal.

E. Fasteners shall have, on both sides of the rail base, a positive means of preventing more than 1/8-inch total lateral movement of the rail base relative to the fastener in case of failure or loosening of one or both rail clips. The positive means shall extend at least 3/8-inch above the base of rail in the installed position.

F. Rail Seat Pads

1. Provide 3/8-inch thick elastomer pad rail seat pads made from processed natural rubber.
2. Use first quality new ingredients processed and cured in accordance with accepted standard practice.

G. Rail Clip

1. Provide galvanized elastic rail clips of a proven design that are resilient and have a detachable spring clip such as the Pandrol Rail Clip, Type “e”, or approve equivalent that meets the following requirements:
    a. Elastic, made of heat-treated alloy spring steel. Use one identical clip on the field and gauge side of the rail at the rail seat.
    b. Reusable after repeated applications without any effect on the operating performance of the rail clip or any possible damage to or loss of the lateral support provided by the embedded shoulder.
    c. No part of rail clip to protrude more than 1-inch below the rail seat surface or into the tie.
    d. Provide clips such that lateral rail movements within the confines of the shoulders will not produce transverse denting, carving, or scoring of the rail base.
    e. Provide clip such that longitudinal rail slippage will not produce overstressing, bending, twisting, or other damage to the clips, and will not damage the rail.
    f. Installation deflection of rail clip - No less than 3/16-inch.

g. The load deflection curve in the normal loading range shall exhibit a linear behavior establishing the elastic characteristics of the clip.

h. Provide modified versions of the clips supplied by the manufacturer, as necessary to address rail joint areas.

H. Rail Clip Insulator

1. Configuration

a. Provide keys between the rail clip insulators and the rail fastening hardware to prevent relative motion in any direction.

b. Cover with the rail clip insulators the full widths of the embedded shoulders.

c. Except for surfaces in contact with the rail, provide surfaces of the rail clip insulators that are smooth, clearly finished and free of flash. Rail clip insulators shall be free of internal defects and cavities and resistant to ultraviolet rays.

d. Fabricate rail clip insulators such that the bottom edge of the insulator is in contact with the rail seat pad over the entire length of the insulator after installation of the rail clip.

2. Material: Nylon/Plastic reinforced with 33-percent glass fibers or approved equal. Do not use recycled material.

3. Volume resistivity: 1014 ohm-cm, minimum dry; 1012 ohm-cm minimum at saturation as determined in 2.3.D.4. Measure in accordance with ASTM D257.

4. Water absorption at saturation: 2-percent, maximum. Measure in accordance with ASTM D570.

5. Rockwell hardness: R-95. Measure in accordance with ASTM D785.

6. Dry shear strength: 6500 psi, minimum. Measure in accordance with ASTM D732.

7. Deformation under load: 5-percent, maximum. Measure at 2000 psi and 120 degrees Fahrenheit.

8. Heat aging: Age for ten (10) days at 70-degrees Celsius using ASTM D573 as a guide. Compare properties before and after aging at 70-degrees Celsius. The tensile strength shall not decrease more than 10-percent. Rockwell Hardness shall not change more than five points. No warping, cracking, discoloration or exudation of plasticizer.

9. Weatherometer test: After 1,000 hours with cycled water spray

a. Yield stress: A minimum of 8,000 psi

b. Tensile strength: A minimum of 6,000 psi.

I. Embedded Shoulders

1. Malleable iron: Conforming to ASTM A47; or ductile iron conforming to ASTM A536 Grade 60-40-18, or 65-45-12 or approved equivalent.

2. Design embedded shoulder to provide and maintain proper position and alignment of the elastic rail clip, rail clip insulator, tie pad, and rail base.

3. Do not directly anchor embedded shoulder to the pretensioned steel.
4. Provide ragged stem design for embedded shoulder to maximize surface area and pull out resistance.
5. Iron shoulders shall be free of mud, oil, loose rust and other contamination when cast into ties. They shall be rigidly secured in the forms during casting and shall not move within the concrete when the securing device is released.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. All work shall be completed in accordance with AREMA Manual for Railway Engineering and as specified herein.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section, not otherwise provided for, shall be considered as included in contract prices paid for Railway Line Construction and various items of work involved, and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 34 11 36.13
DIRECT FIXATION FASTENERS

PART 1 - GENERAL

1.1 SUMMARY

A. Description:

1. The Work specified in this Section consists of designing, manufacturing, inspecting, testing, shipping and delivering, unloading and stockpiling, Standard Direct Fixation Rail Fasteners.
2. Installation requirements for Direct Fixation Fasteners are included in Section 34 72 13.01, Railway Line Construction and Section 34 72 13.03, Direct Fixation Track Construction.

B. Section Includes:

1. Fastener Body
2. Rail Clip Assemblies
3. ANC Vertical Insulating Shims
4. Horage Assemblies

C. Related Sections:

1. Section 34 72 13.01 – Railway Line Construction
2. Section 34 72 13.03 – Direct Fixation Track Construction

1.2 REFERENCE STANDARDS

A. Perform Work in accordance with the following reference standards for manufacturing components and testing procedures.

B. American National Standards Institute (ANSI):

1. ANSI B1.1 – Unified Inch Screw Threads (UN and UNR Thread Form)
2. ANSI B1.3 – Screw Thread Gaging Systems for Dimensional Acceptability - Inch and Metric Screw Threads (UN, UNR, UNJ, M and MJ)
3. ANSI B18.2.1 – Square and Hex Bolts and Screws
4. ANSI B18.21.1 – Lock Washers
5. ANSI B18.22.1 – Plain Washers

C. American Railway Engineering and Maintenance of Way Association (AREMA):

1. Manual for Railway Engineering – Volume 1 Chapter 4 Rail, et al.

D. ASTM International (ASTM):

1. ASTM A36/A36M – Structural Steel

2. ASTM A123 – Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
3. ASTM A325 – Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
4. ASTM A536 – Ductile Iron Castings
5. ASTM A615/A615M – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
6. ASTM B117 – Salt Spray (Fog) Testing
7. ASTM B633 – Coatings of Zinc Mechanically Deposited on Iron and Steel
8. ASTM C39/C39M – Compressive Strength of Cylindrical Concrete Specimens
9. ASTM D257 – D-C Resistance or Conductance of Insulating Materials
10. ASTM D297 – Rubber Products - Chemical Analysis
11. ASTM D395 – Rubber Property - Compression Set
12. ASTM D412 – Rubber Properties in Tension
13. ASTM D429 – Rubber Property - Adhesion to Rigid Substrates
14. ASTM D471 – Rubber Property - Effect of Liquids
15. ASTM D518 – Rubber Deterioration - Surface Cracking
16. ASTM D570 – Water Absorption of Plastics
17. ASTM D573 – Rubber - Deterioration in an Air Oven
18. ASTM D624 – Rubber Property - Tear Resistance
19. ASTM D1149 – Rubber Deterioration - Surface Ozone Cracking in a Chamber
20. ASTM D1193 – Reagent Water
21. ASTM D1229 – Rubber Property - Compression Set at Low Temperatures
22. ASTM D1248 – Polyethylene Plastics Molding and Extrusion Materials
23. ASTM D1566 – Standard Terminology Relating to Rubber
24. ASTM D2084 – Rubber Property - Vulcanization Using Oscillating Disc Cure Meter
25. ASTM D2240 – Rubber Property - Durometer Hardness
26. ASTM E10 – Standard Test Method for Brinell Hardness of Metallic Metals
27. ASTM E23 – Notched Bar Impact Testing of Metallic Materials
28. ASTM E162 – Surface Flammability of Materials Using a Radiant Heat Energy Source
29. ASTM E164, Standard Practice for Contact Ultrasonic Testing of Weldments
30. ASTM E329 – Evaluation of Testing and Inspection Agencies as Used in Construction

E. National Association of Corrosion Engineers (NACE):

1. NACE RP0188 – Discontinuity (Holiday) Testing of Protective Coatings

F. National Fire Protection Association (NFPA):

1. NFPA 258 – Determining Smoke Generation of Solid Materials

G. Rubber Manufacturers Association, Inc. (RMA):

1. RMA – Rubbers Handbook

H. Society of Automotive Engineers (SAE):

1. SAE J429 – Mechanical and Material Requirements for Externally Threaded Fasteners
2. SAE J434 – Automotive Ductile (Nodular) Iron Castings
3. SAE J995 – Mechanical and Material Requirements for Steel Nuts

I. Steel Structures Painting Council (SSPC)

1. SSPC SP5 – White Metal Blast Cleaning
2. SSPC VIS1 – Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs)

1.3 DEFINITIONS

A. Definitions: Terms in these Specifications that are not in general usage or that have specific connotations are as defined below:

1. Others: An entity that provides goods and/or services related to the Work exclusive of the requirements of the Contract.
2. Production lot: A quantity of manufactured and completed direct fixation rail fasteners based on the accepted qualified design.
3. Qualification test: A test performed prior to production to verify that the components proposed meet the requirements of these Specifications.

B. Abbreviations: The abbreviations used in these Specifications are defined in the text as follows:

1. AC: Alternating-current
2. ANSI: American National Standards Institute
3. AREMA: American Railway Engineering and Maintenance of Way Association
4. ASTM: ASTM International
5. Btu: British thermal unit
6. ºC: Degree Celsius
7. Cm: Centimeter
8. DC: Direct-current
9. DF: direct fixation
10. ºF: Degree Fahrenheit
11. ft: Feet

12. hr: Hour
13. in: Inch
14. lbs: Pounds
15. m: Meter
16. max: Maximum
17. mg: Milligram
18. min: Minimum
19. mph: Miles per hour
20. NFPA: National Fire Protection Association
21. pH: Measure of acidity or alkalinity in solution
22. ppm: Parts per million
23. QA: Quality Assurance
24. RE: rail designation associated with AREMA
25. RMA: Rubber Manufacturers Association
26. RTP: Rail Transit Project
27. SAE: Society of Automotive Engineers
28. SSPC: Steel Structures Painting Council
29. UNC: Unified Inch (Course) Screw Threads

1.4 MATERIAL IDENTIFICATION

A. Records: At the time the completed fasteners are shipped, ship a copy of the production lot records with them and submit another copy separately to the Contractor QC or its designee.

B. Part numbers: Assign part numbers to fastener components and to finished assemblies. Use part numbers on related drawings, correspondence, and documents to identify specific items in specific configurations. Parts identified by the same part number shall have the same physical dimensions, material composition, performance characteristics, and durability. If parts are altered in any fashion during testing or at any other time, assign separate part numbers to the superseding parts and duly indicated on the fastener shop drawings and as-built drawings for resubmittal to the Contractor QC or its designee.

C. Identification marking: Develop a lot and fastener numbering system for marking each fastener. Permanently and clearly stamp or mold the lot number, a daily production identification number, and the Contractor’s name or trademark on the top of each fastener so that they are readily visible when the complete assembly is in the installed position. Permanently mark the letter “Gauge-1” for Standard DF fasteners on the gauge side of the fastener, to clearly indicate the correct orientation for installation in track, and to identify the fastener type.

1.5 SUBMITTALS

A. Submittals shall comply with Section 3.9 “Submittals,” of the Standard Construction Agreement and General Conditions.

B. Design Drawings: Furnish by the Contractor as specified in this Article. The Design Drawings required shall include the following:

1. Fastener Shop Drawings: Fastener shop drawings showing design details of each fastener component separately before assembly, the complete fastener assembly, and the shims. Drawn to scale and will include all necessary dimensions and material designations for manufacturing the components, as well as a table listing all components shown by name and by part number.

2. Test Apparatus Working Drawings: Include with the Test Procedures for each test, Working Drawings showing details of the concrete test blocks and testing equipment, and the set-up for each test required in these Specifications. Pertinent testing drawings included in referenced standard specifications as specified may be referenced in the report in lieu of actual drawings.

3. Fastener As-Built Drawings: Prior to or concurrent with acceptance of the last product, incorporate all changes into the fastener Shop Drawings. Submit copies of the updated drawings shall be submitted to the Contractor QC or its designee to serve as the final (As-built) Configuration Drawings.

C. Data Submittals: Submit design data, qualification test data, and production quality control test data to the Contractor QC or its designee acceptance.

D. Manufacture Certifications: Submit a Certificate of Compliance form the manufacturing certifying each step of production of the fastener shown on the approved shop drawings.

E. A lot and fastener numbering system for marking each fastener.

F. For selected laboratory the following information to the Contractor QC or its designee for acceptance:

1. The name and address of the laboratory,

2. A description of the facilities and testing equipment that will be assigned for this testing,

3. The names, experience, and qualifications of the personnel that will be assigned for this testing, and

4. A list of experience in testing other fasteners or fastener-like assemblies by the laboratory.

G. Copies of calibration certificates with test reports.

1.6 QUALITY ASSURANCE

A. Quality assurance shall comply with Section 01 00 00-3.20.

B. Design Criteria

1. Fastener assembly: Include in the fastener assembly the following components:

a. A fastener body which has a metal top element for support of the running rail and securing of rail clips, a metal base element, and an elastomeric element between them which is vulcanized bonded to both metal elements during the elastomer vulcanization process.

b. At least two spring clips, one on each side of the rail, for securing the running rail to the metal top element of the fastener body.

c. At least two anchorage assemblies, including female-type anchorage inserts for embedment in the concrete trackbed, anchor bolts for securing the fastener to the concrete trackbed, and an adjustment feature to enable the fastener to be laterally repositioned in a direction perpendicular to the rail.

d. Polyethylene Metal shims used for height adjustment, and placed between the fastener base and the concrete trackbed, and use during fastener testing.

2. Fastener functions: Design the fastener to perform the following functions:

a. Secure the running rail to concrete trackbed in direct fixation track;

b. Provide vertical, lateral, and rotational stability to the rail;

c. Restrain the rail from movement in the longitudinal direction;

d. Attenuate vibration generated by moving wheels on the rail; and

e. Electrically insulate the running rail from the concrete trackbed.

3. Design properties of fastener assembly: The complete fastener assembly shall have the following overall configuration and performance functions.

a. Dimensions

1) When completely assembled with clips and anchors, design all parts of the fastener above the concrete trackbed to stay within a design envelope of:

a) 14 to 16 inches for standard fasteners measured horizontally perpendicular to the rail.

b) No wider than 10 inches for standard fasteners measured horizontally parallel to the rail.

2) The height of the fastener body, measured vertically from the base of the fastener body to the base of rail at the rail centerline and excluding shims, shall be no greater than:

a) 1-7/8 inches for standard fasteners.

3) No portion of the completely assembled fastener, including rail clips and anchor bolts, shall extend any higher than 4 inches measured vertically from the base of rail at the rail centerline.

4) Design spacing of anchorage assemblies and other dimensions shall be as shown in Figure 34 11 36.13-1 for standard fasteners. The preferred anchorage spacing longitudinal to the rail is 3-1/2 inches.

5) When installed, no part of the anchorage insert shall be deeper than 5-1/4 inches from the concrete trackbed surface, extend any closer than 1-13/16 inches to the centerline of fastener as measured horizontally perpendicular to the rail, nor extend outside the end of the fastener as measured horizontally perpendicular to the rail.

6) Diameter of the fastener body and anchorage assembly component holes through which the anchor bolt passes shall not be less than 0.895 inch nor more than 0.938 inch.

7) With rail clips removed from the otherwise assembled fastener, no portion of the fastener shall extend higher than 1-1/2 inches above the base of rail, as measured vertically from the base of rail at the rail centerline.

b. Overall design guidelines

1) Design the fastener to have as few components as economically and technically feasible to facilitate assembling, disassembling and maintenance at track Worksites.

2) Except for the anchor insert, the fastener shall permit quick installation and replacement at the track Worksite of the entire fastener, or its components, by one person using standard hand tools.

3) Do not use welding in fabrication or assembly of any fastener component.

c. Rail securing configuration

1) Provide a flat rail-bearing surface on the metal top element of the fastener body in the center of the fastener which supports the rail directly without intermediate pads or shims and is shaped to tilt the rail inward to the gauge side at a 1:40 cant. Integrally cast shoulders to help hold the rail to line and gauge with the metal top element along the entire rail bearing surface and set parallel on both sides of the rail base.

2) Hold the rail to the metal top element using two steel spring clips, securing both the gauge and field sides of the rail base. The clips shall be held by a clip holder which is integrally cast with the metal top element of the fastener in a manner which does not allow lateral rail adjustment on the metal top element. Clips - One-piece, threadless, and designed to be easily removable by maintenance personnel with standard hand tools but not able to vibrate loose under vehicle operating conditions.

3) Clip removal shall not require loosening of anchor bolts. The rail to be removable by raising the rail vertically until it is completely free of the fastener without disturbing the horizontal or vertical alignment of the fastener.

4) Longitudinal rail restraint properties of the fastener - Identical in both longitudinal directions.

5) Lateral rail restraint properties of the fastener - Identical in both lateral directions.

d. Fastener anchoring configuration

1) Keep the base of the fastener horizontal when the fastener is placed on tangent, unsuperelevated track.

2) Secure the fastener body to the concrete trackbed with two 7/8 inch diameter anchor bolts, one on each side of the rail.

3) Thread the anchor bolts into one-piece female-type anchorage inserts embedded in the concrete trackbed perpendicular to the fastener base.

4) Fastener design to provide a means of adjusting the rail laterally within a range of plus or minus 1/2 inch in increments of 1/8 inch or less. The adjustment feature shall be integral with the anchorage assemblies. Lateral or longitudinal stability of the rail shall not be reduced in adjusted position. Do not use friction alone as a means of adjustment. Provide lateral adjustment by a method that does not require removal, substitution, or addition of a component, and does not require the movement of an anchor bolt laterally.

5) If serrations are used for lateral rail adjustment, not less than three interlocking serrations shall be engaged in any position of lateral adjustment.

e. Vibration attenuation

1) Design the rail fastener to attenuate vibration transmitted by vehicle operation on the rail to the concrete trackbed.

2) Fully bond the elastomer used to achieve the vibration attenuation to the metal top element and the metal base element. Do not use separate resilient pads between rail base and the fastener rail seat or between the fastener base and concrete trackbed, or separate elastomeric washers under the anchor bolt.

3) Do not compromise the attenuation performance of the fastener in any position of lateral adjustment.

4) Do not allow precompression of the elastomer by the anchorage assembly when the anchor bolts are tightened to the design installation torque except by written permission from the Contractor QC or its designee upon submittal of documents which show that:

a) Torquing anchor bolt to proper torque does not limit the vibration reduction performance of the elastomer and still meet minimum electrical resistance and impedance requirements for electrical insulation of the fastener.

b) Elastomer does not contribute toward accelerated vibration- loosening of anchor bolts.

c) Design does not cause or contribute to premature breakdown of elastomer performance, nor cause or contribute to premature reduction of electrical insulating qualities for the fastener, over the life of the fastener.

d) Anchor assembly shall not require additional separate elastomer parts which require assembly during installation.

f. Electrical insulation qualities

1) Electrical insulation of the running rail from the concrete trackbed is essential to contain the returning traction power current within the running rails.

2) Recesses in the fastener: Free draining in all positions of lateral adjustment and at maximum track superelevation of four inches. Fastener surfaces shall be resistant to conductive oil and dirt buildup and facilitate effective periodic cleaning by track maintenance equipment and personnel.

3) For the purpose of this Subparagraph, a bare surface on the fastener is defined as a metallic surface on the fastener that is not covered with bonded elastomeric material. Design the fastener to provide an electrical leakage distance path along elastomer covered surfaces of not less than 3/4 inch, under all load and adjustment conditions. Measure this leakage path from any bare surface on the grounded portion of the fastener including anchor assemblies to any bare surface on the metallic portion of the fastener in direct contact with rail by the most direct path that does not pass through elastomeric insulating material. The leakage distance shall exclude recesses and other geometric configurations which could collect and hold moisture, dust, and other materials which could create a conductive path to ground.

4) Cover exposed metal surfaces on the sides of the fastener by not less than 1/8 inch thickness of the same elastomer as used in the fastener body. Securely bond the elastomer covering to metal surfaces during the same vulcanization process as the rest of the elastomer. Do not cover top or bottom surfaces with elastomer, except 1/32 inch maximum thickness of elastomer surface flash will be allowed to extend 1/2 inch maximum from edges onto elastomer- free surfaces.

4. Design Basis

a. Installation: Design fastener to meet the requirements of its installation as identified in other Sections of the Contract Documents.

b. Rail: Design fastener for use with 115 RE rail, and standard gauge of 4 feet 8-1/2 inches. The track is designed for 1:40 rail cant, which is provided by the fastener. Thus, on the tangent track, the fasteners will be placed on trackbed concrete which is level, with no transverse slope. Level the base of the fastener to match.

c. Adjustment: For height adjustment during installation, one or two shims of variable thickness, but not to exceed 1/2 inch total thickness, may be placed by the installer between the fastener base and the concrete trackbed. Shims to be supplied in accordance with the provisions of Section 34 72 13.03, Direct Fixation Track Construction.

d. Ambient conditions: Design the direct fixation fasteners to withstand the ambient conditions in Table 34 11 36.13-1.

Table 34 11 36.13-1	
AMBIENT CONDITION	**VALUE**
Air Temperature Range (C)	0-46
Relative Humidity Range (percent)	10-100
Rainfall (Maximum inch/hour)	4
Wind (steady state/gusts, maximum mph)	30/60
Hail/Snow	Trace
Fog	Heavy
Air Quality:	
Particulate (Average mg/m3)	0.248
O3 (max-ppm)	0.35
NOx (max-ppm)	0.44
SOx (max-ppm)	0.037
CO (max-ppm)	29
Chloride Content (mg/m3)	13.9
Moisture Acidity (pH)	4.41
Solar Radiation (max-Btu/hr/ft2)	275

C. Tolerances

1. Manufacturing tolerances for the fastener:
   a. Length and width: plus or minus 1/16 inch,
   b. Height: plus or minus 1/32 inch,
   c. Squareness: angles within plus or minus 1 degree,
   d. Centering of holes: plus or minus 1/32 inch,
   e. Diameter of holes: plus or minus 1/32 inch,
   f. Durometer Short A: plus or minus 5,
   g. Serration depth: plus or minus 1/64 inch,
   h. Serration spacing: plus or minus 1/64 inch,

i. Width between shoulders at rail base: plus 1/16 inch or minus 0 inch,

j. Cant of top plate supporting rail: 1:35 to 1:45.

2. Forming tolerances for the concrete test block used for fastener tests:

a. Concrete surface flatness: Maximum 1/16 inch gap between 16 inch straight-edge and concrete surface all around.

b. Elevation of top face of anchorage insert embedded in concrete: 0 inch above or 1/16 inch below top surface of concrete.

c. Voids in bearing surface of concrete: No void greater than 1/2 inch and total area of voids less than ten percent of total fastener bearing area.

3. Determine dimensions affecting the shape of the elastomer so that the complete rail fastener conforms to the physical requirements and acceptance criteria for fastener tests.

D. Testing: Perform testing to demonstrate that fasteners and fastener components meet the requirements of these specifications. Two series of tests are required by this Section: Qualification tests and Production quality control tests.

1. Qualification tests: Tests performed prior to production to verify that the proposed fasteners and fastener components meet the requirements of these specifications.

2. Production quality control tests: Tests performed during production to verify that the manufactured fasteners meet the requirements of these specifications.

3. The Contractor notification: Notify the Contractor QC or its designee in writing not less than 14 days in advance of dates scheduled for any tests. The Contractor QC or its designee retains the right to witness the tests and do not conduct tests until authorized by the Contractor QC or its designee.

4. Testing laboratory: Perform both qualification and production quality control tests either by an independent testing laboratory or a qualified manufacturer's laboratory. If an independent testing laboratory is selected, it shall be a member of the American Council of Independent Laboratories. If a manufacturer's laboratory is selected, it shall satisfy the requirements of the American Council of Independent Laboratories' "Manual of Practice - Quality Control System - Requirements for a Testing and Inspection Laboratory," and ASTM E329. Qualification and production quality control tests will be done by the same laboratory using the same machines. The selected laboratory shall use the proper equipment and qualified testing personnel for elastomeric and metal material and assembly performance testing such as are described in this Section. Acceptance is required by the Contractor QC or its designee prior to qualification testing.

5. Testing equipment: In good operating condition, of adequate capacity and range, and accurately calibrated. In calibration with standards which are certified and traceable to the National Bureau of Standards within 1 year immediately preceding the test date.

6. Documentation: Submit the following documentation in conjunction with the specified tests to the Contractor QC or its designee.

a. Test program plan: Submit a test program plan. Identify the approach for accomplishing each of the specified qualification and production quality control tests. The projected schedule for test procedure submittals, test executions, and test results report submittals shall also be included.

b. Test procedures: Procedures shall be submitted for each test, describing the objective, equipment, and instrumentation that will be used, procedure to be implemented, and the anticipated, as well as acceptable, results. Working drawings detailing test equipment and include set-up of fastener or fastener component that will be tested.

c. Test report

1) Submit a separate report of test results for each test and include original data calculations, test procedure references, test equipment identification, test personnel, date of test, specified requirements, actual test results, nonconformances, if any, and interpretation of the results. Highlight conformance or deviations in a Report Summary.

2) Include with the written test reports a photographic record of the tests containing photographs of sufficient clarity to distinguish relevant details as described or referenced in the respective written report.

1.7 DESIGN QUALIFICATION TESTS

A. Design qualification tests may be waived by the Contractor QC providing that previous satisfactory qualification testing is provided.

B. Successfully complete qualification tests for acceptance by of the Contractor QC or its designee before commencing any production of fasteners or fastener components.

1. Qualification tests on specific components may be waived by the Contractor QC providing that satisfactory evidence, including certified qualification test reports, is submitted with the Test Program Plan and accepted by the Contractor QC or its designee. The evidence will include certified test procedures with test apparatus working drawings, as described in Articles 1.02 D.6 and 1.04. The evidence must adequately prove that satisfactory qualifications tests have been conducted on components of identical design to that specified in these technical provisions. The tests are described in detail in Articles 1.07 through 1.10.

2. In the absence of previous test documentation or if the submitted documentation fails, in the sole opinion of the Contractor QC, to provide evidence of the qualification of the components in accordance with these specifications, the Contractor shall conduct the following tests to satisfactorily complete the qualification test program.

C. Testing of Elastomer: Perform the following tests on separate pairs of elastomer specimens, as described in Article 1.07. Complete elastomer qualification tests successfully with acceptance by the Contractor QC or its designee before commencing qualification testing of fastener assemblies.

1. Hardness Test

2. Tensile Strength Test

3. Ultimate Elongation Test

4. High Temperature Compression Set Test
5. Low Temperature Compression Set Test
6. Accelerated Aging Test
7. Resistance to Ozone Cracking Test
8. Oil Absorption Test
9. Adhesion to Metal Test
10. Flame Spread and Smoke Generation Test
11. Electrical Resistivity Test
12. Water Absorption Test

D. Testing of Anchorage Assemblies: Embed six anchorage inserts in a concrete test block and perform the following anchorage assembly tests as described in Article 1.08. All six anchorage assemblies will have successfully met the test requirements and been accepted by the Contractor QC or its designee prior to commencing qualification testing of fastener assemblies.

1. Restrained Pullout Test
2. Unrestrained Pullout Test
3. Torsion Test

E. Testing of Fastener Body Metal: On three samples of metal to be used for the metal top and base elements of the fastener body, perform the impact test specified in Article 1.09. Each metal specimen will have met the minimum impact requirements and be accepted by the Contractor QC or its designee before fastener assembly qualification testing proceeds.

F. Testing of Fastener Assemblies

1. Following review and acceptance of the Shop Drawings by the Contractor QC or its designee and the successful completion of the qualification testing of the elastomer, anchor assemblies, anchor inserts, and fastener body metal, a minimum of eight complete fastener assemblies and twelve shims shall be manufactured for qualification testing. From these, deliver four fastener assemblies and four shims to the Contractor QC to be retained for design control reference and further test use. Assemble the remaining four fastener assemblies and eight shims and install on concrete test blocks for testing as specified in Article 1.10.
2. If the two-fastener alternative testing arrangement described in Article 1.10B. is selected, the quantities of fasteners and shims required will be revised. Manufacture a minimum of 16 complete fastener assemblies and shims. Deliver eight fastener assemblies and four shims to the Contractor QC, and use eight fastener assemblies with 16 shims for the testing.
3. Perform the tests in the sequence shown on Figure 34 11 36.13-3. A listing of the necessary tests follows:
    a. Vertical Load Test
    b. Vertical Uplift Test

c. Lateral Load Test
d. Lateral Restraint Test
e. Longitudinal Restraint Test
f. Voltage Withstand Test
g. Electrical Resistance Test
h. Electrical Impedance Test
i. Corrosion Test (744 hours)
j. Vertical and Lateral Repeated Load Test (3,000,000 cycles)
k. Repeated Load Test with One Anchor Bolt Loosened (15,000 cycles)
l. Uplift Repeated Load Test (1,500,000 cycles)
m. Push-Pull Test (2,000 cycles and 1,000,000 cycles)
n. Dynamic to Static Stiffness Ratio Test (1,000 cycles)
o. Heat Aging Test (336 hours)

G. Test Failure: Should any fastener assembly fail a test, perform the entire sequence of tests, as specified in Article 1.05E, on a new fastener assembly. If the fastener assembly must be modified to pass any test, Shop Drawings of the new design must be submitted and accepted by the Contractor QC or its designee before performance testing is continued. Produce a new lot of at least eight rail fastener assemblies of the new design and all tests performed on the new fastener design. Continue the revision, acceptance and test cycle until fastener assemblies are accepted, but no longer than twelve weeks after acceptance of the new design. After the Contractor QC or its designee has accepted the fastener assembly design, make no change in the design, materials, and manufacturing process without written acceptance by the Contractor QC or its designee. If a change is proposed, the Contractor QC or its designee may require retesting of the rail fastener as altered. Perform such testing in the same laboratory on the same equipment and insofar as possible, by the same laboratory personnel as the qualification test.

1.8 PRODUCTION QUALITY CONTROL TESTS

A. General: Following successful completion of the qualification tests, acceptance of the qualification test reports by the Contractor QC or its designee, and start of fastener assembly manufacturing, elastomer samples and fasteners selected from regular production shall be subjected to testing to ensure that high quality standards are maintained and that design requirements set forth in these specifications are met through the completion of production. The required production quality control tests shall be conducted in accordance with the test descriptions in Articles 1.07 through 1.10. The following is a summary listing of the production quality control tests that shall be satisfactorily conducted.

1. Testing shall be conducted on two samples from the first 50 produced, and an additional two samples from each additional 1,000 produced or portion thereof. If production is greater than an even multiple of 1,000, two samples shall be taken from the first 50 and the remaining samples taken at regular intervals distributed evenly throughout the production.

B. Testing of Elastomer: Provide specimen test results according to certification of the elastomer used in the manufacturer of the fasteners. Provide verification of the compliance of the elastomer used in each fastener production with the following testing requirements at least 30 days before prior to shipment of fasteners:

1. Hardness Test
2. Tensile Strength Test
3. Ultimate Elongation Test
4. High Temperature Compression Set Test
5. Low Temperature Compression Set Test
6. Accelerated Aging Test
7. Resistance to Ozone Cracking Test
8. Oil Absorption Test
9. Adhesion to Metal Test
10. Flame Spread and Smoke Generation Test
11. Electrical Resistivity Test
12. Water Absorption Test

C. Testing of Fastener Assemblies

1. Production quality control testing of fasteners shall be performed on two fasteners from the first fifty fasteners produced and on two fasteners from each production lot, as defined in Article 1.06.A.1. Fasteners shall be selected for testing by the Contractor QC.
2. All production quality control tests for each particular production lot shall be successfully completed and the test reports for the tests accepted by the Contractor QC or its designee before that production lot will be accepted. Should either fastener fail to meet the test requirements, subject two additional fasteners from the same production lot to complete set of production quality control tests. If either of the second pair of tested fasteners fails to meet the test requirements, reject or retest the entire production lot and only those fasteners that successfully pass the production quality control tests will be accepted.
3. Permanently mark fasteners used for production testing and meeting all test requirements as production test fasteners and shall be delivered separately to the Contractor QC. Production quality control testing of fastener assemblies shall include the following tests:
    a. Vertical Load Test
    b. Vertical Uplift Test

c. Lateral Load Test

d. Lateral Restraint Test

e. Longitudinal Restraint Test

f. Voltage Withstand Test

g. Electrical Resistance and Impedance Test

h. Electrical Impedance Test

i. Vertical and Lateral Repeated Load Test (500,000 cycles)

1.9 TESTING OF ELASTOMER

A. Preparation of Test Specimens: Elastomer tests shall be performed on each of two specimens that are identical in all respects to the elastomer proposed for use in fasteners. Use a separate pair of specimens for each test. Use specimens taken from a batch of compound used for making the elastomeric component of the fastener and having a cure equivalent to the cure of the elastomeric component. Prior to testing, condition specimens for at least seven days at 23 degrees Celsius and 50 percent relative humidity.

B. Effect of Elastomer Type on Tests: As defined in Article 2.01H. 4.

C. Hardness Test

1. Test method: ASTM D2240.

2. Acceptance criteria: 40 to 75 Durometer, Shore A.

D. Tensile Strength Test

1. Test method: ASTM D412.

2. Acceptance criteria: 1,500 pounds per square inch, minimum.

E. Ultimate Elongation Test

1. Test method: ASTM D412.

2. Acceptance criteria: 350 percent, minimum.

F. High Temperature Compression Set Test

1. Test method: Test for 22 hours in accordance with ASTM D395, Method B. For rubber base elastomers, the test shall be conducted at a temperature of 70 degrees Celsius.

2. Acceptance criteria: The set shall not exceed 25 percent.

G. Low Temperature Compression Set Test

1. Test method: Using ASTM D1229, test for 70 hours at a temperature of minus 10 degrees Celsius.

2. Acceptance criteria: The compression set at 30 minutes after release (plus 30 reading) not to exceed 65 percent.

H. Accelerated Aging Test

1. Test method: Using ASTM D573, age the elastomer for 70 hours at a temperature of 70 degrees Celsius. Measure and record the change in hardness, tensile strength and ultimate elongation.
2. Acceptance criteria: Tensile strength shall exceed 1,125 pounds per square inch, the ultimate elongation shall exceed 310 percent, and change in hardness, measured on Durometer A scale, not to exceed 10 points.

I. Resistance to Ozone Cracking Test

1. Test method: Prepare test specimens in accordance with Procedure A of ASTM D518. Test specimens in accordance with ASTM D1149 at a temperature of 40 degrees Celsius and ozone concentration of 50 pphm.
2. Acceptance criteria: Elastomer, not to exhibit cracking at the end of a 100 hour exposure.

J. Oil Absorption Test

1. Test method: Determine volume change of elastomer using ASTM D471. Conduct one test with ASTM No. 3 oil at a temperature of 23 degrees Celsius for 70 hours and conduct the other test using a different sample with ASTM No. 1 oil at a temperature of 23 degrees Celsius for 70 hours.
2. Acceptance criteria: The volume change for No. 1 oil, not to exceed minus 10 or plus 20 percent; and for No. 3 oil, volume change, not to exceed 100 percent.

K. Adhesion to Metal Test

1. Test method: Test the elastomer’s adhesion to the metal top and base elements as per ASTM D429, Method B. Use the same metal, metal preparation, elastomer, and adhesives in preparing the test specimen as are used in the production of the fasteners body.
2. Acceptance criteria: Type R, failure in which the elastomer tears before elastomer bond to the metal parts.

L. Flame Spread and Smoke Generation Test

1. Test method: Test elastomer in accordance with ASTM E162 to determine the flame propagation index. Test elastomer in accordance with NFPA 258 in both the flaming and non-flaming modes to determine smoke generation specific optical index.
2. Acceptance criteria: Elastomer, not to exhibit flaming drippings when tested. No acceptance criteria are specified for the flame propagation index and the smoke generation specific optical index. Report these indices to the Contractor QC or its designee for information only.

M. Electrical Resistivity Test

1. Test method: ASTM D257. For testing under wet conditions, immerse elastomer for 24 hours in potable water with a resistivity of 1,000 to 1,500 ohm-cm. Adjust Resistivity of potable water to the required range by addition of sodium chloride.
2. Acceptance criteria: A minimum volume resistivity of 1012 ohm-centimeters for elastomer under dry conditions and a minimum of 1011 ohm-centimeters after 24 hours immersion in water.

N. Water Absorption Test

1. Test method: Determine change in weight of elastomer due to absorption of water using ASTM D570. Immerse specimens in distilled water for 24 hours at a temperature of 23 degrees Celsius.
2. Acceptance criteria: Elastomer to have a maximum increase in weight of 1.0 percent.

1.10 TESTING ANCHORAGE ASSEMBLIES

A. Test Preparation

1. Provide six anchor assemblies identical in design to those specified for supply with the fasteners to perform the following tests. Use two separate anchorage assemblies for each of the three tests. For the acceptance of anchorage design, each anchor assembly shall satisfy the test requirements and test results will not be averaged.
2. Embed anchor inserts in a reinforced concrete test block which is 8 feet long. The sides shall be vertical and the top and bottom shall be horizontal. Position inserts as they would be in track for two fasteners 30 inches apart measured parallel to the rail. Inserts should be vertical, with the top face flush with the concrete surface. Set the insert in the concrete before or during the concrete placing. Do not permit post-drilling and placing of inserts with resins or grouts. The test set-up is shown graphically on Figure 34 11 36.13-4.
3. Concrete test block: A 28 day compressive strength of between 4,000 and 4,400 pounds per square inch as determined by ASTM C39. Provide four test cylinders, and test two at 7 days and two at 28 days. Do not begin the test on the insert until the concrete has reached the specified 28-day compressive strength.
4. Place reinforcing steel as shown. Use ASTM A615, Grade 60 steel.
5. Thread the anchor bolts into the inserts to at least 1-1/4 inch thread engagement before load application.
6. The test apparatus working drawings shall be submitted to the Contractor QC or its designee.

B. Restrained Pullout Test

1. Test method: Place a 3-1/2 inch by 3-1/2 inch by 1/2 inch thick steel plate with a 1 inch diameter hole in its center, over an anchor bolt. Apply for 1 minute an upward vertical load, starting at 1,000 pounds and increasing to 40,000 pounds, to the anchor bolt with the reaction force bearing against the steel plate. Repeat the test on one other anchor bolt.
2. Acceptance criteria: No evidence of slippage or cracking of concrete or failure of bond between either of the two bolts or inserts, and concrete.

C. Unrestrained Pullout Test

1. Test method: Apply a vertical pullout load on an anchor bolt, in such a manner that no restraining load is applied to the concrete within a radius of six inches from the center of the bolt. Start the load application at 1,000 pounds, increase it until a load of 16,000 pounds occurs, hold at 16,000 pounds for at least 1 minute and release. Repeat the test on one other anchor bolt.

2. Acceptance criteria: No evidence of concrete cracking or failure of bond between either of the two bolts or inserts, and concrete.

D. Torsion Test

1. Test method: Subject an anchor bolt to a torque not less than 100 percent greater than the design installation torque submitted with installation requirements. Hold the load for 3 minutes and release. Repeat test on one other anchor bolt.

2. Acceptance criteria: No evidence of failure of the bond between either of the two bolts or inserts, and concrete.

1.11 TESTING FASTENER BODY METAL - CHARPY IMPACT TEST

A. Test Method: Prepare three Charpy impact test specimens in accordance with ASTM E23 from the same metal used for the top and base elements of the fastener body. If different grades of steel or iron are used for the two elements, prepare three specimens of each. Conduct a Charpy impact test on each specimen at a temperature of 21 degrees Celsius in accordance with ASTM E23. Include in the test report the information in Paragraph 12 of ASTM E23.

B. Acceptance Criteria: The fracture energy will be greater than 3 foot-pounds for irons and 15 foot-pounds for steel.

1.12 TESTING FASTENER ASSEMBLIES

A. Test Preparation

1. Except as described in Article 1.10B, a minimum of four complete fastener assemblies are required to conduct the tests. Assemble one fastener and mount on each of four concrete test blocks, designated as A, B, C, and D. Conduct the test in sequence, in accordance with Figure 34 11 36.13-3.

2. Except as otherwise specified herein, perform each test on a completely assembled fastener with a section of 115 RE rail not less than 1 foot long mounted and clipped thereon. Before assembly, wipe metal parts and elastomer clean and dry. Assemble the fastener as shown on test apparatus working drawings, and as outlined in the test procedures. Place two 1/4-inch shims under the fastener. Tighten the anchor bolts to the design installation torque submitted with the installation procedures to the Contractor QC or its designee. Measure the torque of each bolt and note in the test report.

3. Space the anchor inserts to match the fastener at the middle lateral adjustment setting. Set the inserts in a reinforced concrete block in as specified Article 1.06A, except that only two anchor inserts to be placed at the center of the block and the concrete block shall have a minimum length of 2.5 feet.

4. Before commencing each test, stabilize the fastener and concrete test block at a temperature of 23 degrees Celsius, plus or minus 4 degrees Celsius, for not less than four hours. Perform testing within the same temperature range except as otherwise as specified.
5. Except as otherwise noted, apply the test loading to the rail at centerline of the fastener. Clearly indicate in the test report the performance of each fastener separately. Failure of any fasteners will be sufficient cause for rejection of the fastener design.

B. Alternative Test Preparation

1. Instead of using one fastener, each test may be performed on a pair of fastener assemblies at thirty inch center-to-center spacing, with a section of 115 RE rail not less than 42 inches long mounted and clipped thereon. Assemble each fastener as described in Article 1.10A. for one fastener.
2. For two-fastener testing arrangement, double total loadings specified for each test. Apply vertical or lateral loads to rail at a point centered between the fasteners to ensure that each fastener is equally loaded. Label each fastening in the pair distinctly and indicate the performance of each fastener separately. For acceptance of fastener design, each fastener shall satisfy test requirements without failure.
3. Concrete test block: As described in Article 1.08A. and shown in Figure 34 11 16.13-4, except it shall have a minimum length of eight feet, with three pairs of anchorage inserts at 30 inch spacing center-to-center centered within the test block.

C. Vertical Load Test

1. Test method: Load each fastener vertically to 10,000 pounds for 1 minute. Thereafter, release the load and after 1 minute, zero the displacement gauges, one on each side of the load, at zero load. Apply a vertical load increasing in increments of 500 pounds to a maximum load of 10,000 pounds at a rate not less than 100 pounds per minute nor more than 1,000 pounds per minute, downward at the centerline of the rail head at the centerline of the fastener and normal to the rail. For each increment of load measure and record the vertical deflection of the rail head to the nearest 0.001 inch. Remove the load and measure and record the final position of the rail head.
2. Acceptance criteria
    a. Calculate fastener stiffness as the slope of a straight line determined by a linear least-squares regression of each load versus each deflection for loads between 2,000 pounds and 10,000 pounds. The fastener stiffness shall be within 20 percent of 95,000 pounds per inch for standard fasteners. The load versus displacement curve shall be within the limits identified in Figure 34 11 36.13-5 for standard DF fasteners.
    b. The tangent to load-versus-deflection curve at each load between and including 2,000 pounds and 8,000 pounds shall be within 20 percent of the fastener stiffness determined above. For the purpose of calculation, the tangent to the load versus deflection curve at each deflection, Xn, and each load, Pn, are approximated as:

(Pn+1 - Pn-1)/(Xn+1 - Xn-1)

where Pn is the load at deflection Xn.

c. Total deflection of the elastomer at the 10,000 pound load: not to exceed 30 percent of the uncompressed thickness. After removal of the maximum load of 10,000 pounds, the fastener will return to within 0.005 inch of its original position within 1 minute. At no time during the tests will a fastener component exhibit any sign of failure by slippage, yielding, fracture, or bond failure. Slippage is as specified to mean movement of any fastener component relative to its initial position not attributable to deflection of the elastomer.

d. Values obtained when this test is repeated, after performance of other tests, on a fastener to be within 15 percent of the initial test values.

D. Vertical Uplift Test

1. Test method: Apply a vertical load to the center of the rail head at the centerline of the fastener normal to the rail, alternating continuously from a downward load to an upward load. The upper and lower peaks per cycle will be increased in increments of 200 pounds each cycle up to a maximum load of 2,400 pounds. The loads and deflections shall be continuously measured to the nearest 0.001 inch and immediately recorded on a load-versus-time graph and deflection-versus-time graph, respectively. Remove the load and measure and record the final position of the rail head. Apply the reaction force to the uplift load to the test block on which the fastener is mounted.

2. Acceptance criteria: The absolute vertical deflection of the fastener for an upward load of 2,000 pounds will be within 135 percent of the absolute deflection for the 2,000 pound downward vertical load as determined from vertical load tests. When vertical load is continuously varied from vertical downward to vertical uplift loads, there will be no indication of backlash or freeplay at times when the load or the deflection changes direction. After removal of the maximum load, the rail will, within 2 minutes, return to within 0.005 inch of its original position. At no time during the test shall a fastener component, including the anchorage to the test block, exhibit a sign of failure by slippage, yielding, or fracture.

E. Lateral Load Test

1. Test method: While applying a constant vertical load of 10,000 pounds downward at the center of the rail head, a lateral load, increasing in increments of 500 pounds to a maximum load of 6,000 pounds at a rate not less than 100 pounds per minute, will be applied horizontally to the gauge side of the rail head at the location of vertical load. Apply the horizontal force 0.625 inch below the top of the rail for standard DF fasteners. For each lateral load increment, measure the lateral deflection of the rail head at a point 0.625 inch below the top of the rail to the nearest 0.001 inch and recorded. Remove the lateral load and measure and record the final position of the rail head. Plot the recorded values for lateral load versus deflection.

2. Acceptance criteria: Lateral load versus deflection curve to lie within the envelope shown in Figure 34 11 36.13-6. After removal of the lateral load, the difference between the original and final positions of the gauge line shall not exceed 0.062 inches. At no time during the test will fastener component exhibit a sign of failure by slippage, yielding, or fracture.

F. Lateral Restraint Test

1. Test method: Apply two equal lateral loads increasing simultaneously in increments of 500 pounds up to a maximum load of 5,000 pounds for each load, for a total load of 10,000 pounds, normal to the rail in the same direction and at the base of the rail. Loads shall be symmetrical on each side of the fastener centerline. Measure the lateral deflection to the nearest 0.001 inch at intersection of centerline of the fastener and gauge line of the rail. Record measurements after each increment of loading.

2. Acceptance criteria: Difference between original and final positions of the gauge line after removal of load, not to exceed 0.062 inch. The lateral deflection of the rail head, when fully loaded shall be between 0.0625 and 0.225 inch from the original gauge line of the rail. At no time during the test shall a component show signs of slippage, yielding, or fracture.

G. Longitudinal Restraint Test

1. Test method: Apply a load longitudinally to the rail at its base increasing in increments of 200 pounds up to a total load of 5,000 pounds or until the rail deflects

2. 0.6 inches from the initial position. Maintain each load increment constant until the longitudinal deflection of the rail ceases before increasing the load by the next increment. For each load, measure and record the longitudinal deflection of the rail to the nearest 0.001 inch. Then remove the longitudinal load and measure and record the final position of the rail. Plot the recorded values for longitudinal load versus deflection.

3. Acceptance criteria: The difference between initial and final positions of the rail after removal of load shall not exceed 0.125 inch plus the slippage distance of the rail relative to the fastener top plate. The longitudinal load versus deflection curve, when plotted on a graph similar to Figure 34 11 36.13-7 for standard fasteners, shall lie entirely within the shaded limits. At no time during the test shall a fastener component exhibit a sign of failure by slippage, yielding, or fracture, except for the slippage which occurs between the rail and the fastener top element and clips.

H. Voltage Withstand Test

1. Test method: Prepare a fully assembled fastener and apply a DC potential of 10,000 volts between the rail head and the metal base element of the fastener body for 1 minute.

2. Acceptance criteria: Elastomer to withstand this test with no visible damage such as splits, cracks, pinholes or fractures, and no evidence of arcing, arc tracking, or other voltage breakdown.

I. Electrical Resistance Test

1. Test method: Test complete, a fully assembled fastener, as specified herein, for electrical resistance. Before assembly, metal parts, anchoring devices, rail clips, clean and dry elastomer surfaces and other ancillary parts associated with the fastener. Assemble the fastener with a section of 115 RE rail, not less than 1 foot in length. Mount the test fastener on a 1/4 inch thick metallic ground plate sized to extend 1/2 inch beyond all edges of the fastener. Use anchor assemblies supplied for use in actual field installation, to mount the fastener to the ground plate. Use the same number of bolts (or other devices) as will be used to anchor the fastener in service. Verify that all parts which are in electrical contact do not exhibit excessive contact resistance because of improper assembly or other causes. Test shall apply to, but not necessarily limited to the following areas:
   a. Rail to rail-plate interface
   b. Rail hold down assembly (i.e., clip) and rail
   c. Anchor bolts and bottom fastener plates (if present)
   d. Anchor bolts and ground plate
2. Dry conditions: 24 hours prior to testing, store the assembled fastener(s) in a clean, dry environment with ambient conditions of 60 degrees Fahrenheit to 80 degrees Fahrenheit and 50 to 70 percent relative humidity. Apply 100 volts (minimum) DC between rail head and ground plate for 3 minutes. Measure the applied voltage and resulting current flow, or directly measure the resistance with an accuracy of plus or minus 2 percent. Instrumentation used for direct measurement will have a minimum 100 volt output capability.
3. Wet conditions: Perform this test on the same fastener(s) that passed the dry electrical resistance tests. Place the assembled fastener in a nonmetallic trough or other suitable container. Size the container such that there is a minimum of 2 inches between the sides and bottom of the fastener/ground plate assembly and sides and bottom of container. In the event more than one fastener is placed in the same container, maintain 2 inches clearance between the edges of the ground plates on adjacent fasteners and clearances described above. Pour water into the container to a level midway up the rail web covering all surfaces of the fastener. Maintain this level of immersion for 10 minutes. Ambient temperature of fastener surfaces (prior to immersion), water and air to be 60 degrees Fahrenheit to 80 degrees Fahrenheit. Relative humidity will be 50 to 70 percent. Water resistivity to be 1,000 to 1,500 ohm-cm (use potable water and adjust resistivity by addition of sodium chloride per ASTM D1193). Drain water from container to a level 1/2 inch below the ground plate, and without drying or otherwise disturbing the fasteners or creating a condition that causes the fastener surfaces to dry, measure the resistance within 15 seconds after draining as follows:
   a. Apply 100 volts between the rail head and the ground plate for a period of 15 seconds.
   b. Measure the applied voltage and resulting current flow between the rail head and the ground plate with an accuracy of plus or minus 2 percent and calculate the DC wet resistance, or directly measure the resistance with an accuracy of plus or minus 2 percent. Instrumentation used for direct measurement will have a minimum 100 volt output capability.

c. Repeat the resistance measurement every 5 minutes for the first hour, every 10 minutes for the second hour, and every 15 minutes thereafter to establish the wet resistance versus time characteristics of the fastener. Make the tests for not less than 2 hours after wetting. The tests can be terminated after the 2 hour test period when any three consecutive measurements are not less than 1 megohm, or after another 2 hour test period, whichever comes first.

4. Test acceptance criteria

a. Dry conditions: Minimum DC resistance: 20 megohms.

b. Wet conditions: Minimum resistance of 1 megohm for the average of three consecutive readings within 2 hours after wetting. The difference between each of the three readings and the average, not to exceed 10 percent of the average.

J. Electrical Impedance Test

1. Test method: Test a complete, a fully assembled fastener, as specified, for electrical impedance. Apply a potential of 50 volts AC RMS to the rail head for 3 minutes for each increment of measurement for frequencies from 20 Hz to 10 kHz, in increments of 20 Hz up to 100 Hz, 200 Hz up to 1,000 Hz, and 2,000 Hz up to 10 kHz. Measure the impedance after 3 minutes with an accuracy of plus or minus 2 percent and recorded for each frequency. Electrical resistance may be calculated by measuring current flow, and impedance may be calculated from the measurements of resistance and capacitance using the impedance equation which applies to a resistance and capacitance in parallel.

2. Acceptance criteria: Minimum impedance for any frequency between 20 Hz and 10 Khz with 50 volts AC RMS shall be 10,000 ohms.

K. Corrosion Test

1. Test method: Expose the fastener, without loose components, to a 5 percent chloride solution in accordance with ASTM B117 for 744 hours.

2. Acceptance criteria: Acceptance to be based upon visual comparison between actual metal surface condition after completion of the test and the pictorial surface preparation standards defined in SSPCVIS 1. The condition of the metal surfaces shall match or be superior to Rust Grade B, wherein there is no more than light surface rust, mill scale has only begun to flake and there is no pitting. There shall be no evidence of adhesion loss of adhesive coating. In areas where prior testing has removed the protective coatings, use surface rust grade specified above for judging acceptance.

L. Vertical and Lateral Repeated Load Test

1. Test method: Apply a load on the rail head center so as to produce a vertical downward load of or 10,400 for standard fasteners on the fastener. Apply lateral loads 0.625 inches below the top of rail for standard fastener. Apply lateral loads at the centerline of the fastener and normal to the rail. Lateral loads from the field side shall be 1,500 pounds and from the gauge side, 3,500 pounds. Application of the lateral loads shall be alternate, each combined with the application and release of the vertical load. Application of the field side load together with the vertical load, loads release and then the gauge side load together with the vertical load and loads release shall constitute one cycle. Vertical and lateral

loads versus time will be sinusoidal. For the qualification testing program, the test will be conducted for 3,000,000 cycles. The anchor bolts may be retorqued to their initial torque once during this test prior to 500,000 cycles. Regulate the loading frequency to prevent the temperature of the fastener components from exceeding 50 degrees Celsius. Do not reposition the rail clips or the threaded elements retorqued.

2. Acceptance criteria: The fastener will withstand the specified total number of cycles of load application with no evidence of failure. Upon visual inspection, no component of the fastener will exhibit evidence of failure by slippage, yielding, abrasion, or fracture at any time during the test. The rail will exhibit no evidence of wear or grooving that could contribute to failure of a rail.

M. Repeated Load Test With One Anchor Bolt Loosened

1. Test method: After completion of vertical and lateral repeated load test, reassemble the fastener using only the original components previously tested. Then, with the gauge side anchor bolt loosened and backed out 1/4 inch, repeat the vertical and lateral repeated load test for 15,000 cycles.

2. Acceptance criteria: The fastener will withstand the specified total number of cycles of loading with no evidence of failure by slippage, yielding, or fracture. The rail will exhibit no evidence of wear or grooving that could contribute to failure of a rail.

N. Uplift Repeated Load Test

1. Test method

a. Apply the load to a fully assembled fastener, to the rail head so as to produce alternately a vertical downward load of 10,400 pounds for standard fasteners and a vertical upward load of 2,000 pounds for standard fasteners) at the centerline of the fastener normal to the rail. Apply the loads alternately for a total of 1.5 million complete cycles. Regulate the frequency to prevent component temperature reaching 50 degrees Celsius. Do not reposition rail clips or retorque the threaded elements.

b. During the final 500,000 cycles, a longitudinal load will be applied to the rail at its base. Increase the load in increments of 100 pounds up to 600 pounds at intervals of at least one increment per 100 cycles of vertical loading. For each load increment, measure and record the longitudinal deflection of the rail to the nearest 0.001 inch. Then remove the longitudinal load and measure and record the longitudinal position of the rail. Plot the recorded values for the longitudinal load versus deflection on a graph.

2. Acceptance criteria: The fastener will withstand 1.5 million cycles of load application with no evidence of failure. Upon visual inspection, no component of the fastener shall exhibit evidence of failure by yielding, abrasion, slippage or fracture. The rail shall exhibit no evidence of wear or grooving that could contribute to its failure. The plot of the load versus deflection curve shall indicate the elastic deformation and the residual deflection. Residual deflection, not to exceed 0.005 inch.

O. Push-Pull Test

1. Test method

a. Support rail end on a roller or other frictionless support properly elevated to prevent the longitudinal load from binding the rail in the fasteners. Apply a cyclic longitudinal load at the base of the rail to slip the rail approximately 1/2 inch back and forth about its initial position for a total of 2,000 cycles without repositioning rail clip or retorquing bolts. Measure the 1/2 inch slip with respect to a fixed point on the testing machine. Following this, check components against the acceptance criteria. Next, apply a cyclic longitudinal load at the rail base to slip the rail approximately 1/8 inch back and forth about its initial position for a total of 1 million cycles.

b. Repositioning of the rail clip will not be allowed during the second phase of the test. Regulate loading frequency to prevent the temperature of components from exceeding 50 degrees Celsius. Clean water may be applied occasionally as a spray in order to keep the temperature below 50 degrees Celsius.

2. Acceptance criteria: The fastener will withstand the specified number of cycles of load application with no evidence of failure. Upon visual inspection, no component will exhibit evidence of failure by slippage, yielding, or fracture at any time during the test, nor will a rail clip show evidence of sliding out or backing out of its hold- down housing more than 1/16 inch. The rail will exhibit no evidence of wear, beyond minor polishing and grooving that could contribute to failure of a rail.

P. Dynamic to Static Stiffness Ratio Test

1. Test method

a. Apply an oscillating downward load at the centerline of the rail head at the centerline of the fastener so as to produce a sinusoidal load alternating between 3,000 and 7,000 pounds at a rate of between 10 and 20 hertz. Continuously record the load and deflection versus time on a high speed oscillograph. After a minimum of 1,000 cycles, determine the dynamic stiffness from the ratio of peak-to-trough force to peak-to-trough deflection from the recorded data. Measure the deflection to an accuracy of 0.001 inch or better.

b. Between five and ten minutes after completion of the dynamic stiffness measurement, apply a vertical load beginning at 0 pounds and increasing in 1,000 pound increments to a maximum of 8,000 pounds, at a rate not less than 100 pounds per minute nor more than 1,000 pounds per minute, at the centerline of the fastener. For each increment of load between 2,000 and 8,000 pounds, record the vertical deflection of the rail head to the nearest 0.001 inch. The static stiffness of the fastener shall be the difference in load divided by the difference in deflection between 3,000 and 7,000 pounds.

2. Acceptance criteria: The dynamic stiffness will not exceed 1.4 times the static stiffness.

Q. Heat Aging Test

1. Test method: Age test the fastener body, without rail, concrete test block, rail clips or anchorage assemblies, in an air oven for 336 hours at a temperature of 70 degrees Celsius as per ASTM D573.
2. Acceptance criteria: This is a conditioning process and there is no acceptance criteria.

1.13 DELIVERY, STORAGE, AND HANDLING

A. General

1. Replace fasteners damaged during packaging, shipping, and unloading with new units.
2. Deliver fasteners used in qualification testing separately to the Contractor QC, to not be included in the final delivered quantity.
3. Clearly mark containers with the following - Identification of item contained, supplier's name, shipping date, number of pieces, destination, and gross weight.

B. Packaging

1. Pack fastener bodies, rail clips, anchor bolts and anchorage assemblies separately in units convenient for handling. The pack fastener bodies in weatherproof containers, banded on pallets for forklift handling. Pack rail clips, anchor bolts and anchorage assemblies in weatherproof wooden or metal containers, banded on pallets for forklift handling.
2. Adequately prepare fastener shipments to preclude damage during shipment.
3. Shipping - Ship fasteners FOB, in accordance with the schedule and general delivery locations identified by the Contractor.

PART 2 - PRODUCTS

2.1 FASTENER BODY

A. Rail Fastener Body: An elastomeric element bonded to metal top and base elements.

B. Base of the fastener body in contact with concrete trackbed or height adjustment shims will be flat and horizontal for tangent track, with no projections into the concrete pad or height adjustment shims.

C. The stability of the rail fastener in any lateral and longitudinal direction will not be dependent solely on the strength of the bond of the elastomer to metal.

D. The fastener will have full bearing on the elastomer in all positions of lateral adjustment.

E. Coat exposed metal surfaces of the fastener body that are not covered with elastomer with primer and material used to form the bond of elastomer to metal. This coating will protect the exposed surfaces of the metal parts from corrosion and shall protect the elastomer-to-metal bond.

F. Fastener Components: Free of gaps, burrs, sharp edges, wrinkles, waves, blemishes, or other unsightly or unsafe defects which detract from a neat appearance of the finished product.

G. Metal Components

1. Metal top and base elements: One-piece rolled, forged or cast steel or ductile iron.
2. Metal top and base elements: Designed with sufficient material strength, thickness and shape to withstand the loading and fatigue requirements of the Specifications and the transit systems.
3. Metal top element: Flat, except for rail clip and rail seat shoulder projections, and continuous. The rail seat: Flat, with a 1:40 slope down on the gauge side for rail cant. The rail seat and clip mating surfaces - Smooth, free from injurious warp and other imperfections in surface and projecting fins of metal caused during forming.
4. Metal base element thickness: Not less than 1/8 inch.
5. Rolled steel plate: ASTM A36/A36M steel, minimum. The fracture energy at 21.1 degrees Celsius in accordance with ASTM E23 - Greater than 15 foot-pounds.
6. Ductile iron castings: Grade 65-45-12 in accordance with ASTM A536. They can be as-cast, but may be heat treated. Chemical composition: Meet the acceptable level per SAE J434. Brinell hardness in accordance with ASTM E10 within 156-217 BHN. Microstructure within limits set by SAE J434. Fracture energy at 21.1EC in accordance with ASTM E23: Greater than 3 foot-pounds.
7. Design: The fastener top element to support 115 RE rail.

H. Elastomer

1. Any portion of the elastomer bonded between metal top and base elements, i.e. between upturned or downturned metal on the sides: Thickness of not less than 1/2 inch and free of discontinuity of holidays in accordance with NACE RP0188.
2. Recesses or notches which penetrate metal top element and expose the elastomer: Free draining with not less than seven percent slope if draining in a direction perpendicular to the rail or not less than six percent if draining in a direction parallel to the rail.
3. Elastomer surfaces: Smooth with a finish and appearance in accordance with ASTM D297 Rubber Products.
4. Natural rubber elastomer based as defined in ASTM 1566 and as specified in the Rubbers Manufacturers Association (RMA) Handbook. Natural rubber based elastomer is defined as being 100 percent natural rubber or a blend with over 50 percent natural rubber with a tear resistance in accordance with ASTM D624.
5. Durometer A hardness: Between 40 and 70 as measured in accordance with ASTM D2240.

2.2 RAIL CLIP ASSEMBLIES

A. Fasten the gauge and field sides of the rail base up by a resilient type, nonthreaded

spring steel clip. Spring-wedge type rail clips shall not be permitted.

B. Neither the rail clip nor the rail clip holder shall make point contact with the rail. The contact area shall not be shorter than 1 inch measured along the rail and not smaller than 0.15 square inch in area.

C. Do not include any elastomeric components in the rail clip assembly.

D. Design rail clip assembly to enable installation and removal without damage to the fastener body, elastomeric elements, clip holder, clip, or rail.

E. Rail Clip: Commonly produced design by the rail clip manufacturer, as manufactured by Pandrol USA, or approved equal. Underbent or overbent alterations of the commonly produced clip will not be accepted.

F. Provide rail clips with a track record of successful performance on other rail transit or railroad projects.

G. Bars Used For Rail Clips: Free of injurious defects and have a workmanlike finish consistent with good hot-rolling practices for bars intended for use in springs.

H. Clip Holder: A permanent and integral part of the metal top element. Welding of clip holder to metal top element is not permitted.

2.3 ANCHORAGE ASSEMBLIES

A. General Requirements

1. Provide two anchor assemblies for each fastener consisting of an anchor bolt, anchor insert, washers, and other components required for lateral adjustment of the fastener.

2. Anchorage assembly to anchor the metal base element to the concrete trackbed, and be perpendicular to the fastener base. Do not penetrate or contact the metal top element with anchor bolts.

3. The necessary lateral adjustment of the fastener, to be integral with the anchorage assembly.

B. Anchor Bolts and Nuts

1. ANSI B18.2.1, 7/8 inch diameter, heavy hex. Be of sufficient length to provide not less than 1-1/4 inch thread engagement with anchorage insert threads when the fastener is installed at the maximum vertical adjustment, using 1/2 inch of shims. Threads: 7/8-9 UNC-2A in accordance with ANSI B1.1 and ANSI B1.3.

2. SAE J429, Grade 5 steel. Bolts, including threads, shall be electrodeposited with zinc in accordance with ASTM B633, Type II, SC 2.

3. Steel nuts shall meet the requirements of SAE J995.

C. Washers

1. Both plain and lock washers: 7/8 inch diameter, carbon steel, and zinc-electrodeposited in accordance with ASTM B633, Type II, SC 4.

2. Plain washers: ANSI B18.22.1, Type B, Regular.

3. Lock washers: ANSI B18.21.1, helical spring, Extra Duty.

D. Anchorage Inserts

1. The anchor inserts shall, as a minimum, conform to ASTM Designation A536, Standard Specification for Ductile Iron Casting, Grade 65-45-12, and shall have a Class 2B thread fit.

2. As part of the insert, there shall be a feature to prevent rotation of the insert after the concrete has reached its design strength.

3. The anchor insert shall have a minimum length of 4-1/2 inches and a maximum length of 4-7/8 inches and shall have a minimum 2-inch engaging threaded length.

4. In the installed position, the top of the anchor insert shall provide a flat surface parallel to the rail base with a minimum of 1/8-inch bearing width surrounding the anchor bolt hole.

5. Inserts shall be furnished with an installed plug of metal or plastic material to preclude the entrapment of moisture, concrete, or other foreign materials. Removal shall be by using a socket wrench or other common device. Plugs shall be capable of reinsertion, and if reinserted, shall still preclude concrete and other material from entry.

6. Inserts shall be coated with uniform epoxy resin insulating coating on exterior surfaces.

   a. Coating material shall be a 100 percent dry powder epoxy resin such as Scotch Kote Brand Protective Resin No. 203, manufactured by the Minnesota Mining and Manufacturing Company, Corvel Epoxy ECB- 1363A, manufactured by the Polymer Corporation, or approved equivalent.

   b. Before coating, the insert shall be degreased and cleaned to white metal in accordance with SSPC Specification SP5, White Metal Blast Cleaning.

   c. The coating application shall be in accordance with the coating manufacturer’s recommendations and the following general requirements, or an approved equivalent:

      1) The epoxy coating shall not be thinner than 10 mils nor thicker than 20 mils. Epoxy coating having runs, sags, or chips will not be accepted. Thickness shall be tested by a magnetic millimeters gauge at not less than two locations of the insert.

      2) When tested in accordance with ASTM D2240, Test for Rubber Property: Durometer Hardness, epoxy coatings shall have a hardness of not less than 85 or more than 90 Shore C.

      3) The coated insert shall be tested for pin holes and breaks in a weak electrolytic solution. The coated insert shall be immersed in a weak electrolytic solution to within 1/4 inch of the top surface of inserts and the positive electrode shall make contact with the non-coated, threaded, internal area of the insert with a negative lead placed in the solution. Electrolytic solution shall be potable water with resistivity maintained to within 1,000 to 1,500 ohm-cm. A 100-volt DC electrical current shall be applied between the electrolyte and the insert; the coating will be

acceptable if the circuit is not closed when the insert is immersed in the electrolytic solution. The above tests shall be performed by the epoxy coating applicator. The frequency of testing shall be in accordance with a sequential statistical quality control plan developed by the epoxy coating applicator. The plan shall ensure that the average defective rate shall not exceed 2 percent and that defective rates shall be demonstrated at a 90 percent degree of confidence.

E. Additional Components

1. Other components required by the design shall have sufficient material strength and size to withstand loading and fatigue properties of the testing, installation, and in-track service.
2. Metal components: Steel or iron of the same material with which they match or intermesh to avoid corrosion due to galvanic action between dissimilar metals.
3. These components to have material hardness consistent with those of the metal base element and anchorage assembly parts with which they match or intermesh, to minimize wear from operating vibration and lateral adjustment.
4. Submit the material description and manufacturing method of components with the fastener shop drawings indicating in conformance with ASTM A123 Zinc Coatings on Iron and Steel Products.

2.4 VERTICAL INSULATING SHIMS

A. Provide 1/8 inch thick high-density polyethylene (HDPE) pads with each fastener, matt finish black, to provide an additional insulating surface between the base of the fastener and the concrete surface.

1. The shape, size, and configuration of the pads shall in general conform to the overall configuration of the direct fixation fastener and consider lateral adjustment.
2. Insulating pads shall have slotted holes for anchor bolts.
3. Size the pads so that they project out from under the fastener by 1/2 inch, minimum, on all sides, under all positions of fastener lateral adjustment.

B. Shims shall be designed so that they can be simply installed and removed. Installation or removal shall require the removal of the fastener body anchor bolts. The design shall incorporate a positive means of preventing the shims from displacement under operating conditions.

C. Furnish pads of high-density polyethylene meeting the requirements of ASTM D1248, Types III or IV, Grades W8 or W9; and conforming to the physical properties listed in Table 34 11 36.13-2.

Table 34 11 36.13-2.
High Density Polyethylene Tests

PROPERTY	UNITS	TEST METHODS (ASTM)	ACCEPTANCE CRITERIA
Color			Blue
Density	Grams/cm 3	D1505	0.941 o 0.965
Environmental Stress Cracking		D1693	<1 to >1,000
Vicat Softening Temperature	ºF	D1525	235 to 260
Brittleness Temperature	ºF	D746	<-180 to -100
Impact Strength	Ft.-Lbs Inch Notch	D256	0.8 to 14
Tensile Strength 20 inches/minute 2 inches/minute	psi psi	D638 D638	2,600 and 4,800
Elongation 20 inches/minute 2 inches/minute	Percent Percent	D638 D638	12 to 700 128 to 860
Heat Distortion Temperature at 66 psi	ºF	D648	16 to 170
Coefficient of Linear Expansion	Inches/Inch/ ºC	D695	1.3 x 10 4
Hardness	Shore D Scale	D2240	55 to 70
Modulus of Elasticity	psi	D638	60m to 150m
Compressive Stress at 1 Percent Offset	psi	D695	3,200 to 3,600

Dielectric Constant 100 kc **1 mc**		**D1531**	 **2.32** **2.32**
Dissipation Factor 100 kc **1 mc**		**D1531**	 **<0.0001** **<0.0001**
Dielectric Strength, 1/8-inch thick	Volts/mil	D149	500
Volume Resistivity	Ohm-cm	D257	>6 X 10 15

D. Design and supply twelve 1/4 inch thick galvanized steel shims. Use shims for qualification and production quality control tests and delivered to the Contractor QC after the testing is complete.

E. Shims to provide a 1/4 inch projection beyond the sides of the fastener. Design anchor bolt slots in the shim to allow it to be slipped laterally under the adjusted fastener to prevent it from vibrating loose during service. Design slot size so that with the shim in the installed position under the fastener body, the bearing area of the top face of each anchorage insert against the shim is a minimum of 9/16 square inch. Removal of the fastener body is not required.

PART 3 - EXECUTION

3.1 NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement will be made for the requirements of this section unless otherwise provided for.

4.2 PAYMENT

A. No separate payment will be made for the requirements of this section unless specifically noted for separate payment as stated herein. Full compensation for complying with the requirements of this section, not otherwise provided for, shall be considered as included in contract prices paid for Direct Fixation Track Construction and various items of work involved, and no additional compensation will be allowed therefore.

NOTE: THE FOLLOWING FIGURES ARE NOT TO SCALE.

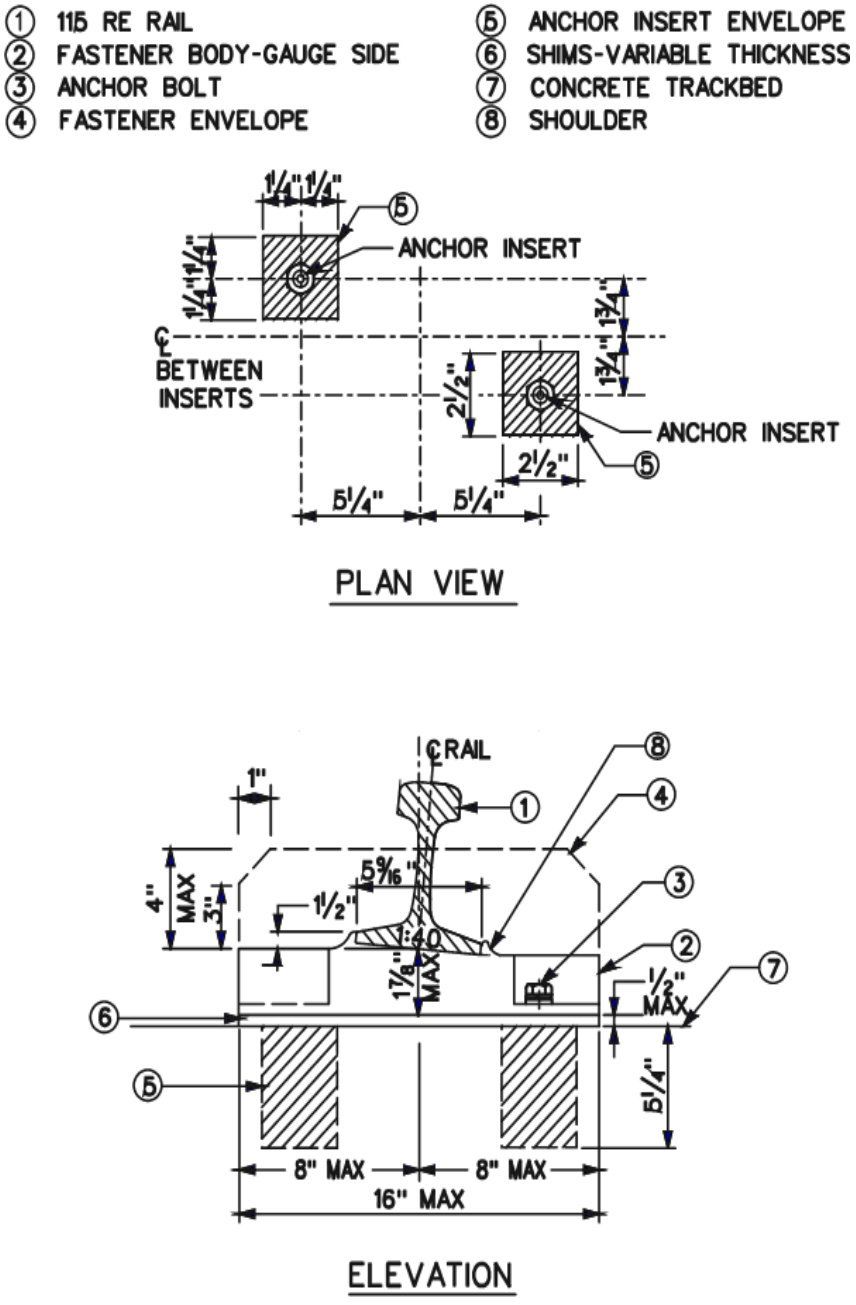


Figure 1 - Fastener Clearance Envelope For Standard DF Rail Fasteners

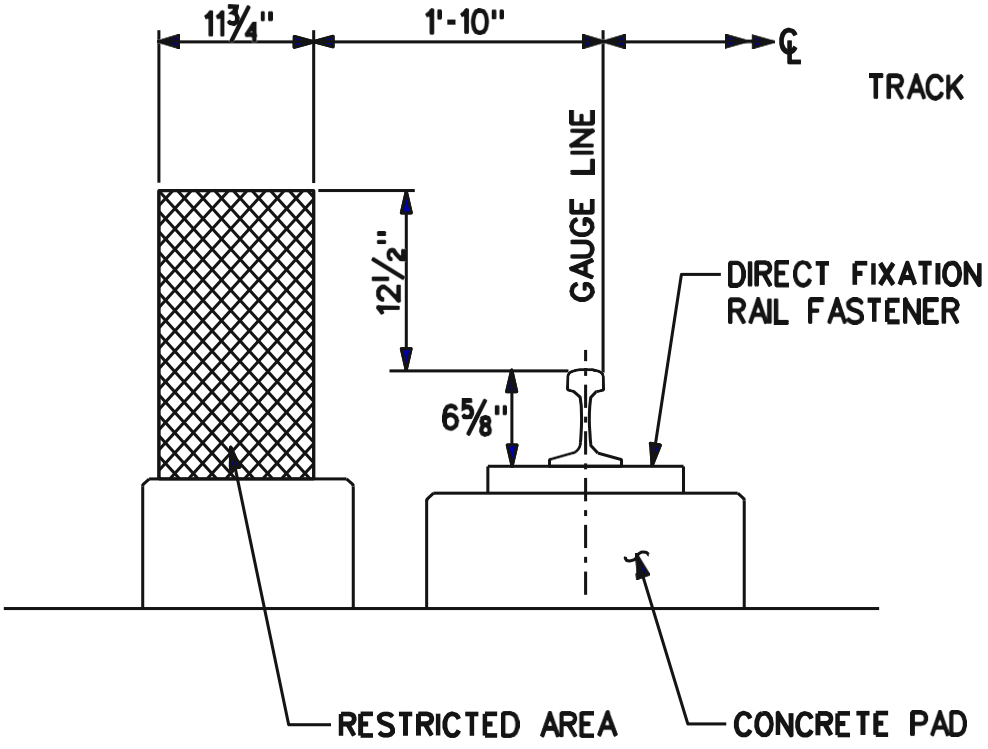


Figure 2 - Restricted Area During Installation & Maintenance

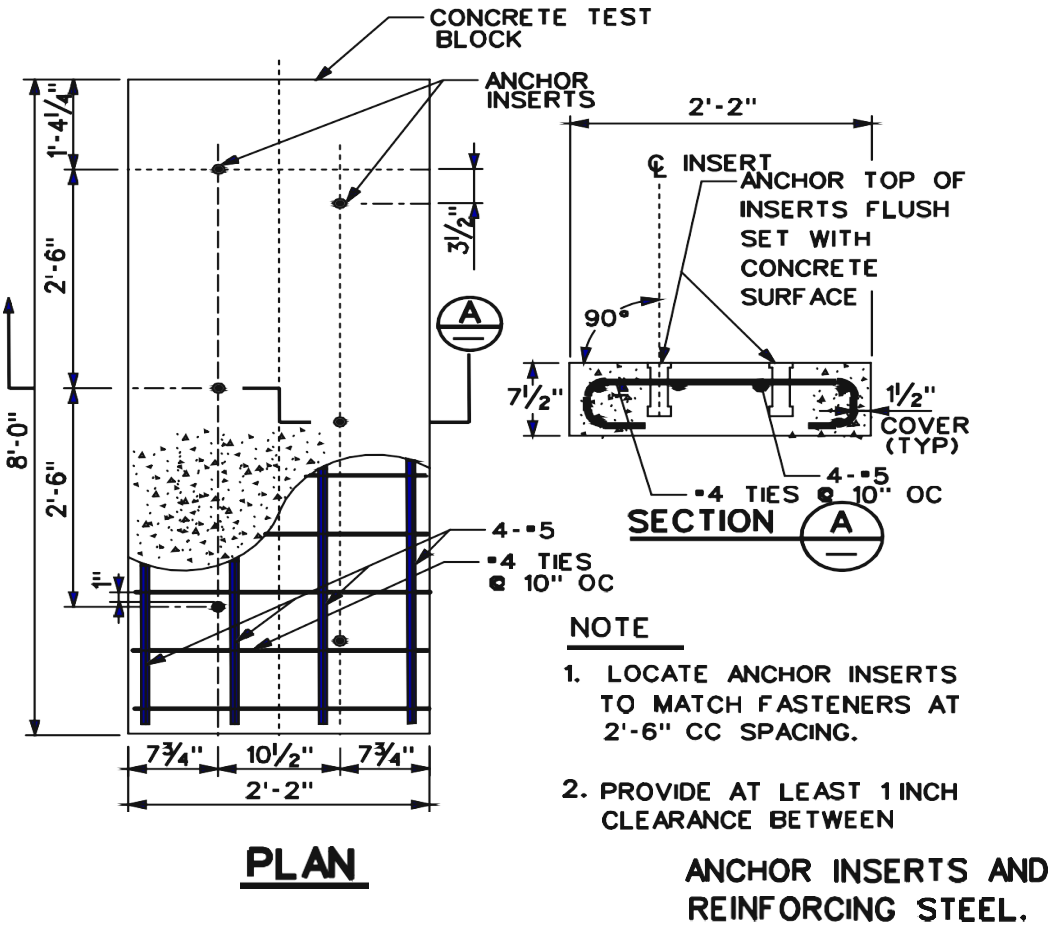
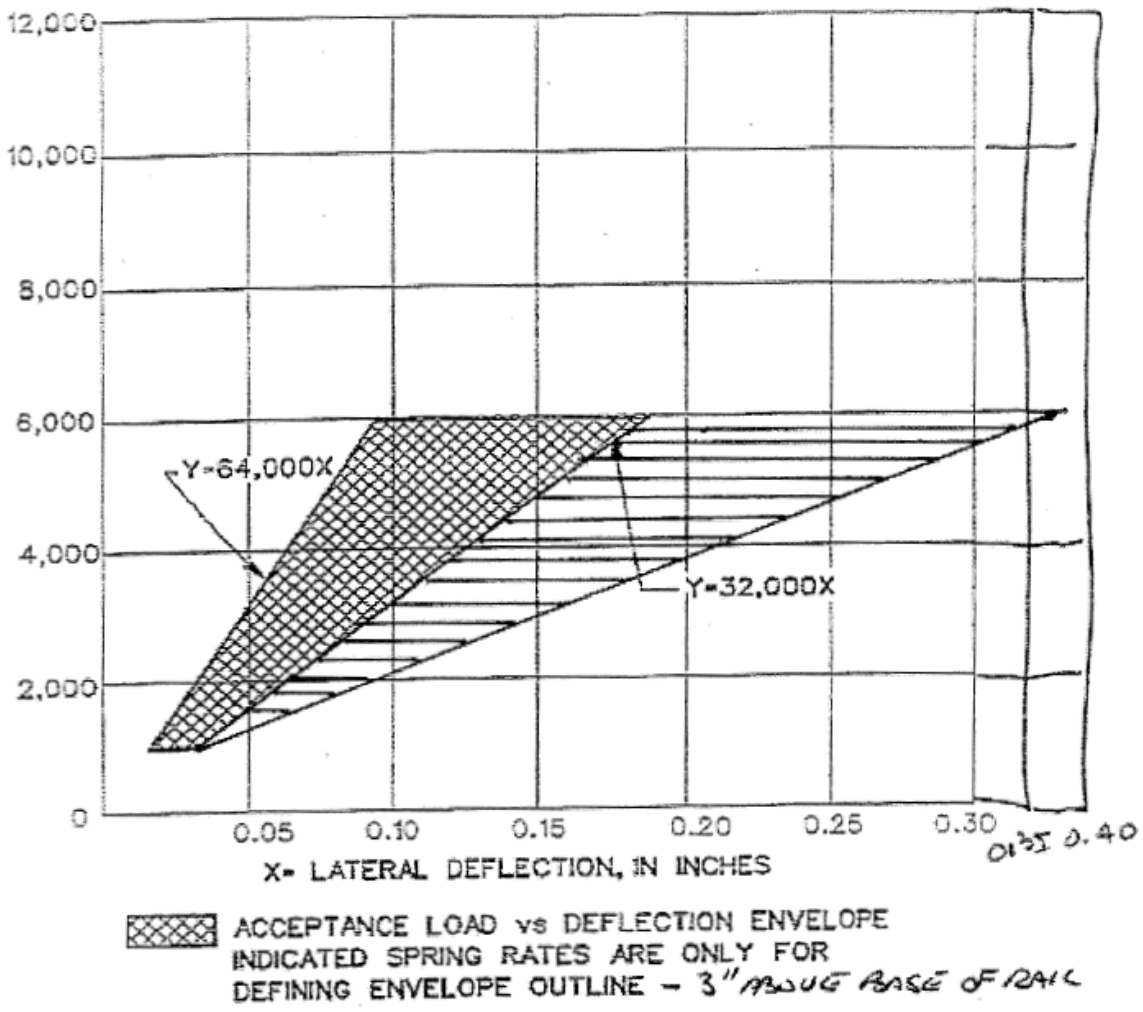


Figure 3- Concrete Test Block For Testing Anchor Assemblies for Standard DF Rail Fasteners



ACCEPTANCE LOAD vs DEFLECTION ENVELOPE INDICATED SPRING RATES ARE ONLY FOR DEFINING ENVELOPE OUTLINE – 0.625 INCH BELOW HEAD OF RAIL

Figure 4 - Lateral Load Test Acceptance Criteria

END OF SECTION

SECTION 34 11 93
TRACK APPURTENANCES AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. This work shall consist of furnishing and installing geotextile fabric and other miscellaneous work as required by the contract documents.

1. The geotextile fabric shall consist of furnishing and installing geotextile fabric on the subgrade, beneath the ballast, for the purpose of stabilizing the trackway as defined by AREMA. The geotextile fabric shall be installed as shown on the Plans and in accordance with the manufacturer's recommendations and these technical specifications.

1.2 REFERENCES

A. AREMA Manual for Railway Engineering, Current Edition

B. AREMA Portfolio of Trackwork Plans, Current Edition

C. American International (ASTM) Standards:

1. ASTM D1777 Standard Test Method for Thickness of Textile Materials
2. ASTM D3786 Standard Test Method for Bursting Strength of Textile Fabrics
3. ASTM D4218 Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds By the Muffle-Furnace Technique
4. ASTM D4491-99a Water Permeability of Geotextiles by Permittivity
5. ASTM D4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles
6. ASTM D4632-91 Grab Breaking Load and Elongation of Geotextiles
7. ASTM D4716 Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic using a Constant Head
8. ASTM D4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile
9. ASTM D4759 Standard Practice for Determining the Specification Conformance of Geosynthetics
10. ASTM D4833-00 Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
11. ASTM D4886 Standard Test Method for Abrasion Resistance of Geotextiles

1.3 SUBMITTALS

A. Submittals shall be made in accordance with Section 3.9, “Submittals,” of the Standard Construction Agreement and General Conditions, and shall include the following:

1. Product data
    a. Submit manufacturer’s catalog data and certification of compliance on geotextile fabric.
2. Test Results
    a. Geotextile Fabric test results.

PART 2 - PRODUCTS

2.1 GEOTEXTILE FABRIC

A. The geotextile fabric shall conform to the provisions in Chapter 1, Part 10, “Geosynthetics,” of the AREMA Manual and these technical specifications. Geotextile fabric weighing 16 ounces per square yard (Extra Heavy) shall be non-woven, manufactured from polyester, polypropylene, or polypropylene-nylon material, with the following properties. The following tests shall be qualification tests made on two samples of filter fabric. The Engineer will choose the samples and the proposed test shall be conducted by an independent laboratory approved by the Engineer. Results of the test shall be submitted to the Engineer for approval. All testing shall be at no additional cost to MTS. Ballast or HMA shall not be placed on geotextile fabric until the Engineer has given written approval to the test results.

1. Grab Tensile Strength, ASTM D 4632-91	350 lbs. minimum
2. Elongation, ASTM D 4632-91	20-percent minimum
3. Permittivity, ASTM D 4491-99a	0.20 1/sec.
4. Puncture Strength, ASTM 4833-00	185 lbs. minimum

PART 3 - EXECUTION

3.1 GEOTEXTILE FABRIC

A. Handling

1. Handling, storage and installation, including overlapping, shall conform to the recommendations of the manufacturer. All sheeting damaged during installation or weakened by exposure to sunlight shall be replaced prior to placement of ballast or HMA.

B. Placement

2. Geotextile Fabric shall be placed in accordance with manufacturer’s recommendations, and AREMA Chapter 1, Section 10, Part 1.5, “Construction Details and Methods.” Specifically, Geotextile Fabric shall be placed with an overlap of two (2) feet in both the longitudinal and transverse directions.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

C. Geotextile Fabric

1. No separate measurement will be made for installing geotextile fabric.

4.2 PAYMENT

D. Geotextile Fabric

1. Full compensation for geotextile fabric shall be considered as included in the contract price paid per track foot for various items, therefore no separate payment will be allowed.

END OF SECTION

SECTION 34 72 13.01

RAILWAY LINE CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section consists of furnishing all labor, Materials, equipment, tools, and incidentals necessary to remove, repair, modify, rehabilitate, or construct trackwork in accordance with the Contract Documents. Work includes, but is not limited to, ballast, ties, rail, fastening systems, other track material (OTM), and other special trackwork.

1.2 REFERENCES

A. American Railway Engineering and Maintenance of Way Association (AREMA)

1. AREMA Manual for Railway Engineering (AREMA Manual), Current Edition
2. AREMA Portfolio of Trackwork Plans (AREMA Plans), Current Edition
3. Communications and Signals Manual, Current Edition

B. FRA: 49 CFR Part 213, Track Safety Standards, most current and addenda, Federal Railroad Administration

C. CPUC: California Public Utilities Commission, applicable General Orders.

1.3 SUBMITTALS

A. Submittals shall comply with Section 3.9 “Submittals,” of the Standard Construction Agreement and General Conditions.

B. Submit the following:

1. Materials: Submit individual certifications that all materials furnished by the Contractor conform to the specified requirements.
2. Shop Drawings: Submit Shop Drawing and product data for the Engineers approval for trackwork items furnished by the contractor. All Shop Drawings shall be submitted in hard copy and PDF format, prior to fabrication. Acceptance of shop drawing does not relieve Manufacturer of requirements for functionality or defects or other failures to meet the Contract requirements.
3. Equipment: Submit a list of all track tools and equipment to be employed for installation of rail including rail-cutting, rail-heating devices, and destressing. Track surfacing and alignment equipment shall be laser guided, with a sixteen tamping tool design and be capable of surfacing track switches. Refer to Section 01 00 00 for additional requirements.
4. Procedure: Submit procedure for transporting, stockpiling, and handling of trackwork materials.

5. Procedure: Submit a proposed construction and installation procedure for new trackwork as part of the Construction Area Work Plan required per Section 01 00 00. Contractor may modify the installation procedure stated hereinafter to produce the most efficient method for track construction subject to approval by the Engineer. The plan shall define the Contractor's work sequence, schedule of night work and working hours, methods and procedures to accomplish the required work and shall:
    a. Designate the line and profile rails to be used.
    b. Specify night work and working hours taking into consideration single line LRT running, the City Traffic Engineer’s requirements, environmental considerations, and local business and residential access requirements, and scheduled freight movements.
    c. Establish a ballast tamping procedure.
    d. Establish procedures for unloading, stockpiling, distributing and handling ties.
    e. Provide an installation procedure for removal of existing.
    f. Provide a method for handling all ballast.
    g. Installing rail clips and attaching rail to the specified horizontal and vertical alignment within tolerances.
    h. Provide an installation schedule defining the sequence of operations by which the Work will be performed and the anticipated duration of each operation. Describe each installation operation in detail, indicating the Materials, manpower and mechanical equipment needed.
6. Compliance Record: As-built compilation of actual track geometry produced in construction including curvature, length of reversing tangent, length of spirals, top of rail profile, and superelevation values.
7. Compliance Record: Test results for insulated joints.
8. Procedure: Quality Control/Quality Assurance Program. Program shall comply with Article 3.20 of Section 01 00 00 of the Technical Specifications.
9. Procedure: Rail end hardening procedure.
10. Procedure: Procedure and field welding material technical data for field welding rail.
11. Procedure: Rail destressing.
12. Procedure: Installation of insulated joints.
13. Procedure: Plan for the coordinating and scheduling of a signal track support crew to protect and maintain the operating signal system if required.

1.4 QUALITY CONTROL

A. Perform track construction under the supervision of qualified personnel as defined in Section 5.5 of the Special Conditions, experienced in railroad track construction acceptable to MTS.

B. Develop a Quality Program to ensure that the work is performed in accordance with the Contract Documents and within the tolerances provided herein. The program shall be submitted to MTS for review and approval prior to start of any or related trackwork activities.

1.5 TRACK TESTING

A. Quality Assurance

1. Tracks shall be subjected to frequent inspection, measurement, and operational tests by the Engineer using both localized testing and inspection during the construction and by means of operating test trains, geometry cars, rail flaw detection cars, engines, and other equipment as required over the entire track structure after completion of Installation, but prior to final acceptance of the work.

B. Corrections by Contractor

1. During the Installation and testing period, all Contractor personnel, equipment, and materials necessary to make required corrections to the track shall be available for replacements, re-ballasting, resurfacing, and realigning, or repair of constructed or modified items, as the Engineer may direct to insure proper completion of the work in accordance with the Contract Documents.

PART 2 - PRODUCTS

2.1 CONSTRUCTION EQUIPMENT

A. Refer to requirements of Section 01 00 00-1.1.H.

B. All machinery and all machine operators shall comply with applicable sections of 49 CFR 214, Railroad Workplace Safety.

C. All construction loads borne by equipment shall be applied between gage lines of running rails on each track unless approved by MTS.

2.2 TRACK TOOLS

A. Furnish tools and equipment necessary to construct the track.

B. Track gages, track levels, and other tools shall conform to the AREMA "Specifications and Plans for Tools."

C. Tools and equipment shall be maintained in such a condition as not to endanger employees nor damage the work and shall be subject to inspection by the Engineer.

D. Tools not conforming to the standard shall be "dressed" to AREMA standards or shall be replaced. Substitution of tools other than AREMA standard shall be permitted only with approval of the Engineer.

E. Track levels and gages shall be checked for accuracy at the start of every work shift and at any time the tool is dropped, struck, or damaged. Adjustments shall be performed anytime it is found to have more than 0.050 inches deviation from the nominal measurement value.

2.3 BALLAST

A. Ballast, where required by Contract Documents, shall conform to the requirements of Section 34 11 26.13, “Track Rail Ballast.”

2.4 TIES

A. Concrete Ties shall conform to the requirements of Section 34 11 33.13, “Concrete Track Crosstie.” All ties are to be new unless indicated otherwise in the Contract Documents.

2.5 RAIL

A. Rail shall conform to the requirements of Section 34 11 13, “Track Rails.” Unless otherwise shown on the Plans, all rail is to be new 115 RE Continuous Welded Rail (CWR) standard rail conforming to AREMA Volume 1, Chapter 4, Section 2.1, Specifications for Steel Rails. For tangents and curves up to 2-degree, use new standard rail, per AREMA specifications. For curves over 2-degree, and all turnouts, use new head hardened rail per AREMA specifications.

2.6 OTHER TRACK MATERIAL (OTM)

A. All OTM shall be new and conform the contract drawings, and these technical specifications.

B. Bolts, nuts, and washers shall conform to AREMA Volume 1, Chapter 4, Section 2.9, Specifications for Heat-Treated Carbon-Steel Track Bolts and Carbon-Steel Nuts.

C. Joint bars shall be 6-hole, 36-inches in length, and conform to AREMA Volume 1, Chapter 4, Section 2.8, “Specifications for Quenched Carbon-Steel Joint Bars and Forged Compromise Joint Bars”.

D. All joint bars used to temporarily connect rails that will be field welded in the final configuration shall be bolted with the rail ends drilled in the outer four holes only.

E. Resilient Rail Fastening Systems per Section 34 11 36, “Track Rail Fasteners.”

F. Standard Fastening System per Section 34 11 36, “Track Rail Fasteners.”

2.7 CROSSOVERS - N/A

2.8 LUBRICANTS – N/A

2.9 INSULATED JOINTS

A. Insulated joints shall be furnished and installed by the Contractor in conformance with Section 34 11 19, “Track Rail Joints.”

2.10 GEOTEXTILE

A. Geotextile shall be furnished and installed by the Contractor in conformance with Section 34 11 93, “Track Appurtenances and Accessories”.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. All work shall be completed in accordance with AREMA Manual for Railway Engineering and as specified herein. Each fully completed work segment of track, as approved in the Construction Area Work Plan, that is to be placed into operational service shall fully comply with 49 CFR 213, have ballast section full within 1-inch from the top of ties, have joints fully bolted or welded, have all anchors or elastic fasteners applied, rail fully de-stressed, and the track surfaced, regulated, and stabilized.

3.2 CROSSTIES

A. Concrete, as specified, shall be used in all trackwork as shown on the Plans.

B. Ties shall be lifted and supported during storage, transportation, and placing in such a manner as to prevent damage. Ties shall not be dropped to the roadbed. Ties shall be handled in accordance with AREMA Manual Volume 1, Chapter 30, and Section 3.5.

C. Ties damaged resulting from improper handling or installation by Contractor and rejected by the Engineer shall be removed and replaced with new ties at no additional cost to MTS.

D. Space concrete crossties as shown on the Contract Drawings and the manufacturer shop drawings. Care shall be taken to ensure that the proper rail cant is established where applicable. Care shall be taken to ensure that all crossties are uniformly supported on the roadbed and that no center-binding conditions develop prior to ballasting and tamping. A minimum layer of 3-inches of ballast should be placed on top of the geotextile fabric, leveled and compacted before placement of crossties. Crossties shall be installed at right angles to the centerline of track at the designed spacing prior to rail installation.

3.3 RAIL FASTENING

A. OTM shall be installed in accordance with these technical specifications and manufacturer’s recommendations.

B. Installation resilient fasteners shall be in accordance with manufacturer's recommendations.

3.4 INSTALLING TRACK

A. Installation, laying, raising, lining, tamping, dressing of track over ballast, and stabilization shall be performed as follows:

1. The Contractor shall maintain rail bonding at all times to preserve negative return track circuits.
2. The Contractor shall be responsible for disconnecting and reconnecting all track joint bonds and cables within the proposed area of work as needed to install the new improvements. If existing track joint bonds and cables are disturbed, damaged, or destroyed resulting from the Contractor’s operations, they shall be repaired or replaced by the Contractor.
3. After repair or replacement of track joint bonds and cables is complete, the Contractor shall demonstrate to the Engineer that the repaired or replaced facilities operate properly.
4. After removal of the existing ballast and grading as required to meet the line and grade as shown on the Plans, the contractor shall proof roll existing subgrade to 95-percent relative compaction. Ballast pockets and soft or saturated material shall be excavated and replaced with competent material compacted to 95-percent relative compaction as directed by the Engineer. The Contractor shall submit a detailed plan for the compaction process to the Engineer for approval.
5. Geotextile Fabric shall be placed in accordance with AREMA Chapter 1, Section 10, Part 1.5, “Construction Details and Methods.” Specifically, Geotextile Fabric shall be placed with an overlap of 2-feet in both the longitudinal and transverse directions.
6. Ballast spreading and compacting shall conform to Section 25-1.03D, "Spreading,” and Section 25-1.03E, "Compacting,” of the Caltrans Standard Specifications. An initial layer of ballast shall be uniformly distributed over the geotextile fabric and compacted before crosstie distribution, except that ballast shall not be distributed on the roadbed until the subgrade has been accepted by the Engineer. The initial layer of ballast shall be limited to a total compacted depth that will establish the track surface at least four inches below final.
7. Compaction of base ballast shall be by means of vibratory compaction equipment specifically manufactured for compaction purposes. The self-propelled, pneumatic-tired roller shall have a gross weight of ten (10) to 15 tons. The vibratory compactor shall have a weight of not less than ten (10) tons and shall be capable of applying a dynamic load of not less than 18,000 pounds at 1300 to 1500 cycles per minute. The proposed compaction equipment is subject to approval by the Engineer in accordance with Section 01 00 00-1.1.H.

8. The Engineer will verify the compacted ballast prior to the installation of track and appurtenant work over the ballast. Each lift of ballast within the base layer shall be uniformly spread and compacted with not less than four passes of either a self-propelled, pneumatic-tired roller, or vibratory compactor. Ballast surface that exhibits ruts, crowns, or pumping is not acceptable and must be re-graded and re-compacted prior to the placement of the crossties.
9. The track shall be assembled on the compacted base ballast to permit placement of additional ballast for subsequent raising and tamping and to provide the full depth under the ties.
10. The ballast shall be compacted with a 16-tool vibrating, squeeze-type mechanical tamper making a minimum of one full tamping insertion per tie for each inch of raise. No track raise shall exceed 4-inches. The final track raise shall not exceed 1-inch. All 16 tamping tools must be in good repair with at least 70-percent of the original surface area of the tamping pad available for each surfacing pass or the tool(s) must be replaced. The ballast in the crib areas shall be compacted in accordance with Article 3.1. The track shall be raised, aligned, tamped, and regulated to within the specified tolerances.
11. Ballast shall be thoroughly tamped within a space from 15-inches inside either rail to the ends of the ties. In tamping ties within the above-described limits, simultaneous tamping must be performed under each rail. Tamping is not permitted at the center of the tie except within limits of turnouts and crossings where the center of the ties shall be tamped unless prevented by trackwork.
12. Prior to the final acceptance of the track by the Engineer for surface and line, the Contractor shall compact the ballast in accordance with Article 3.1. Deviation from this requirement by use of other means shall be approved by the Engineer.
13. Pneumatic or electric tamping tools, either hand-held or machine-mounted shall be used to perform tamping at portions of turnouts not accessible to a production tamper. Hand tamping with shovels or picks shall not be permitted unless authorized by the Engineer.
14. Two tamping tools shall always be used opposite each other on the same tie. Tampers shall be started from a nearly vertical position and worked downward past the bottom of the tie after which the tool shall be slanted downward to force ballast under the tie. Double tamp every joint tie.
15. Ballast shall be mechanically dressed to provide the proper section as shown on the Contract Drawings.
16. Excess ballast shall be removed, or may, at the Engineers option, be placed as directed by MTS.
17. Ballast damaged by overwork and/or excessive tamping or fouled by dirt or other deleterious material as determined by the Engineer shall be removed and replaced at no additional cost to MTS.
18. Where new track joins existing track, the existing track shall be surfaced for a minimum distance of 500 feet on mainline or siding tracks, or 200 feet on industrial tracks, from the point of connection or longer as needed to meet FRA requirements for highest class of track involved or to the limits as shown on the Contract Drawings.

19. After the track has been raised to its final elevation and superelevation, tamping and consolidation of all tracks shall be performed before the track is placed in service. Each segment of track may be placed in full service, as approved by the Engineer, if that segment fully complies with 49 CFR 213, has ballast section full to within 1-inch from top of ties, joints fully bolted, all anchors or elastic fasteners applied, has no more than one consecutive missing crosstie, and the rail fully de-stressed, ballast compacted, and track stabilized as specified in Article 3.1.
20. When raising track, a spot board or other approved device shall be used to maintain grade and a level shall be used to keep track to proper cross level. Laser guided alignment is required with horizontal alignment maintained during the raising operation. Use of automated controls on tampers will satisfy this requirement.
21. In addition to the other requirements specified herein, all newly constructed mainline and mainline siding track, upon completion of final surfacing operations, shall be stabilized as specified in Article 3.1.
22. Contractor may provide alternative installation method for review and approval by the Engineer.

3.5 DRILLING

A. For joining rails with joint bars, provide standard six-hole joints. Drill and space bolt holes in the rail as shown:

1. Drill with clean, sharp and properly shaped drill bits. Use drill RPM as recommended by the bit manufacturer.
2. Drilling for bolted joints shall be in accordance with AREMA, Chapter 4.
    a. Joints for temporarily connection of CWR strings shall leave the center two bolt holes undrilled.
3. Drill holes perpendicular to rail web, using a template as a drilling guide. Provide marked templates specially designed for each drilling pattern as shown. Do not use a joint bar as a drilling guide. Use a drill which is approved by the Contractor or its designee.
4. Following drilling, lightly grind the edges of each bolt hole on each side of the rail with a hand-held grinder to remove burrs or fins resulting from the drilling.
5. Inspect the inside face of each drilled hole for drill-caused ridges or surface scars. Where ridges exist, peen the hole surface with a peening tool to smooth out the irregularities. Where scars exist, cut back the rail and form a new rail end. As an alternate, the Contractor or its designee may allow peening of the scarred surface to see if a smooth-surfaced hole can be formed. Ovaled holes or holes similarly misshaped due to rail-drill movement or other cause will be rejected. Cut back the rail and form a new rail end.

3.6 RAIL ENDS

A. Rail shall be cut with rail saw to a tolerance of 1/32-inch from square. All burrs shall be removed and ends made smooth. Torch cut rails shall be rejected.

B. Battered or mismatched ends must be built up to conform to minimum tolerance of 1/16-inch on top and gage side to adjoining rail.

3.7 RAIL END HARDENING

A. At all rail end locations not eliminated by field welding, rail ends shall be field end hardened in accordance with the AREMA Manual, Volume 1, Chapter 4, Section 2.1.17.1.

3.8 PROCEDURES FOR PLACEMENT OF JOINTED RAIL

A. This covers both the permanent construction and rehabilitation of jointed rail and the temporary use of rail joints in the CWR pending field welding.

B. When laying jointed rail, each rail shall be carefully placed on the ties with ends square, using standard expansion shims placed between the ends of adjoining rails to ensure proper opening of joint.

C. Shims shall be removed after all joint bolts are tightened.

D. Using temperatures taken on the rails when they are being laid or adjusted; the thickness of the shim to be used for 39 FT rails will be determined by the following table:

Ranges (Deg Fahrenheit)	Shim (Inches)
-20 - 0	3/8
0 - 25	1/4
25 - 50	3/16
50 - 75	1/8
75 - 100	1/16
Over 100	Laid Tight

E. Joint bars shall be well oiled and properly applied with full number and correct size of bolts, nuts, and spring washers. Joint bolts shall be properly tightened before spiking rail and the two center bolts shall be tightening in advance of the end bolts.

F. Bolts shall be placed with the nuts alternatively on the inside and outside of the rail. Nuts shall be placed with the flat side toward the rail. Track bolts, joint bars, and finishing surfaces of rails at joint bars shall be swabbed with oil. Use outer four bolt holes only when installing bolted joints that will be eliminated by field welding. Do not drill inside holes (holes closest to rail ends) at future filed weld locations.

3.9 TRACK CRITERIA AND TOLERANCES

A. Tolerances:

1. Deviations from indicated gauge, cross level, horizontal line, profile grade, and tie spacing shall conform to the following requirements:
2. Gauge: Track gauge shall be 4-feet 8 1/2-inches ± 1/8-inch.
3. Cross Level: Cross level, taken at top of rail, shall be ± 1/8-inch from level on tangent or design superelevation on curve.
4. Deviation from Horizontal Alignment:
5. ± 1/8-inch in 31 feet
6. ± ½-inch from the planned alignment
7. ± ¼-inch from the planned alignment adjacent to LRT platforms
8. Deviation from Horizontal Circular Curves:
9. Adjacent midordinates of 62-foot chords, with half-chord overlaps, shall not vary more than ± 1/8-inch.
10. Average midordinate shall not vary by more than ± ¼-inch from theoretical midordinate.
11. Deviation from Horizontal Spiral Curves: Midordinate of 62-foot chords, with half-chord overlaps, shall not vary by more than ± 1/8-inch from straight line rate of change.
12. Deviation from Top of Rail Profile Grade: Deviation from top of rail profile grade shall not exceed ± 1/8-inch in 31-feet, and ± 1/2-inch from the vertical alignment shown on the Plans.
13. Crosstie Spacing: Distance between centerline of adjacent crossties shall not vary more than ± 1-inch from the indicated spacing.

B. Tag the top of each tie with Engineer approved identification plates signifying the beginning and end of spirals and circular curves or change in degree of curve.

C. Tangent track shall be level and superelevation and runoffs shall be provided on all curves as indicated in the Plans, or as approved by the Engineer.

D. Install track, OTM, turnouts, derails, and road crossings in accordance with the Plans, Track Maintenance and Engineering Instructions, and Federal Railroad Administration and California Public Utilities Commission requirements.

E. Construct track within specified tolerances for uniformity of gage, cross-level, profile grade, and horizontal alignment. Humps, sags, or hollows in track surface or alignment irregularities in excess of specified tolerances shall not be accepted. The final alignment shall be approved by MTS. For any reason, the Engineer may require additional alignment refinements at the Contractor’s expense.

F. The low rail on all superelevated track shall be designated as the profile rail.

G. Rail shall be handled carefully. Refer to current edition of the AREMA Manual for Railway Engineering, Chapters 4 and 5, for specifications on safeguarding and storage of CWR. Bumping or striking rail shall be avoided. Nicked or gouged rails shall be rejected. Minor damage may be repaired as determined and approved by MTS. Bottom of rail, fastener assemblies, and all bearing surfaces shall be broom cleaned before laying. Rail gouged or bent, as determined by the Engineer, by the contractor during Installation shall be removed and replaced by the Contractor at no additional cost to MTS.

H. Do not cut rail strings except as required to fit rail to turnouts, crossings, or limits of work.

I. A thermometer designed to measure rail temperature shall be used in during rail Installation to ensure compliance with the Preferred Rail Laying Temperature.

3.10 INSULATED JOINTS

A. Each insulated joint installed by the Contractor shall be tested with an insulated joint tester, either the Harmon 1501A1JC or equal approved by the Engineer.

B. Test shall measure no less than 100 ohms across the joint.

C. Test results shall be uniquely identified with a specific joint and submitted to the Engineer in Compliance Record.

D. The rail ends at each insulated joint shall be beveled and hardened in accordance with the manufacturer’s procedures as approved by the Engineer.

E. Contractor must comply with rail end hardening and beveling requirements specified in this Section.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Railway Line Construction shall be measured by the track foot, complete in place, as shown on the plans.

B. No separate measurement will be made for Re-registering OCS unless otherwise provided for.

4.2 PAYMENT

A. The contract price paid per track foot for Railway Line Construction shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved installation including rails, rail fasteners, ties, ballast, OTM, reconnecting negative return and cross bond cables, and all other incidentals required to completely install the new track as shown on the plans, as a specified in these specifications and as directed by the Engineer.

END OF SECTION

SECTION 34 72 13.03

DIRECT FIXATION TRACK CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. Description:

1. The Work specified in this Section consists of installing, furnished specified materials for direct fixation track, including but not limited to, the following:
    a. Re-installing direct fixation rail fasteners
    b. Installing sections of RE 115 rail: anchoring, aligning and joining rail to indicated grades, lines, and elevations.
    c. Correcting deficiencies.
    d. Performing final adjustments and clean-up of the Worksite.

B. Section Includes:

1. Inspection
2. Preparation
3. Installation
4. Field Quality Control

C. Related Sections:

1. Section 03 05 00 – Concrete
2. Section 03 15 19 – Anchorage to Concrete
3. Section 34 11 13 – Track Rails
4. Section 34 11 19 – Track Rail Joints
5. Section 34 11 36.13 – Direct-Fixation Fasteners
6. Section 34 72 13.01 – Railway Line Construction

1.2 SUBMITTALS

A. Submittals shall comply with Section 3.9 “Submittals,” of the Standard Construction Agreement and General Conditions.

B. Shop Drawings, including procedures for computing and establishing cross level of track in the formwork.

1.3 QUALITY ASSURANCE

A. Quality assurance shall comply with Section 01 00 00-3.20.

PART 2 - PRODUCTS

2.1 DIRECT FIXATION RAIL FASTENERS AND INSERTS

A. Refer to Section 34 11 36.13, Direct-Fixation Fasteners.

B. SHIMS - Shims for height adjustment of direct fixation rail fastener shall be high density polyethylene. Furnish pads of high-density polyethylene meeting the requirements of ASTM D1248, Types III or IV, Grades W8 or W9. Size the shims to project outside the sides of the fastener, and match the shim holes with the fastener anchor bolts. Furnish shims in 1/16, 1/8, and 1/4 inch thicknesses in such quantities as required. The shape, size, and configuration of the pads shall in general conform to the overall configuration of the direct fixation fastener and consider lateral adjustment. Shims shall be designed so that they can be simply installed and removed.

2.2 CURING COMPOUND

A. As specified in Section 03 05 00, Concrete.

2.3 THREAD SEALANT

A. Provide a low melting point wax.

2.4 RUNNING RAILS

A. As specified in Section 34 11 13, Track Rails.

PART 3 - EXECUTION

3.1 INSPECTION

A. Refer to Section 34 72 13.01 Railway Line Construction. Prepare a preconstruction inspection report.

B. Inspect the first pour concrete slab or deck surface for defects or surface variances which may affect the subsequent Work. Check elevations of existing surface and assess implications prior to ordering reinforcing steel or concrete.

3.2 PREPARATION

A. Establish alignment and elevation points as specified in Section 34 72 13.01 Railway Line Construction.

B. Sweep clean the existing concrete invert surface and wash with pressurized water blaster.

3.3 INSTALLATION

A. Secure the positioning fasteners with the anchorage inserts of standard and high resilience direct fixation rail fasteners to the underside of the fasteners as follows:

1. In tangent track, set fasteners in pairs directly opposite each other and perpendicular to the centerline of track.
2. Set the fastener pairs 30 inches apart maximum, on centers, as measured along the outside rail. Locations of standard direct fixation rail fasteners are as shown.
3. In tangent track, set each fastener horizontally. Set each fastener so that at the 1/2 inch of lateral rail adjustment is centered for future rail wear remains in each direct fixation rail fastener.

B. Spacing of gauge support fixtures shall be in accordance the approved shop drawings.

C. Direct Fixation Rail Fasteners

1. Before re-positioning the dismantled direct fixation rail fasteners, sweep, pressure wash, clean, and dry the second pour plinth concrete as necessary to remove debris and foreign materials and to ensure 100 percent fastener bearing.
2. Re-install fasteners after the second pour concrete has attained the specified 28-day compressive strength, but not sooner than ten days after the concrete has been placed.
3. Remove the pull-away plug from the anchorage insert and position the direct fixation rail fastener with anchor bolts engaged in the inserts. Coat threads of anchor bolts with thread wax sealant specified herein before engaging bolts in the inserts.
4. Install fasteners and restraining rail assemblies in accordance with manufacturer’s installation instructions and the Contract documents.

D. Laying, Joining, and Anchoring CWR.

1. Refer to Section 34 72 13.01 Railway Line Construction.
2. Adjust rail, if required, to final vertical alignment with corrective shims placed between the rail fastener and the second pour concrete. Do not use more than two shims under each direct fixation fastener. Total thickness of shims not to exceed 1/2 inch.
3. Fully anchor rail fasteners to second pour concrete with anchor bolts tensioned to torque as specified by the rail fastener manufacturer. Verify anchor bolt torque requirements with the Contractor QC or its designee before tightening anchor bolts. Tighten anchor bolts on both sides of the rail simultaneously. Before and during installation of rail fasteners, check the equipment used for torquing anchor bolts daily. Provide equipment within two foot-pounds of the calibrated and certified torque wrench specified.
4. Rejection of unacceptable second pour track concrete will also constitute rejection of contiguous second pour restraining rail concrete, if used, and vice-versa.

3.4 FIELD QUALITY CONTROL

A. Field Proof Testing Of Anchorage Assemblies

1. Test Parameters

   a. The Contractor QC will randomly select not less than one fastener location for every 200 fasteners installed in the field for the purposes of testing the performance of as-installed direct fixation fastener anchorages.

   b. Perform tests only after plinth concrete cylinders have been tested to verify that the concrete has reached 28-days strength. The Contractor shall perform the following tests in the presence of the Contractor QC and/or its representative.

   c. These tests are in addition to the production quality control tests described in Section 34 11 36.13 Direct-Fixation Fasteners.

   d. The test apparatus working drawings shall be submitted to the Contractor QC or its designee.

2. Restrained Pullout Test

   a. Test method: Place a 3-1/2 inch by 3-1/2 inch by 1/2 inch thick steel plate with a 1 inch diameter hole in its center, over one anchor bolt of a fastener. Apply for 1 minute an upward vertical load, starting at 1,000 pounds and increasing to 40,000 pounds, to the anchor bolt with the reaction force bearing against the steel plate. Perform this test on one anchor bolt at one third of the locations selected.

   b. Acceptance criteria - No evidence of slippage or cracking of concrete or failure of bond between the bolts or inserts, and concrete.

3. Unrestrained Pullout Test

   a. Test method: Apply a vertical pullout load on an anchor bolt, in such a manner that no restraining load is applied to the concrete within a radius of six inches from the center of the bolt. Start the load application at 1,000 pounds, increase it until a load of 16,000 pounds occurs, hold at 16,000 pounds for at least 1 minute and release. Perform this test on one anchor bolt at one third of the locations selected. These locations shall be different from the locations of the other anchorage tests.

   b. Acceptance criteria: No evidence of concrete cracking or failure of bond between the bolts or inserts, and concrete.

4. Torsion Test

   a. Test method: Subject an anchor bolt to a torque not less than 100 percent greater than the design installation torque submitted with installation requirements. Hold the load for 3 minutes and release. Perform this test on one anchor bolt at one third of the locations selected. These locations shall be different from the locations of the other anchorage tests.

   b. Acceptance criteria: No evidence of failure of the bond between the bolts or inserts, and concrete.

5. Corrective Measures

   a. Should any of the anchor inserts tested not meet the acceptance criteria, submit for approval a plan for correcting the condition at the “failed” anchorage(s). In addition, the Contractor shall submit a detailed plan for and proof test a sufficient number of additional installed anchorage assemblies to demonstrate that the results of the failed tests are not indicative of a condition common at all anchorages installed by the Contractor.

3.5 ADJUSTMENT AND CLEANING

A. Refer to Section 34 72 13.01 General Track Construction.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Direct Fixation Track Construction shall be measured by the track foot, complete in place, as shown on the plans.

B. No separate measurement will be made for Re-registering OCS unless otherwise

4.2 PAYMENT

A. The contract price paid per track foot for Direct Fixation Track Construction shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved installation including rails, rail fasteners, ties, OTM, reconnecting negative return and cross bond cables, and all other incidentals required to completely install the new track as shown on the plans, as a specified in these specifications and as directed by the Engineer.

END OF SECTION

ATTACHMENT 2 - BID FORM

All Source Company Building Group

ATTACHMENT 2 - BID FORM
BUILDINGS A & C WHEEL TRUING MACHINES REMOVAL AND CONSTRUCTION PROJECT

ITEM	SPEC SECTION	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL
		Building A				
1	**02 41 00**	**Demolition**				**$ 110,031.00**
	02 41 13.33	Rail Track Removal (including ballast and subballast)	30	TF	$ 295.00	$ 8,850.00
		Sawcut Existing Pavement	135	LF	$ 11.00	$ 1,485.00
	02 21 13.13	Remove Existing Concrete Pavement	265	SF	$ 12.00	$ 3,180.00
		Remove Existing Asphalt Pavement (included in 02 41 00 Demolition line item)	15	SF	$ 95.00	$ 1,425.00
	34 01 23.13	Equipment Removal and Salvage (Remove Wheel Truing Machine)	1	LS	$ 88,000.00	$ 88,000.00
		Removal of Pavement Markings	26	LF	$ 75.00	$ 1,950.00
		Removal of Existing Handrails	97	LF	$ 53.00	$ 5,141.00
2	**34 72 13.01**	**Railway Line Construction**				**$ 5,400.00**
	34 11 13	Track Rails - Ballasted Section (115 RE Head Hardened Rail)	2	TF	$ 1,975.00	$ 3,950.00
	34 11 33.13	Concrete Track Cross Ties (estimate invluded with Railway Line Construction line item)			$ -	$ -
	34 11 26.13	Track Rail Ballast (estimate included with Railway Line Construction line Item)			$ -	$ -
	34 11 36	Rail Fasteners (estimate included with Railway Line Construction line item)			$ -	$ -
	34 11 19	Track Rail Joints (36")	2	EA	$ 725.00	$ 1,450.00
3	**34 72 13.03**	**Direct Fixation Track Construction**				**$ 31,389.00**
	34 11 13	Track Rails - Embedded Section (115 RE Head Hardened Rail)	47	TF	$ 550.00	$ 25,850.00
	34 72 13.13	Direct Fixation Fasteners (included with Direct Fication Track Construction line item)			$ -	$ -
	----	Angle Iron	47	TF	$ 87.00	$ 4,089.00
	34 11 19	Track Rail Joints (36")	2	EA	$ 725.00	$ 1,450.00
4		**Miscellaneous**				**$ 8,625.00**
	01 57 23	Temporary Stormwater Pollution Control	1	LS	$ 4,800.00	$ 4,800.00
	32 12 16	Asphalt Paving (8" mn. Thickness)	0.75	TON	$ 3,500.00	$ 2,625.00
	32 17 23	Pavement Markings	1	LS	$ 1,200.00	$ 1,200.00
5		**Structural**				**$ 123,250.00**
	31 23 24	Flowable Fill	200	CY	$ 380.00	$ 76,000.00
	03 05 00	Concrete (including top sealant)	35	CY	$ 1,350.00	$ 47,250.00
5		**Mobilization/Demobilization**				**$ 11,000.00**
	01 57 23	Mobilization (not to exceed 7.5% of Base Construction Cost)	1	LS	$ 7,500.00	$ 7,500.00
	32 12 16	Demobilization (not to exceed 2.5% of Base Construction Cost)	1	LS	$ 3,500.00	$ 3,500.00
		TOTAL CONSTRUCTION COST BUILDING A				$ 289,695.00

ITEM	SPEC SECTION	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL
		Building C				
1	**02 41 00**	**Demolition**				**$ 112,040.00**
	02 41 13.33	Track Removal	45	TF	$ 312.00	$ 14,040.00
	34 01 23.13	Removal of Wheel Truing Machine	1	LS	$ 98,000.00	$ 98,000.00
2	**34 72 13.01**	**Railway Line Construction**				**$ 37,350.00**
	34 11 13	Track Rails (115 RE Head Hardened Rail)	65	TF	$ 315.00	$ 20,475.00
	34 72 13.13	Direct Fixation Fasteners (Rigid @ 24" Spacing with Neoprene Pad and Epoxy Grout)	65	TF	$ 215.00	$ 13,975.00
	34 11 19	Rail Joint (36")	4	EA	$ 725.00	$ 2,900.00
3	**34 72 13.03**	**Miscelleaneous**				**$ 9,100.00**
	01 57 23	Temporary Stormwater Pollution Conctrol	1	LS	$ 4,800.00	$ 4,800.00
		Sump Pump (In-Kind or Approved Equal)	1	LS	$ 4,300.00	$ 4,300.00
4		**Structural - Pit**				**$ 82,775.00**
	01 57 23	Flowable Fill	5	CY	$ 375.00	$ 1,875.00
	32 12 16	Concrete (including top sealant)	5	CY	$ 1,600.00	$ 8,000.00
	05 12 00 05 50 00	Steel - Posts & Beams	5	TONS	$ 14,400.00	$ 72,000.00
	32 17 23	Pavement Markings	1	LS	$ 900.00	$ 900.00
5		**Structural - Bogie Rack**				**$ 64,800.00**

	05 12 00 05 50 00	Steel - Posts & Beams	1.5	TONS	$ 38,000.00	$ 57,000.00
	09 96 00	High Performance Coating	150	SQFT	$ 52.00	$ 7,800.00
6		**Mobilization/Demobilization**				**$ 20,000.00**
		Mobilization (not to exceed 7.5% of Base Construction Cost)	1	LS	$ 15,000.00	$ 15,000.00
		Demobilization (not to exceed 2.5% of Base Construction Cost)	1	LS	$ 5,000.00	$ 5,000.00
		TOTAL CONSTRUCTION COST BUILDING C				$ 326,065.00
		TOTAL CONTRACT (BUILDINGS A + C COMBINED) - BASIS FOR AWARD				$ 615,760.00

Bidder Name: __ALL SOURCE COMPANY BUILDING GROUP_____

Third Party Contractors						Any time there is a change to Third Party Contractor resubmit this attachment. Any change to these forms after bid submittal must be made in accordance with Public Contract Code sections 4100 et seq., as applicable, and as permitted by MTS.						
Company Name	**Type of Small Business or DBE**	**% of Work**	**DIR Number**	**Dollar Value**	**Description of Work**	**Point of Contact Name**	**Email**	**Phone Number**	**Street Address**	**City**	**State**	**Zip**
All State Electric	SB	6.00%	1000006717	$25,000.00	Electrical Demo	Warren Thompson	rachel@aesandiego.com	619-588-7888	PO Box 152192	San Diego	CA	92195
PPM Contracting	SB	94.00%	1000001137	$396,500.00	Pit Demo & construction	Greg Taylor	greg@performanceplumbingsd.com	7607542848	1903 W. Vista Way Suite A	Vista	CA	92083
Total		**100.00%**		**$421,500.00**								

Metropolitan Transit System

Agenda Item No. 07

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

On-Call Job Order Contracting (JOC) General Building and Facilities Construction – Contract Award

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWG441.0-25 (in substantially the same format as Attachment A), with ABC General Contractor, Inc. (ABCGC), for on-call general building and facilities construction services, to not exceed the statutory JOC limits under Public Contract Code Section 20128.5, calculated to be in the amount of $6,561,000.00, for one (1) year beginning January 1, 2026.

Budget Impact

The total cost of this contract is estimated to not exceed $6,561,000.00 based on the calculated statutory JOC limits. The contract will be funded by various MTS capital budget accounts. Funding will be included in the budget of each project for which a work order will be issued under this agreement.

DISCUSSION:

JOC is a procurement method under which public agencies may accomplish frequently encountered repairs, maintenance, and construction projects through a single, competitively procured agreement.

The JOC program includes a catalogue of pricing for a variety of potential tasks to be performed under the contract, developed by the MTS contractor, the Gordian Group. All potential contractors are subject to the pre-pricing within this catalogue. Each contractor then includes an adjustment factor, escalating their proposed price from the catalogue price, to determine the total cost of the task order. The adjustment factor represents an average percentage increase over the catalogue price (i.e. 1.25 adjustment factor represents 25% above the catalogue price) for that respective task within the project. In order to select the lowest responsive and responsible bidder, MTS staff compares each contractor's proposed adjustment factor.

MTS's enabling legislation at Public Utilities Code Section 120222 authorizes MTS to use any procurement method authorized for state or local agencies under state or federal law. Certain public entities in California are expressly authorized to use the JOC process within limited parameters. MTS's ability to utilize the JOC contracting process is premised upon the statutory allowance granted to such entities. MTS shares the same general limitations imposed on the JOC process under this statutory framework. Public Contract Code Section 20128.5 allows the board of supervisors of a county to utilize JOCs up to $3,000,000.00 annually, adjusted annually to reflect the percent change in the California Consumer Index. Calculations to August 2025 are $6,561,000.00 annually. Staff estimates that $3,500,000.00 in capacity is needed at this time based on projected project needs. MTS maintains internal contract administration guidelines to ensure compliance with the annual maximum in JOC work orders.

The JOC contract under consideration includes general building and facilities maintenance and construction work, and all required incidental professional and technical services required for quality control monitoring and testing. Examples of these projects may include, but are not limited to, restroom rehabilitation, facilities and administrative space renovations, and repair of MTS facilities and equipment to allow maintenance of a state of good repair.

On September 24, 2025, MTS issued an Invitation for Bids (IFB) seeking a contractor to provide JOC general building and facilities construction services, with the award provided to the contractor with the lowest cumulative adjustment factor weighted as follows:

Item 1: Normal Working Hours (Non-Railroad Right-of-Way) –75%
Item 2: Other Than Normal Hours (Non-Railroad Right-of-Way) – 15%
Item 3: Normal Working Hours Along Railroad Right-of-Way – 5%
Item 4: Other Than Normal Hours Along Railroad Right-of-Way – 2%
Item 5: Restricted Work Shift – 3%

On November 4, 2025, a total of five (5) bids were received from the following:

1. ABC General Contractor, Inc. (ABCGC)
2. All Source Company Building Group (All Source)
3. APR Construction Inc. (APR)
4. Exbon Development Inc. (Exbon)
5. SoCal Coatings Inc. (SoCal)

Staff determined that the solicitation was conducted in a fair and open manner. The Bidder with the lowest cumulative adjustment factor over the pre-priced catalogue was ABCGC. ABCGC was determined to be the lowest responsive and responsible bidder.

Contractor	Firm Certification	Total Score
ABCGC	N/A	.8500
All Source	Small Business (SB)	.8900
Exbon	N/A	.9973
SoCal	N/A	1.0900
APR	N/A	2.588

Based on historical results for these and other JOC services, the Procurement staff determined ABCGC's adjustment factor to be fair and reasonable.

Today's action authorizes the award of this on-call contract to ABCGC. However, no specific project or spending is authorized. Individual projects/task orders will be processed according to the signature authority outlined in MTS Board Policy No. 41 (e.g., task orders under $150,000.00 will be approved by the CEO; task orders over $150,000.00 will require Board approval). Any individual work order estimated to be over $1,000,000.00 will require compliance with MTS's Project Labor Agreement. If subcontractors are needed for any individual work order, the Contractor will designate the list of subcontractors at that time.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWG441.0-25 (in substantially the same format as Attachment A), with ABCGC, for on-call general building and facilities construction services, to not exceed the statutory JOC limits under Public Contract Code Section 20128.5, calculated to be in the amount of $6,561,000.00, for one (1) year beginning January 1, 2026.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Standard Construction Agreement, MTS Doc. No. PWG441.0-25

Metropolitan Transit System

STANDARD CONSTRUCTION AGREEMENT

FOR

MTS DOC. NO. PWL441.0-25

JOC GENERAL BUILDING AND FACILITIES CONSTRUCTION SERVICES

THIS AGREEMENT is entered into this _____ day of _____, 2025 in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: ABC General Contractor, Inc. Address: 3120 National Ave.

San Diego CA 92113
City State Zip

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email: travis@abcgeneralinc.com

Telephone: 619-247-7113

Authorized person to sign contracts Travis Brozowski President
Name Title

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in the Scope of Work (Exhibit A), Bid Proposal (Exhibit B), and in accordance with the Standard Construction Agreement and Special Conditions (Exhibit C), Federal Requirements (Exhibit D),JOC Special Conditions (Exhibit E), Technical Specifications Prepared by Gordian (Exhibit F), Construction Task Catalog (Exhibit G), Invitation for Bids (Exhibit H), Contractor Bonds (Exhibit I) and Contractor Forms (Exhibit J). All Exhibits to this agreement are attached separately on PlanetBids.

SCOPE OF WORK.

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

JOC GENERAL BUILDING AND FACILITIES CONSTRUCTION SERVICES

San Diego Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego. MTS is also the For-Hire Vehicle administrator for multiple cities in San Diego County.

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

This agreement shall be valid for a period of one (1) year, effective January 1, 2026 through December 31, 2026. Time is of the essence in the performance of the Work for each subsequent Work Order. The Work shall be commenced by the date stated in MTS's Notice to Proceed in the first Work Order of the Contract. The Contractor shall complete all Work required by the Contract Documents within the days specified in each Work Order.

CONTRACT PRICE.

MTS shall pay to the Contractor the value of any executed Work Orders under the Contract as full compensation for the performance of the Work Order, subject to any additions or deductions as provided in each Work Order. The Contract is an indefinite-quantity contract for construction work and services. There is no Minimum Contract Value of Work Orders that the Contractor is guaranteed the opportunity to perform under this Contract. In no event shall the value of total Work Orders exceed the statutory JOC limits under Public Contract Code Section 20128.5 ($6,534561,000.00 as of August 1, 2025).

The Contractor shall perform all work required, necessary, proper for or incidental to completing the Detailed Scope of Work called for in each individual Work Order issued pursuant to this Contract for the Unit Prices set forth in the Construction Task Catalog® and the Adjustment Factors, as provided under the Bid Form.

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

PROJECT LABOR AGREEMENT.

Contractor shall comply with MTS's Project Labor Agreement for any individual work order estimated to be $1,000,000 or more, as determined by MTS.

DRAFT

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	ABC GENERAL CONTRACTOR, INC.
By: _____ Sharon Cooney, Chief Executive Officer Approved as to form: By: _____ Karen Landers, General Counsel	By _____ Title: _____

DRAFT

Metropolitan Transit System

Agenda Item No. 08

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Carpet Replacement at Imperial Avenue Division (IAD) Bus Maintenance Facility – Work Order Agreement

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute Work Order Agreement MTSJOC324-36 under Job Order Contract (JOC) MTS Doc. No. PWG324.0-21 (in substantially the same format as Attachment A) with ABC General Contracting, Inc. (ABCGC), in the amount of $199,999.48, for carpet removal and replacement for the north side of the IAD bus maintenance facility.

Budget Impact

The total cost of this contract is estimated to be $199,999.48. Under separate MTS Doc. No. L1282.0-16, with the Gordian Group, MTS will pay a 1.76% JOC software license fee in the amount of $3,519.99. The project will be funded by the San Diego Transit Corp (SDTC) Facilities Operating Budget account 331014-571142.

DISCUSSION:

In May of 2022, under the signature authority of MTS Board Policy No. 41, the CEO authorized JOC Work Order 324-15 under MTS Doc No. PWG324.0-21 to replace the carpet and base in the south half of the IAD Main Administration Building. Due to funding constraints, only the south half of the building's carpet was replaced. This left the north half of the building and other areas' carpet worn and beyond its useful life to remain.

The IAD North Carpet Replacement project generally consists of removing and replacing the remaining carpet in the north half of the IAD Main Administration Building, the Annex Building, and the Instructors' Office in the RAM building, totaling 7,200 square feet. The existing carpet and base will be removed and replaced with new carpet tiles and wall base in all offices, conference rooms, and hallways.

JOC is a procurement method under which public agencies may accomplish frequently encountered repairs, maintenance, and construction projects through a single, competitively procured long-term agreement.

The JOC program includes a catalog of pre-priced tasks to be performed by the contractor and the Gordian Group. All potential contractors are subject to the pricing within this catalog. Each contractor then includes an adjustment factor, escalating their proposed price from the catalog price, to determine the total cost of the task order. The adjustment factor represents an average percentage increase over the catalog price (i.e. 1.25 adjustment factor represents 25% above the catalog price) for that respective task within the project. To select the lowest responsive and responsible bidder, MTS staff compare each contractor's proposed adjustment factor.

On October 6, 2020, MTS issued an Invitation for Bids (IFB) seeking a contractor to provide JOC building and facilities construction services that primarily consist of repair, remodeling, or other repetitive work and general building and facility contracting services. These services include, but are not limited to, demolition, maintenance, and modification of existing buildings and facilities, as well as any required incidental professional and technical services.

Nine (9) bids were received, and MTS determined that ABCGC was the lowest responsive and responsible bidder. On December 10, 2020, Agenda Item (AI) 11, the MTS Board authorized the CEO to execute MTS Doc. No. PWG324.0-21 with ABCGC for General Building Construction Services.

Today's proposed action would be to issue a work order to ABCGC under this JOC on-call agreement. Pricing for this repair work order was reviewed and determined to be fair and reasonable. ABCGC and its subcontractors will be providing all materials, labor, and equipment needed for the fence relocation.

ABCGC will be utilizing the following subcontractor on this project:

Subcontractor Name	Subcontractor Certification	Subcontractor Amount
A&S Flooring	N/A	$102,000.00

This work order is not subject to the Project Labor Agreement (PLA) approved under Board Policy No. 66 because it is a work order under $1,000,000.00, and it is under a JOC agreement that was executed before the effective date of the PLA.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute Work Order Agreement MTSJOC324-36 under JOC MTS Doc. No. PWG342.0-21 (in substantially the same format as Attachment A) with ABCGC, in the amount of $199,999.48, for carpet removal and replacement in the north half of IAD, Annex Building, and one office in the RAM Building.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft Work Order MTS Doc. No. MTSJOC324-36

Metropolitan Transit System

JOB ORDER CONTRACT
WORK ORDER

PWG324.0-21
CONTRACT NUMBER

MTSJOC324-36
WORK ORDER NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2026, in the state of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: ABC General Contractor, Inc. Address: 3120 National Avenue

Form of Business: Corporation San Diego, CA 92113
(Corporation, partnership, sole proprietor, etc.)

Telephone: (619) 247-7113

Authorized person to sign contracts: Travis Brozowski President
Name Title

Pursuant to the existing Job Order Contract (MTS Doc. No. PWG324.0-21), MTS issues a Work Order to Contractor to complete the detailed Scope of Work (attached as Exhibit A.), the Cost Breakdown for the Scope of Work (attached as Exhibit B.), and the subcontractor listing form applicable to this Work Order (attached as Exhibit C.) Federal terms in accordance with master agreement apply.

TOTAL PAYMENTS TO CONTRACTOR SHALL NOT EXCEED $199,999.48

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	ABC GENERAL CONTRACTOR, INC.
By: _____ Sharon Cooney, Chief Executive Officer	Firm: _____
Approved as to form:	By: _____ Signature
By: _____ Karen Landers, General Counsel	Title: _____

DRAFT

EXHIBIT A
(Scope of Work)

DRAFT

San Diego Metropolitan Transit System
1255 Imperial Ave
San Diego, California 92101

Final Scope of Work

Date: 11/17/2025

Job Order Contracting

To: **From:**

Contract Number:	PWG324.0-21
Job Order Number:	MTSJOC324-36
Job Order Title:	IAD North Carpet Replacement
Location:	IAD 100 16th St. San Diego, CA 92101
Brief Scope of Work:	

The following items detail the scope of work as discussed at the site. All requirements necessary to accomplish the items set forth below shall be considered part of this scope of work.

All job orders include the labor, equipment, and material costs for a complete and in-place installation, unless otherwise noted.

DRAFT

SCOPE OF WORK/MINIMUM TECHNICAL SPECIFICATIONS

1 GENERAL:

MTS completed a previous project to replace the carpet and base in the south half of IAD. This project is to complete the remaining carpet and base replacement in the north half of IAD as well as the Driver Training Room and Annex.

All work is to occur at the Imperial Avenue Division, 100 16th St. San Diego, 92101.

2 STAGING:

Contractor is to keep and store all materials and equipment within the work area or adjacent property as possible. Any further staging would have to be coordinated with the MTS Project Manager. Contractor is responsible for security of all stored material, there is limited MTS staff and no security at this location. All property stored onsite is the responsibility of the contractor and MTS shall not be held liable for any and all equipment, material, tools, etc.

3 TEMP FACILITIES:

The contractor is to provide their own temporary restrooms and wash facilities as needed. Contractor is responsible for temp power and water as there are no known utilities in this location.

4 SAFETY AND ACCESS:

Diligent caution must be taken during the undertaking of this work. Contractor will be provided a gate code to access the property off of Forrest Gate Rd.

5 WASTE:

The contractor is responsible for legally disposing of any and all waste in relation to the work. The contractor shall not use any onsite receptacles to dispose of material generated during the performance of this contract. Contractor is responsible for general cleanup at the end of each work day.

6 SCHEDULE AND SEQUENCING:

All work shall be completed within one hundred (100) calendar days from issuance of Notice to Proceed. The work shall commence once all material is available and the work can proceed without stoppages.

7 DETAILED SCOPE OF WORK:

MTS will remove the majority of the furniture and equipment out of the work space prior to commencement of the work. Contractor is responsible for removing the larger items like the desks and file cabinets. MTS will leave larger furniture in the rooms like desks and large bookshelves. All offices will be cleared by MTS Facilities so the contractor may have access to all offices at one time as shown on the phasing plan. Project consists of 12 individual phases. MTS requires up to 3 working days to remove furniture and 3 days to move furniture

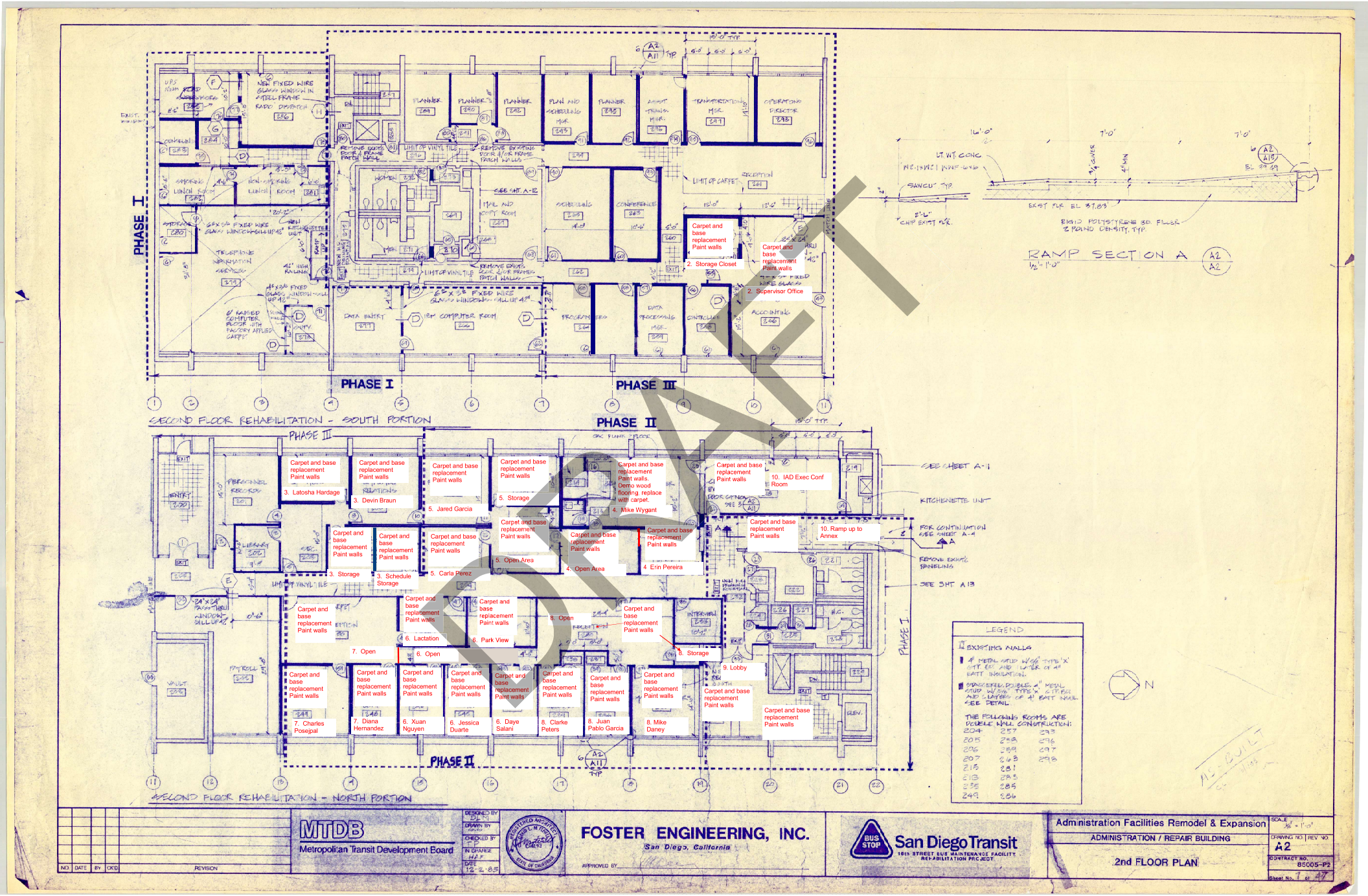
DRAFT

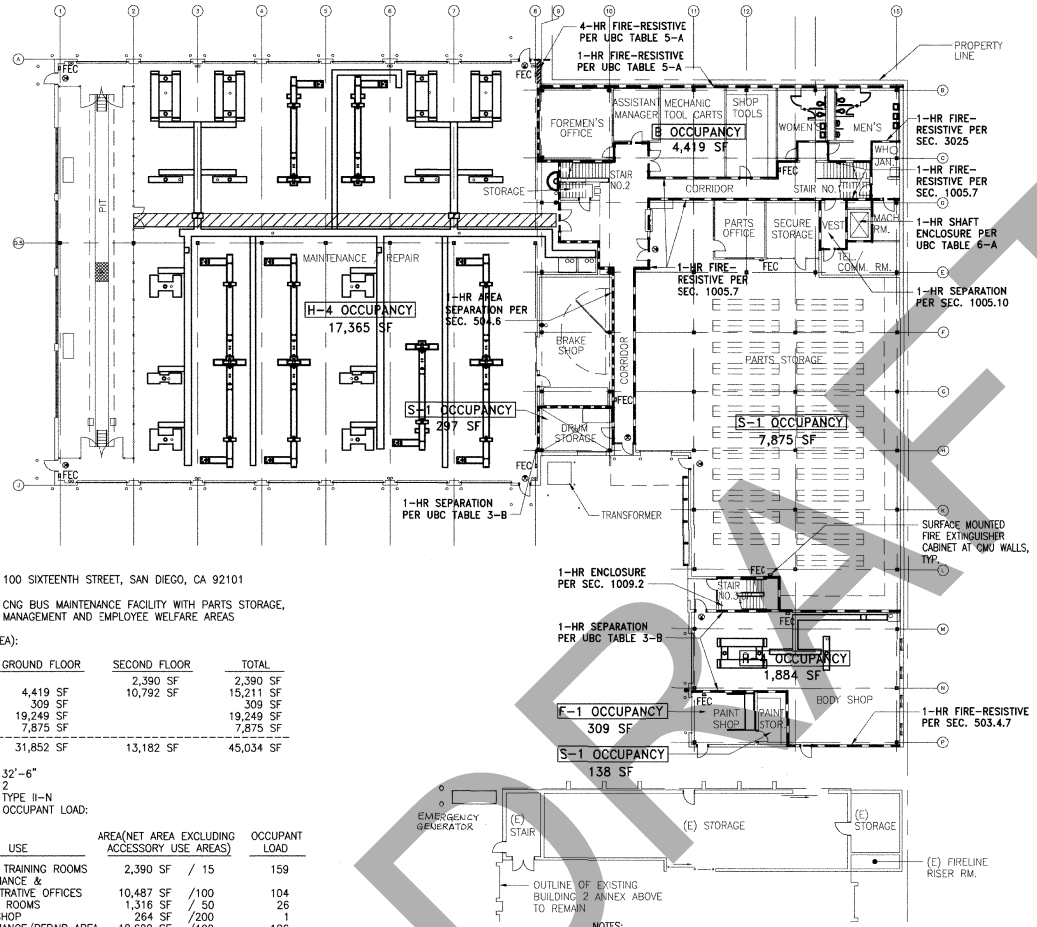
back in the offices once the carpet is complete. The work consists of demolishing the existing carpet & base, installing new carpet tiles, and installing base, as shown in the “SOW Plans” drawings.

Specifications:

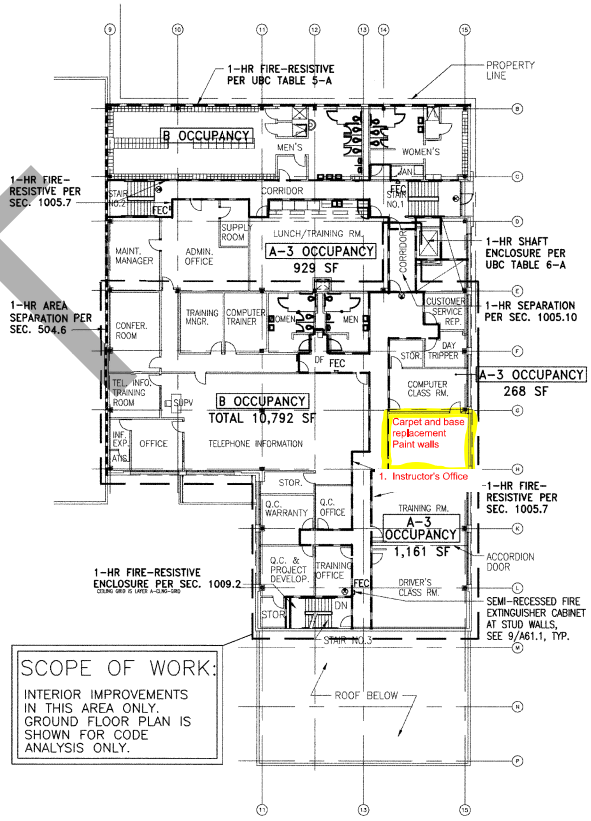
Carpet – Carpet Tile Shaw / Chatterbox 54459 / Smatter 59400 / 24x24 or equal.
Rubber Base – Tarkett Traditional Wall Base / 4” Rubber Cove / “40 Black” or equal.

DRAFT


PHASE I
PHASE I
PHASE III
SECOND FLOOR REHABILITATION - SOUTH PORTION
PHASE II
PHASE III
PHASE II
SECOND FLOOR REHABILITATION - NORTH PORTION
RAMP SECTION A
Carpet and base replacement Paint walls
2. Storage Closet
2. Supervisor Office
3. Latosha Hardage
3. Devin Braun
5. Jared Garcia
5. Storage
4. Mike Wygant
10. IAD Exec Conf Room
10. Ramp up to Annex
3. Storage
3. Schedule Storage
5. Carla Perez
5. Open Area
4. Open Area
4. Erin Pereira
7. Open
6. Lactation
6. Park View
6. Open
8. Storage
9. Lobby
7. Charles Posejpal
7. Diana Hernandez
6. Xuan Nguyen
6. Jessica Duarte
6. Daye Salani
8. Clarke Peters
8. Juan Pablo Garcia
8. Mike Daney
KITCHENETTE UNIT
SEE SHEET A-1
SEE SHT A13
REMOVE EXISTG PANELING
LEGEND
EXISTING WALLS
THE FOLLOWING ROOMS ARE DOUBLE WALL CONSTRUCTION:
204 257 293
205 258 296
206 259 297
207 263 298
215 281
213 283
235 285
249 286
N
DRAFT
MTDB
Metropolitan Transit Development Board
FOSTER ENGINEERING, INC.
San Diego, California
San Diego Transit
Administration Facilities Remodel & Expansion
ADMINISTRATION / REPAIR BUILDING
2nd FLOOR PLAN
DRAWING NO A2
CONTRACT NO. 85005-P2



GROUND FLOOR PLAN 1/16"=1'-0" (1 / A10.2)



SECOND FLOOR PLAN 1/16"=1'-0" (2 / A10.2)

AS-BUILT
Contract No. BUS-443B
Date NOV. 2000

PROJECT DATA:

PROJECT ADDRESS: 100 SIXTEENTH STREET, SAN DIEGO, CA 92101

USE: CNG BUS MAINTENANCE FACILITY WITH PARTS STORAGE, MANAGEMENT AND EMPLOYEE WELFARE AREAS

BUILDING AREA (GROSS AREA):

	GROUND FLOOR	SECOND FLOOR	TOTAL
A-3		2,390 SF	2,390 SF
B	4,419 SF	10,792 SF	15,211 SF
F-1	309 SF		309 SF
H-4	19,249 SF		19,249 SF
S-1	7,875 SF		7,875 SF
TOTAL AREA	31,852 SF	13,182 SF	45,034 SF

BUILDING HEIGHT: 32'-6"
NUMBER OF STORIES: 2
CONSTRUCTION TYPE: TYPE II-N
BUILDING OCCUPANCY AND OCCUPANT LOAD:

	USE	AREA(NET AREA EXCLUDING ACCESSORY USE AREAS)		OCCUPANT LOAD
A-3	LUNCH, TRAINING ROOMS	2,390 SF	/ 15	159
B	MAINTENANCE & ADMINISTRATIVE OFFICES	10,487 SF	/100	104
B	LOCKER ROOMS	1,316 SF	/ 50	26
F-1	PAINT SHOP	264 SF	/200	1
H-4	MAINTENANCE/REPAIR AREA	18,622 SF	/100	186
S-1	DRUM, PARTS & PAINT STORAGES	7,408 SF	/300	24
TOTAL OCCUPANT LOAD:				500

ALLOWABLE FLOOR AREA (W/ AUTOMATIC SPRINKLER SYSTEM):

A-3	9,100 SF x 200% =	18,200 SF	
B	12,000 SF x 200% =	24,000 SF	
F-1	12,000 SF x 200% =	24,000 SF	
H-4	7,500 SF x 300% =	22,500 SF	
	7,500 SF x 100% =	7,500 SF	(SEPARATION ON THREE SIDES)
		30,000 SF	
S-1	18,000 SF x 200% =	36,000 SF	
TOTAL ALLOWABLE AREA		132,200 SF	

NOTES:

1. PROVIDE 1-HR RATED SPRAY-ON FIREPROOFING ON ALL COLUMNS AND JOISTS IN BRAKE SHOP AND PART OF MAINTENANCE / REPAIR SHOP AS SHOWN HATCHED ON PLAN.
2. FIRE SRINKLER CONTRACTOR TO PROVIDE FIRE SPRINKLER SYSTEM THROUGHOUT ENTIRE BUILDING. SEE PLUMBING DRAWINGS FOR EXISTING FIRE SPRINKLER MAIN LOCATION.

SCOPE OF WORK:
INTERIOR IMPROVEMENTS IN THIS AREA ONLY. GROUND FLOOR PLAN IS SHOWN FOR CODE ANALYSIS ONLY.

LEGEND:
- ONE-HOUR FIRE-RESISTIVE AREA SEPARATION
- ONE-HOUR FIRE-RESISTIVE CONSTRUCTION
- FOUR-HOUR FIRE-RESISTIVE CONSTRUCTION
- FEC FIRE EXTINGUISHER CABINET
- EXIT SIGN

DESIGN CRITERIA
THE BUILDING WORK ON THIS PROJECT HAS BEEN DESIGNED TO CONFORM TO THE 1994 UBC AS AMENDED BY THE 1995 TITLE 24 CALIFORNIA BUILDING STANDARD CODE.

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CONSTRUCTION CHANGE TABLE

CHANGE	DATE	SHEET NUMBERS REVISED OR ADDED THIS CHANGE
1	6/28/99	ADDENDUM NO. 1
2	9/22/99	FIREPROOFING CLARIFICATION
4	4/17/00	SECOND FLOOR INTERIOR IMPROVEMENTS

STV Incorporated
ENGINEERS/ARCHITECTS/PLANNERS/CONSTRUCTION MANAGERS
1050 WILSHIRE BOULEVARD, SUITE 1455
LOS ANGELES, CALIFORNIA 90017-2489

LICENSED ARCHITECT KIM SOO KIM C-24485 RENEWAL DATE STATE OF CALIFORNIA

		DATE
DESIGNED BY	K. Kim	4/17/00
DRAWN BY	S. Escobar	4/17/00
CHECKED BY	M. Fernandes	4/17/00
MTDB PRJ. ENG.		

M T D B
Metropolitan Transit Development Board
1255 Imperial Avenue, Suite 1000, San Diego, Ca. 92101-7490 (619)231-1466

IMPERIAL AVENUE DIVISION
BUS MAINTENANCE FACILITY

CODE ANALYSIS/FLOOR PLANS

SCALE	1/16"=1'-0"
MTDB CONTRACT NO.	BUS-443B
DRAWING NO.	A10.2
SHEET NO.	14

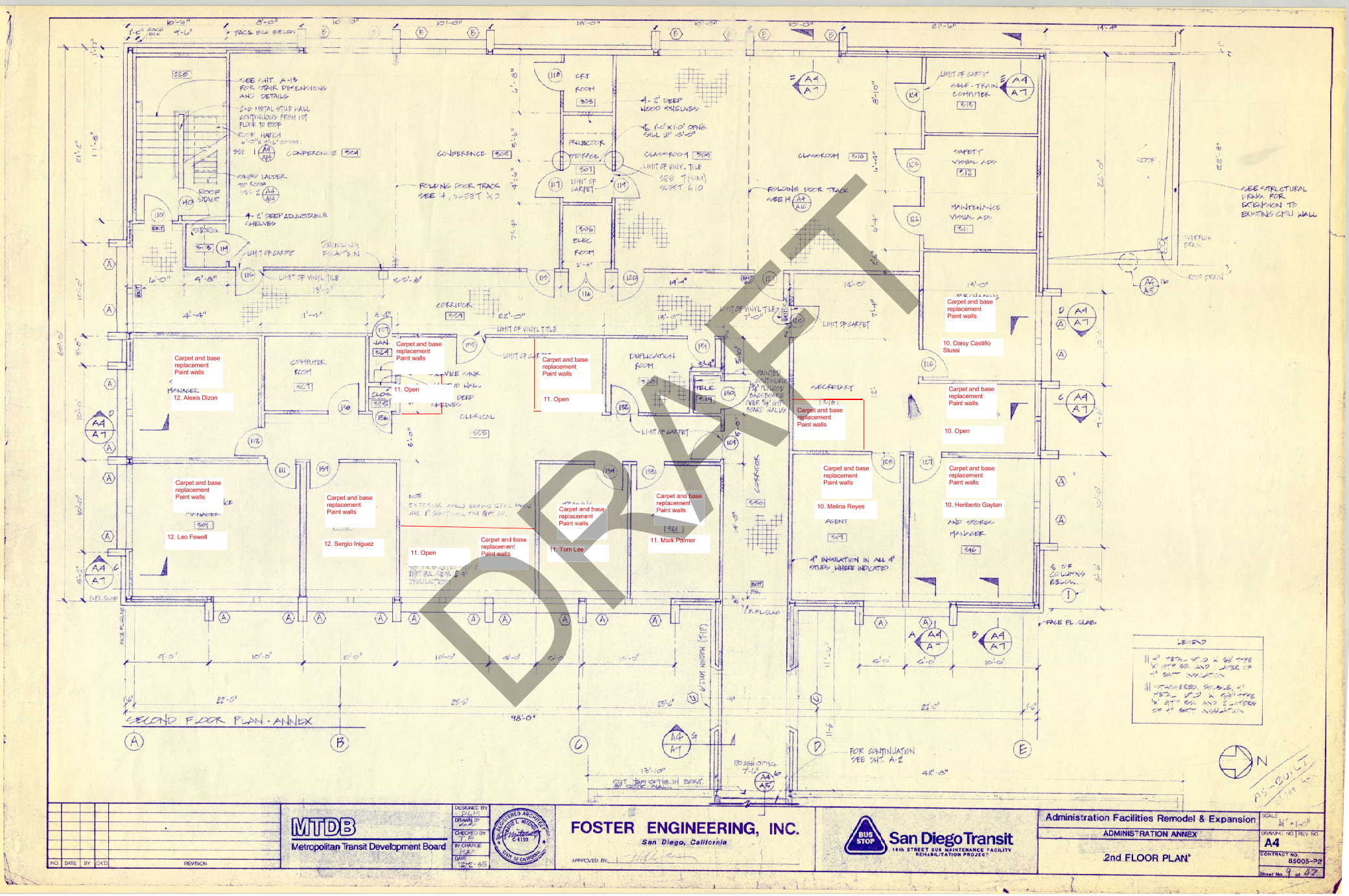

Carpet and base replacement Paint walls
12. Alexis Dizon
11. Open
10. Daisy Castillo Stussi
10. Open
12. Leo Fewell
12. Sergio Iniguez
11. Tom Lee
11. Mark Palmer
10. Melina Reyes
10. Heriberto Gaytan
DRAFT
SECOND FLOOR PLAN - ANNEX
MTDB
Metropolitan Transit Development Board
FOSTER ENGINEERING, INC.
San Diego, California
San Diego Transit
16th STREET BUS MAINTENANCE FACILITY REHABILITATION PROJECT
Administration Facilities Remodel & Expansion
ADMINISTRATION ANNEX
2nd FLOOR PLAN
A4
85005-P2
AS-BUILT

EXHIBIT B
(Cost Breakdown)

DRAFT

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

Division		Install Total	NPP Total	Demo Total	Division Total
01	General Requirements	$69,166.09	$0.00	$0.00	$69,166.09
02	Existing Conditions	$2,106.70	$0.00	$0.00	$2,106.70
09	Finishes	$119,297.20	$0.00	$9,429.49	$128,726.69
	Total:	**$190,569.99**	**$0.00**	**$9,429.49**	**$199,999.48**
Line Count: 16				**Proposal Total:**	**$199,999.48**

Total Reflects Filtered Statuses: Added, Clarification Requested, Clarified, Confirmed Removal, Modified, No Change, OverRuled, Rejected, Removed, Retained, System Removal Acknowledged by Contractor, System Removal Acknowledged by Owner, System Removed

The Percentage of Non Pre-Priced on this Proposal: 0.0%

DRAFT

** Includes Price Changes due to Construction Task Catalog update*

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

DRAFT

01 General Requirements — $69,166.09

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
1	012220000027	Laborer	Install	72.00	$74.04	HR	1.2238	$6,523.93

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor Yes Includes Equipment No Includes Materials No

User Note: Daily clean up on hallways (haul route) 2 men for 1 hour per day x 36 days

Item Note: For tasks not included in the Construction Task Catalog® and as directed by owner only.

Total: $6,523.93

Division 01 General Requirements Total: $6,523.93

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
2	012223001297	1-1/2 Ton Capacity, 8' To 10' Bed, 4 x 2 Flat Bed Truck With Full-Time Truck Driver	Install	36.00	$194.66	DAY	1.2238	$8,576.10

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor No Includes Equipment No Includes Materials Yes

User Note: Onsite tool truck and equipment daily per phase as no onsite laydown area
3 days per phase x 12 phases
No Labor

Total: $8,576.10

Division 01 General Requirements Total: $8,576.10

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
3	012223001300	3 Ton Capacity, 12' To 16' Bed, 4 x 2 Flat Bed Truck With Full-Time Truck Driver	Install	36.00	$278.83	DAY	1.2238	$12,284.36

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor No Includes Equipment No Includes Materials Yes

User Note: Delivery and haul off daily per phase as no onsite laydown area
3 days per phase x 12 phases
No Labor

Total: $12,284.36

Division 01 General Requirements Total: $12,284.36

** Includes Price Changes due to Construction Task Catalog update*

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
4	016619000002	Transfer Delivered Material Between Floors Via Stairs, Per Floor	Install	864.00	$14.34	CY	1.2238	$15,162.59

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor Yes **Includes Equipment Yes** **Includes Materials No**

User Note: 36 working days
Average 12 loads per day in and out x 6 flights of stairs

Item Note: Quantity equals volume of materials multiplied by number of floors traveled.

Total:	**$15,162.59**
Division 01 General Requirements Total:	**$15,162.59**

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
5	016619000005	Transfer Delivered Materials Distances Greater Than 125', Per CY Of Material Per 125'	Install	1,728.00	$5.83	CY	1.2238	$12,328.85

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor Yes **Includes Equipment Yes** **Includes Materials No**

User Note: 36 working days
Average 12 loads per day in x 4

Total:	**$12,328.85**
Division 01 General Requirements Total:	**$12,328.85**

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
6	016619000010	Transfer Demolition Debris Distances Greater Than 125', Per CY Of Material Per 125'	Install	1,728.00	$5.83	CY	1.2238	$12,328.85

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor Yes **Includes Equipment Yes** **Includes Materials No**

User Note: 36 working days
Average 12 loads per day out x 4

Total:	**$12,328.85**
Division 01 General Requirements Total:	**$12,328.85**

DRAFT

** Includes Price Changes due to Construction Task Catalog update*

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
7	017419000036	General Refuse	Install	36.00	$44.52	TON	1.2238	$1,961.41

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor No **Includes Equipment No** **Includes Materials Yes**

User Note: 1 dump load per night, 36 nights

Total: $1,961.41

Division 01 General Requirements Total: $1,961.41

02 Existing Conditions **$2,106.70**

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
8	029050000089	Block And Pad Furniture (Per Piece Of Furniture) For Emergency Clean-up	Install	424.00	$4.06	EA	1.2238	$2,106.70

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor Yes **Includes Equipment Yes** **Includes Materials No**

User Note: Estimate 4 pieces per 53 areas x 2 times (demo and new)

Total: $2,106.70

Division 02 Existing Conditions Total: $2,106.70

09 Finishes **$128,726.69**

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
9	090190520006	Hand Scrape, Concrete And Masonry Surfaces, Surface Preparation	Install	160.00	$0.50	SF	1.2238	$97.90

Accepted

History: 1.1 Added,2.0 Accepted

Includes Labor Yes **Includes Equipment No** **Includes Materials No**

User Note: Floor under wood flooring in Mike Wygant Office

Total: $97.90

Division 09 Finishes Total: $97.90

DRAFT

** Includes Price Changes due to Construction Task Catalog update*

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
10	090190520015	Scrape, Repair And Sand Severely Damaged Drywall Surfaces, Surface Preparation	Install	3,108.00	$0.87	SF	1.2238	$3,309.11
Accepted		*History: 1.1 Added,2.0 Accepted*						
		Includes Labor Yes Includes Equipment Yes Includes Materials Yes						
		User Note: Remove glue on wall of old base						
							Total:	**$3,309.11**
							Division 09 Finishes Total:	**$3,309.11**

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
11	096513130007	4" High, 1/8" Thick, Type TP Thermoplastic Rubber Wall Base, All Colors	Install	2,748.00	$2.70	LF	1.2238	$9,080.11
Accepted		*History: 1.1 Added,2.0 Accepted*	Demo:	2,748.00	$0.85	LF	1.2238	$2,858.55
		Includes Labor Yes Includes Equipment Yes Includes Materials Yes						
		User Note: All area less IAD Exec Conf Room						
							Total:	**$11,938.66**
							Division 09 Finishes Total:	**$11,938.66**

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
12	096513130007	For Up To 20, Add **MOD: 0402**		2,748.00	$1.10	LF	1.2238	$3,699.30
Accepted		*History: 1.1 Added,2.0 Accepted*						
		Includes Labor Yes Includes Equipment Yes Includes Materials Yes						
		User Note: 53 small office						
							Total:	**$3,699.30**
							Division 09 Finishes Total:	**$3,699.30**

DRAFT

** Includes Price Changes due to Construction Task Catalog update*

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
13	096513130008	6" High, 1/8" Thick, Type TP Thermoplastic Rubber Wall Base, All Colors	Install	360.00	$3.20	LF	1.2238	$1,409.82
Accepted		*History: 1.1 Added,2.0 Accepted*	Demo:	360.00	$0.85	LF	1.2238	$374.48

Includes Labor Yes **Includes Equipment Yes** **Includes Materials Yes**

User Note: IAD Exec Conf Room ONLY

Total: $1,784.30

Division 09 Finishes Total: $1,784.30

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
14	096513330005	Removal Of Glue From Concrete Floor	Install	10,530.00	$0.85	SF	1.2238	$10,953.62
Accepted		*History: 1.1 Added,2.0 Accepted*						

Includes Labor Yes **Includes Equipment No** **Includes Materials No**

Item Note: For removal of glue from VCT or carpet placement. Not to be used in conjunction with demolition tasks associated with floor tile installation.

Total: $10,953.62

Division 09 Finishes Total: $10,953.62

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
15	096513360021	1/2" Material To Floor x 4", Vinyl, Wheeled Traffic Transition (Johnsonite CTA-XX-Q)	Install	272.00	$6.40	LF	1.2238	$2,130.39
Accepted		*History: 1.1 Added,2.0 Accepted*	Demo:	272.00	$0.85	LF	1.2238	$282.94

Includes Labor Yes **Includes Equipment Yes** **Includes Materials Yes**

Total: $2,413.33

Division 09 Finishes Total: $2,413.33

DRAFT

** Includes Price Changes due to Construction Task Catalog update*

Price Proposal Detail Report

By Division
Version: 2.0
Approved
Proposal Value: $199,999.48
Approved Date: November 6, 2025

Job Order: MTSJOC324-36
Job Order Name: IAD North Carpet Replacement
Location: IAD 100 16th St. San Diego, CA 92101

Contractor: ABC General Inc.
Contract Number: PWG324.0-21
Contract Name: JOC Building and Facilities Construction Services. - Option 4

Record #	CSI Number	Description	Type	Quantity	Unit Price	UOM	Factor	Line Total
16	096813000031	42 Ounce, Patterned, Nylon Carpet Tile	Install	1,170.00	$61.89	SY	1.2238	$88,616.95
Accepted		*History: 1.1 Added,2.0 Accepted*	Demo:	1,170.00	$4.13	SY	1.2238	$5,913.52

Includes Labor Yes **Includes Equipment Yes** **Includes Materials Yes**

Total:	**$94,530.47**
Division 09 Finishes Total:	**$94,530.47**
Proposal Total:	**$199,999.48**
Div **The Percentage of Non Pre-Priced on this Proposal:**	**0.0%**

DRAFT

** Includes Price Changes due to Construction Task Catalog update*

EXHIBIT C
(Subcontractor Listing)

DRAFT

San Diego Metropolitan Transit System
1255 Imperial Ave
San Diego, CA 92101

Subcontractor Report

Date: 11/17/2025

Job Order Contracting

Contract #: PWG324.0-21

Job Order #: MTSJOC324-36

Job Order Title: IAD North Carpet Replacement

Job Order Value: $199,999.48

Location: IAD

Contractor: ABC General Inc.

Subcontractor: A&S Flooring Inc.

Subcontractor Name	License Number	Describe Nature of Work (Trade)	Certifications	Subcontractor Total	Participation %
A&S Flooring Inc. 2461 Fenton St, Chula Vista, CA 91914	801134	New Carpet	No Certification	$102,000.00	51.00%

Summary

Certification Name	Value	% Subcontracted
No Certification	$102,000.00	51.00%
Total	**$102,000.00**	**51.00%**

DRAFT

Metropolitan Transit System

Agenda Item No. 09

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Rail Noise Suppression Lubricant - Contract Award

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. L1702.0-25 (in substantially the same format as Attachment A), with Kano Laboratories LLC - Super Lube (Kano), for Rail Noise Suppression Lubricant for five (5) years in the amount of $1,156,200.60 (including 7.75% CA Sales Tax).

Budget Impact

The total cost of this contract is estimated to be $1,156,200.60 (Attachment A). The contract will be funded by the San Diego Trolley Inc. (SDTI) Track Operating Budget account 370016-543100.

DISCUSSION:

Rail lubricants serve the purpose of noise suppression and rail lubrication along the populated business and residential corridors of the Trolley. They also prevent rust, reduce corrosion, and provide rail wear and wheel wear reduction.

On June 18, 2025, MTS issued an Invitation for Bids (IFB) to purchase an estimated yearly quantity of 600, 5-gallon pails of rail noise suppression lubricant, for a five (5) year period. A single bid was received by the due date of August 27, 2025, from the following bidder with the overall total amount, including California 7.75% sales tax as follows:

The bid summary is shown below:

Company Name	Firm Certification	Amount	CA Sales Tax	Overall Total Amount
Kano	NA	$1,073,040.00	$83,160.60	$1,156,200.60
MTS Independent Cost Estimate (ICE)	NA	$1,326,151.50	$102,776.75	$1,428,928.24

San Diego Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego. MTS is also the For-Hire Vehicle administrator for multiple cities in San Diego County.

Since a single bid was received, staff conducted a single bid survey as required by law. No responses to the survey were received. Staff found no evidence that the solicitation had unduly restrictive elements in the scope of work. The solicitation was found to be conducted in a fair and open manner and meeting MTS's procurement requirements.

Under a single bid, negotiations with the sole bidder are permissible. On September 3, 2025, MTS contacted Kano to negotiate the costs. Kano declined to adjust their original bid price and submitted a Best and Final Offer (BAFO), which did not change from their original bid in the amount of $1,156,200.60. Staff issued the Notice of Intent to Award (NIA) on September 15, 2025.

On September 24, 2025, LB Foster submitted a protest letter, alleging that MTS's bid requirement that the rail lubricant be "National Sanitation Foundation (NSF) certified H1 for use around food processing areas meeting FDA 21 CFR for appropriate use, ingredient and labeling" unduly restricted competition. On October 24, 2025, MTS responded to the letter of protest and determined that the protest had no merit and was therefore denied. The IFB's requirements that the rail lubricant be compliant with the NSF certified H1 standard was included because it met MTS's technical, regulatory, and risk management needs. Synco SuperLube #47-41040-5, a rail lubricant proposed by Kano, was found to meet this IFB requirement. It is environmentally safe, biodegradable, and has non-insulating properties compatible with the Trolley signal system. LB Foster did not pursue their protest to the next stage after receiving MTS's response.

Based on a comparison of MTS's ICE in the amount of $1,428,928.24, retail/market pricing, and recent comparable purchases made by other agencies, MTS staff deemed Kano's pricing to be fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. L1702.0-25 (in substantially the same format as Attachment A), with Kano, for Rail Noise Suppression Lubricant for five (5) years in the amount of $1,156,200.60 (including 7.75% CA Sales Tax).

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julie.Tuer@sdmts.com

Attachments: A. Draft Agreement, MTS Doc. No L1702.0-25
B. Scope of Work
C. Bid Form

Metropolitan Transit System

STANDARD AGREEMENT

FOR

MTS DOC. NO. L1702.0-25

RAIL NOISE SUPPRESSION LUBRICANT

THIS AGREEMENT is entered into this _____ day of _____, 2026 in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Kano Laboratories LLC

Address: PO Box 405

Bohemia NY 11716

City State Zip

Form of Business: LLC
(Corporation, Partnership, Sole Proprietor, etc.)

Email: natalia@super-lube.com

Telephone: 631-567-5300

Authorized person to sign contracts Natalia Diaz (Name) President (Title)

The Contractor agrees to provide goods as specified in the conformed Scope of Work/Technical Specification (Exhibit A), Contractor's Cost/Pricing Form (Exhibit B), and in accordance with the Standard Agreement, including Standard Conditions (Exhibit C), Federal Requirements (Exhibit D), and Forms (Exhibit E).

The contract term is for five (5) years effective January 1, 2026 through December 31, 2030.

Payment terms shall be Net 30 days from invoice date. The total cost of this contract shall not exceed $1,156,200.60 (inclusive of CA 7.75% sales tax) without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	CONTRACTOR NAME
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, General Counsel	Title: _____

DRAFT

4. SCOPE OF WORK/TECHNICAL SPECIFICATIONS

4.1. OVERVIEW

MTS is seeking bids from responsible contractors for the provision of a service proven rail noise suppression lubricant for use by San Diego Trolley Inc., (SDTI), for a period of five (5) years. Historically, SDTI has used an estimated 35-40 pails per month (420-480 pails per year). To be considered service proven, the lubricant must meet the requirements shown in these specifications.

On the Bid Form, unit pricing shall be all-inclusive with the exception of California sales tax. MTS will calculate sales tax at purchase order issuance. The all-inclusive price includes but is not limited to overhead costs, delivery costs, drum deposit fees, recycling fees, and any other miscellaneous fees related to this lubricant. Other than the CA sales tax, MTS will not pay any other additional costs.

4.2. PRODUCT REQUIREMENTS

The lubricant requirements listed below are for the purpose of noise suppression and rail lubrication along the populated business and residential corridors of SDTI.

Currently, SDTI uses “Synco SuperLube”, manufacturer number 47-41040-5. MTS is looking to purchase “Synco SuperLube” or an approved equal.

Product must be able to be applied with standard unmodified Portec Hydraulic lubricator Part Number 71944-04-115RE and Lincoln Solar powered lubricators Part Number 276733 (200# capacity reservoir) and Part Number 85666 (800# capacity reservoir).

The lubricant must be National Sanitation Foundation (NSF) certified H1 for use around food processing areas meeting FDA 21 CFR for appropriate use, ingredient and labeling.

The lubricant must have an average biodegradation rate of no less than 60% in twenty-eight (28) days as measured by ASTM Method D7373

The lubricant must not contain chemicals known to the State of California to cause cancer or reproductive harm see www.P65Warnings.ca.gov [p65warnings.ca.gov]

4.2.1. TESTING AND COMPLIANCE:

A. This scope of work includes salient characteristics. Also included in Section 3.23 of the General Provisions is Request For Approved equal (RFA) information, and Section 8 of the Forms is the RFA Form. Complete documentation must be provided in support of any RFA submitted by bidders for MTS review, and must meet the deadline provided in the calendar of events.

B. In all cases, the lubricant furnished must meet all the minimum technical specifications.

C. The lubricant must have a proven history of achieving noise suppression, and be in use at a minimum of three (3) transit agencies for five (5) years at each agency. These agencies must be of similar operation as SDTI (i.e. similar in rail and wheel

profiles curves, grades, etc). When submitting the RFA, Bidders should include this supporting documentation.

D. Lubricant tracking ability must be a minimum of five (5) miles with the same application settings as in current use at SDTI. SDTI personnel will verify this.

4.3. PACKAGING

The lubricant pails must be wrapped and protected from damage. The lubricant must be packaged in individual five (5) gallon pails with handles, and sealed properly to reduce any spillage. The lubricant pails shall be delivered or packaged on a pallet and shrink wrapped, which is designed to occupy the least amount of warehouse space as possible without damage to the pails. Each pallet must be forklift capable and/or pallet-jack ready to protect each pallet from damage. The pallets must be visibly labeled with the description, and each pallet must include a detailed pack slip with delivery and referencing SDTI's purchase order number. All incomplete and or damaged pails will be returned to the Vendor at the Vendor's cost.

4.4. SPECIFIC DELIVERY INSTRUCTIONS

Beginning with the effective contract date, the purchase and delivery of the lubricant will be twenty-one (21) days from the date the purchase order is sent to the Vendor. Any changes to the delivery shall require prior notification and approval by the Project Manager, Alex Pereyra at 619-595-4937 or alex.pereyra@sdmts.com or designee.

All deliveries shall be shipped to: San Diego Trolley, Inc., 1341 Commercial Street, San Diego, CA 92113. SDTI has a loading dock, and all delivery trucks can back up to the loading dock, and SDTI personnel will provide a forklift to off load from the delivery truck. The Contractor must provide a packing slip with the delivery which must include the SDTI PO number as a reference.

All deliveries will be from 7:00 a.m. until 5:00 p.m., Monday through Sunday. The Contractor may contact the SDTI Warehouse at 619-595-4934 or 619-595-4936.

4.5. DAMAGED OR DEFECTIVE MATERIAL

Any pallets or pails delivered with damaged or with a defect in packaging will be returned to the Contractor at the Contractor's expense. SDTI may request, at its discretion, a credit in full or a replacement in full. Any additional costs incurred by SDTI related to the return such as freight, packaging, or re-stocking, will be borne by the Contractor.

4.6. SPECIFIC TECHNICAL REQUIREMENTS

4.6.1. NOISE SUPPRESSION REQUIREMENTS

A. The lubricant must have properties that eliminate "wheel squeal" in traditional wheel to rail contact in light rail transit operations.

B. The lubricant must be capable of eliminating wheel flange noise in curves of twenty (20º) degrees or less.

C. The lubricant must have high lubricating and adhesive properties for effective noise reduction capability.

4.6.2. TRACKING REQUIREMENTS

A. The lubricant must have adhesive and cohesive properties, so that the lubricant can be tracked for a minimum distance of five (5) miles on the gauge-face of the rail.

B. The lubricant must have properties that allow it to efficiently transfer onto the flange of the rail wheel, thereby achieving the tracking capability a minimum of five (5) miles.

C. The lubricant must be waterproof against outside weather conditions.

4.6.3. LUBRICATING REQUIREMENTS

A. The lubricant must have properties which prevent rust and reduce corrosion.

B. The lubricant must have properties which enable it to lubricate efficiently for rail and wheel wear reduction.

C. The lubricant must be a synthetic lubricant.

D. The lubricant must maintain lubricating properties for the entire distance of the tracking requirement which is a minimum of five (5) miles.

4.6.4. REQUIREMENTS OF THE APPLICATION OF PRODUCT

A. The lubricant must be capable of being applied to the gauge face of the rail dispensed by the Portec Hydraulic lubricator Part number 71944-04-115RE and Lincoln Solar powered lubricators Part number 276733 (200# capacity reservoir) and Part number 85666 (800# capacity reservoir). With no modification to the unit.

B. The lubricant must be non-petroleum and non-silicone based to prevent gumming and clogging of the applicators, thereby minimizing service.

C. The lubricant must have the required properties to produce a build-up column of lubricant, so that it transfers efficiently from the applicator head to the flange of the wheel.

D. The lubricant must be compatible with all rubber, plastic, and metals.

E. The lubricant must have non-insulating properties compatible with the MTS/SDTI signal system and have dielectric properties.

F. The lubricant must be stable and therefore not effected by other substances.

G. The lubricant must be effective under high pressure rail/wheel friction.

H. The lubricant must operate in negative forty-five (-45ºF) degrees Fahrenheit to five hundred (+ 500ºF) degrees Fahrenheit.

I. The lubricant must have properties which prevent melting at high temperatures.

4.6.5. PRODUCT SAFETY AND HANDLING REQUIREMENTS

A. The lubricant must be non-toxic to skin, eyes, and incidental contact with the mouth.

B. The lubricant must have properties, so that inhalation of the product when handled is not dangerous to personnel.

C. The lubricant must meet Hazardous Material Information System (HMIS) codes as follows:

- Fire = 1
- Health = 0
- Reactivity = 0
- Other = 0

4.6.6. FIRE SAFETY REQUIREMENTS (NFPA)

The lubricant must meet the following standards for fire safety requirements as described by the NFPA:

- Flammability = 1
- Health = 0
- Reactivity = 0
- Other = 0
- Flash Point > 428º Fahrenheit
- Fire Point > 572º Fahrenheit

4.6.7. ENVIRONMENTAL IMPACT REQUIREMENTS

A. The lubricant must be biodegradable - achieving fifty (50%) percent degradability within thirty (30) days.

B. The lubricant must exhibit zero (0) bio-resistance when challenged with mixed bacterial fungal inoculums under aerobic conditions.

C. The lubricant must not be toxic to aquatic organisms.

D. The lubricant must be relatively inert in aquatic systems, fresh and salt water.

E. The lubricant must have properties that inhibit spills in the course of safe environmental handling by personnel.

4.6.8. PHYSICAL PROPERTIES REQUIRED

The lubricant must have the following physical properties:

A. Viscosity: 850,000 + - 50,000 centerpoise (cps)

B. Flash Point: > 428º Fahrenheit

C. Fire Point: > 572º Fahrenheit

D. Water Solubility: Insoluble

E. Shelf Life: Two (2) years minimum

F. Chemical Characteristic: Inert

G. Non Black and Non staining

4.7. INVOICES

Invoices must be sent to the MTS Accounting Department, via email, at ap@sdmts.com. All invoices must have the Purchase Order and contract number clearly displayed to ensure timely payment. MTS will not pay on packing slips, receiving documents, delivery documents, or other similar documents. Invoices must be submitted for payment.

Contractors must also indicate if any of the invoiced amount(s) is for service or work provided by a subcontractor and indicate the amount that will be paid to the subcontractor. Contractors must also comply with the prompt payment requirements in the *Prompt Progress Payments* section of the Standard Conditions.

4.8. DELIVERY AND ACCEPTANCE

Equipment or any deliverable provided under this contract shall be delivered F.O.B. to SDTI, 1341 Commercial Street, San Diego, California 92113 unless otherwise specified, in first class condition, complete and ready for operation, and the Contractor shall assume all responsibility and risk of loss incident to said delivery.

Contractor shall indicate delivery date on the Bid Form unless already specified, in which case, shall be made within the time set forth. Delivery is part of the consideration and must be adhered to as specified.

Contractor will not be held liable for failure to make delivery because of strikes, construction of property, governmental regulations, acts of God or any other causes beyond his control, provided a written extension of time is obtained from MTS.

Upon delivery, MTS will acknowledge receipt of said items or products. Delivery shall not constitute acceptance. Upon inspection and testing (if necessary) by MTS, a determination will be made whether said items or products are in conformance with contract requirements. If found in conformance, MTS shall approve the Contractor's invoice for payment; thereby constituting acceptance. Payment terms begin from this point. If the delivered items or products are found not in compliance, MTS will immediately notify the Contractor, and furnish all details of deficiencies. Contractor shall correct the deficiencies or supply new items or products (at the discretion of MTS), and resubmit for inspection and testing (if necessary).

Metropolitan Transit System

RAIL NOISE SUPPRESSION LUBRCANT IFB - Bid Form
MTS Doc. No. L1702.0-25

BIDDER NAME: __Kano Laboratories LLC_____

Year	Item Description	Quantity (Unit of Measure 5 Gallons)	Total Pounds	Unit Cost per Pound	Extended Price
1	Synco SuperLube, manufacturer number 47-41040-5	600 x 5 Gallon Pails @ 40 lbs per pail	24,000	$ 8.59	$ 206,160.00
2	Synco SuperLube, manufacturer number 47-41040-5	600 x 5 Gallon Pails @ 40 lbs per pail	24,000	$ 8.76	$ 210,240.00
3	Synco SuperLube, manufacturer number 47-41040-5	600 x 5 Gallon Pails @ 40 lbs per pail	24,000	$ 8.94	$ 214,560.00
4	Synco SuperLube, manufacturer number 47-41040-5	600 x 5 Gallon Pails @ 40 lbs per pail	24,000	$ 9.12	$ 218,880.00
5	Synco SuperLube, manufacturer number 47-41040-5	600 x 5 Gallon Pails @ 40 lbs per pail	24,000	$ 9.30	$ 223,200.00
				GRAND TOTAL (All Inclusive) (BASIS OF AWARD) :	**$ 1,073,040.00**
				Ca Sales Tax 7.75%	$ 83,160.60
				GRAND TOTAL (All Inclusive)	**$ 1,156,200.60**

BIDDER ACCEPTS RESPONSIBILITY FOR ACCURACY AND PRESENTATION OF THE ABOVE NUMBERS.

**The above quantities are for bidding purposes only and are based on MTS' current usage. They represent what MTS anticipates as a requirement, but MTS does not guarantee this quantity. The actual quantity ordered may be more or less than what is anticipated on the pricing form, and it is dictated by MTS actual requirements and the available funding at the time each order is initiated.*

Unit pricing shall be all-inclusive with the exception of California sales tax. MTS will calculate sales tax at purchase order issuance. The all-inclusive price includes but is not limited to overhead costs, delivery costs, drum deposit fees, recycling fees, and any other miscellaneous fees related to this lubricant. Other than the CA sales tax, MTS will not pay any other additional costs.

Metropolitan Transit System

Agenda Item No. 10

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Operations Budget Status Report for October 2025

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

This report summarizes the year-to-date operating results for October 2025 compared to the Fiscal Year (FY) 2026 budget for the San Diego Metropolitan Transit System (MTS). Attachment A-1 combines the operations', administration's and other activities' results for October 2025. Attachment A-2 details the October 2025 combined operations' results and Attachments A-3 to A-7 present budget comparisons for each MTS operation. Attachment A-8 details budget comparisons for MTS Administration, and Attachment A-9 provides October 2025 results for MTS's other activities (For Hire Vehicle Administration (FHVA)/San Diego and Arizona Eastern Railway Company (SDA&E)).

MTS NET-OPERATING SUBSIDY RESULTS

As indicated within Attachment A-1, for the year-to-date period ending October 2025, MTS's net-operating income unfavorable variance totaled $793,000 (-0.7%). Operations produced a $1,241,000 (-1.1%) unfavorable variance and the administrative/other activities areas were favorable by $447,000 (15.9%).

MTS COMBINED RESULTS

Operating Revenues. Year-to-date combined revenues through October 2025 were $35,949,000 compared to the year-to-date budget of $38,541,000, representing a $2,592,000 (-6.7%) unfavorable variance. Year-to-date passenger revenue was unfavorable by $2,715,000 (-9.1%) through October. Passenger revenue is up by $1,223,000 (4.7%) versus the prior year while passenger levels were up by only 251,000 (0.7%) passengers versus the prior year. The FY 2026 budget assumed 14.5% year-over-year growth versus FY 2025 actual passenger revenues, including 6.0% growth in passengers, so FY 2026 revenue is trailing the budget.

Other operating revenue was favorable by $123,000 (1.4%), primarily due to interest income which is being partially offset by unfavorable energy credit revenue.

Operating Expenses. Year-to-date combined expenses through October 2025 were $153,309,000 compared to the budget of $155,108,000, resulting in a $1,799,000 (1.2%) favorable variance.

Personnel Costs. Year-to-date personnel-related costs totaled $67,267,000, compared to a budgetary figure of $68,352,000, producing a favorable variance of $1,085,000 (1.6%). This is primarily due to favorable Flagging wages within Trolley Operations, Operator overtime wages within Bus Operations, Security wages within Administration, and healthcare costs within Bus Operations.

Outside Services and Purchased Transportation. Total outside services through four months of the FY totaled $54,890,000, compared to a budget of $55,697,000, resulting in a favorable variance of $807,000 (1.4%). This is primarily due to favorable purchased transportation costs within both Fixed Route and Paratransit Operations.

Materials and Supplies. Total year-to-date materials and supplies expenses were $6,707,000, compared to a budgetary figure of $6,510,000, resulting in an unfavorable variance of $197,000 (-3.0%). This is primarily due to unfavorable revenue vehicle parts and maintenance supplies within Bus Operations.

Energy. Total year-to-date energy costs were $17,324,000, compared to the budget of $17,905,000, resulting in a favorable variance of $582,000 (3.2%). This is primarily due to favorable electricity commodity rates.

Risk Management. Total year-to-date expenses for risk management were $3,544,000 compared to the budget of $3,519,000, resulting in an unfavorable variance totaling $25,000 (-0.7%).

General and Administrative. The year-to-date general and administrative costs were $2,795,000 through October 2025, compared to a budget of $2,437,000, resulting in an unfavorable variance of $357,000 (-14.7%). This is primarily due to unfavorable Pronto-related fare materials and credit card fees within Administration, as well as unfavorable radio equipment costs within Bus Operations.

Vehicle and Facility Leases. The year-to-date vehicle and facilities lease costs were $782,000 compared to the budget of $687,000, resulting in a $95,000 (-13.9%) unfavorable variance. This is primarily due to unfavorable non-revenue vehicle lease costs within Administration and Bus Operations.

YEAR-TO-DATE SUMMARY

The October 2025, year-to-date net-operating income totaled an unfavorable variance of $793,000 (-0.7%). These factors include favorable variances in other revenue, personnel, outside services, and energy; offset by unfavorable variances in passenger revenue, materials and supplies, risk management, general and administrative costs, and vehicle/facility leases.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. October FY26 Operating Budget Results

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

MTS
CONSOLIDATED

COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ 27,114	$ 29,829	$ (2,715)	-9.1%
Other Revenue	8,835	8,712	123	1.4%
Total Operating Revenue	**$ 35,949**	**$ 38,541**	**$ (2,592)**	**-6.7%**
Personnel costs	$ 67,267	$ 68,352	$ 1,085	1.6%
Outside services	54,890	55,697	807	1.4%
Materials and supplies	6,707	6,510	(197)	-3.0%
Energy	17,324	17,905	582	3.2%
Risk management	3,544	3,519	(25)	-0.7%
General & administrative	2,795	2,437	(357)	-14.7%
Vehicle/facility leases	782	687	(95)	-13.9%
Administrative Allocation	-	-	-	0.0%
Total Operating Expenses	**$ 153,309**	**$ 155,108**	**$ 1,799**	**1.2%**
Operating Income (Loss)	**$ (117,360)**	**$ (116,566)**	**$ (793)**	**-0.7%**
Total Non-Operating Activities	**99**	**99**	**-**	**0.0%**
Income (Loss) before Capital Contributions	**$ (117,261)**	**$ (116,468)**	**$ (793)**	**0.7%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OPERATIONS
CONSOLIDATED
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ 27,114	$ 29,829	$ (2,715)	-9.1%
Other Revenue	220	268	(48)	-18.0%
Total Operating Revenue	**$ 27,334**	**$ 30,097**	**$ (2,763)**	**-9.2%**
Personnel costs	$ 55,516	$ 56,300	$ 784	1.4%
Outside services	44,626	45,227	601	1.3%
Materials and supplies	6,691	6,487	(204)	-3.1%
Energy	16,936	17,443	507	2.9%
Risk management	3,139	3,147	8	0.3%
General & administrative	519	393	(126)	-32.2%
Vehicle/facility leases	548	501	(48)	-9.5%
Administrative Allocation	14,349	14,349	-	0.0%
Total Operating Expenses	**$ 142,323**	**$ 143,846**	**$ 1,523**	**1.1%**
Operating Income (Loss)	**$ (114,990)**	**$ (113,749)**	**$ (1,241)**	**-1.1%**
Total Non-Operating Activities	**99**	**99**	**-**	**0.0%**
Income (Loss) before Capital Contributions	**$ (114,891)**	**$ (113,650)**	**$ (1,241)**	**1.1%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OPERATIONS
BUS - DIRECTLY OPERATED (SAN DIEGO TRANSIT CORP.)
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ 6,730	$ 6,718	$ 11	0.2%
Other Revenue	16	17	(1)	-6.6%
Total Operating Revenue	**$ 6,745**	**$ 6,735**	**$ 10**	**0.2%**
Personnel costs	$ 33,962	$ 34,285	$ 322	0.9%
Outside services	786	683	(103)	-15.0%
Materials and supplies	2,847	2,585	(261)	-10.1%
Energy	2,601	2,763	162	5.9%
Risk management	1,280	1,242	(38)	-3.1%
General & administrative	337	179	(158)	-88.1%
Vehicle/facility leases	203	169	(34)	-20.0%
Administrative Allocation	2,849	2,849	-	0.0%
Total Operating Expenses	**$ 44,864**	**$ 44,755**	**$ (110)**	**-0.2%**
Operating Income (Loss)	**$ (38,119)**	**$ (38,020)**	**$ (99)**	**-0.3%**
Total Non-Operating Activities	**-**	**-**	**-**	**-**
Income (Loss) before Capital Contributions	**$ (38,119)**	**$ (38,020)**	**$ (99)**	**0.3%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OPERATIONS
RAIL (SAN DIEGO TROLLEY INC.)
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ 11,284	$ 14,480	$ (3,197)	-22.1%
Other Revenue	204	251	(47)	-18.7%
Total Operating Revenue	**$ 11,488**	**$ 14,732**	**$ (3,244)**	**-22.0%**
Personnel costs	$ 21,233	$ 21,693	$ 460	2.1%
Outside services	4,497	4,486	(11)	-0.2%
Materials and supplies	3,772	3,868	96	2.5%
Energy	10,994	11,339	345	3.0%
Risk management	1,844	1,890	46	2.4%
General & administrative	174	204	30	14.8%
Vehicle/facility leases	216	196	(20)	-10.5%
Administrative Allocation	10,436	10,436	-	0.0%
Total Operating Expenses	**$ 53,166**	**$ 54,112**	**$ 946**	**1.7%**
Operating Income (Loss)	**$ (41,678)**	**$ (39,380)**	**$ (2,297)**	**-5.8%**
Total Non-Operating Activities	**-**	**-**	**-**	**-**
Income (Loss) before Capital Contributions	**$ (41,678)**	**$ (39,380)**	**$ (2,297)**	**5.8%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OPERATIONS
BUS - CONTRACTED SERVICES (FIXED ROUTE)
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ 8,520	$ 8,088	$ 432	5.3%
Other Revenue	-	-	-	-
Total Operating Revenue	**$ 8,520**	**$ 8,088**	**$ 432**	**5.3%**
Personnel costs	$ 259	$ 248	$ (11)	-4.3%
Outside services	32,763	33,176	413	1.2%
Materials and supplies	72	34	(39)	-114.0%
Energy	2,889	2,914	25	0.9%
Risk management	-	-	-	-
General & administrative	8	6	(2)	-40.5%
Vehicle/facility leases	15	21	7	30.9%
Administrative Allocation	885	885	-	0.0%
Total Operating Expenses	**$ 36,891**	**$ 37,285**	**$ 393**	**1.1%**
Operating Income (Loss)	**$ (28,371)**	**$ (29,196)**	**$ 825**	**2.8%**
Total Non-Operating Activities	**-**	**-**	**-**	**-**
Income (Loss) before Capital Contributions	**$ (28,371)**	**$ (29,196)**	**$ 825**	**-2.8%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OPERATIONS
BUS - CONTRACTED SERVICES (PARATRANSIT)
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ 580	$ 542	$ 38	7.0%
Other Revenue	-	-	-	-
Total Operating Revenue	**$ 580**	**$ 542**	**$ 38**	**7.0%**
Personnel costs	$ 61	$ 75	$ 13	17.6%
Outside services	6,481	6,783	301	4.4%
Materials and supplies	-	-	-	-
Energy	452	427	(26)	-6.1%
Risk management	15	15	0	0.3%
General & administrative	-	4	4	-
Vehicle/facility leases	114	114	0	0.1%
Administrative Allocation	179	179	-	0.0%
Total Operating Expenses	**$ 7,303**	**$ 7,596**	**$ 293**	**3.9%**
Operating Income (Loss)	**$ (6,723)**	**$ (7,054)**	**$ 331**	**4.7%**
Total Non-Operating Activities	**-**	**-**	**-**	**-**
Income (Loss) before Capital Contributions	**$ (6,723)**	**$ (7,054)**	**$ 331**	**-4.7%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OPERATIONS
CORONADO FERRY
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ -	$ -	$ -	-
Other Revenue	-	-	-	-
Total Operating Revenue	**$ -**	**$ -**	**$ -**	**-**
Personnel costs	$ -	$ -	$ -	-
Outside services	99	99	(0)	0.0%
Materials and supplies	-	-	-	-
Energy	-	-	-	-
Risk management	-	-	-	-
General & administrative	-	-	-	-
Vehicle/facility leases	-	-	-	-
Administrative Allocation	-	-	-	0.0%
Total Operating Expenses	**$ 99**	**$ 99**	**$ (0)**	**0.0%**
Operating Income (Loss)	**$ (99)**	**$ (99)**	**$ (0)**	**0.0%**
Total Non-Operating Activities	**99**	**99**	**0**	**0.0%**
Income (Loss) before Capital Contributions	**$ -**	**$ -**	**$ -**	**-**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
ADMINISTRATION
CONSOLIDATED
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ -	$ -	$ -	-
Other Revenue	8,458	8,304	154	1.9%
Total Operating Revenue	**$ 8,458**	**$ 8,304**	**$ 154**	**1.9%**
Personnel costs	$ 11,517	$ 11,826	$ 308	2.6%
Outside services	10,210	10,400	189	1.8%
Materials and supplies	16	23	7	30.0%
Energy	386	460	75	16.2%
Risk management	347	343	(4)	-1.2%
General & administrative	2,239	2,005	(234)	-11.7%
Vehicle/facility leases	225	177	(48)	-27.2%
Administrative Allocation	(14,363)	(14,363)	-	0.0%
Total Operating Expenses	**$ 10,577**	**$ 10,871**	**$ 293**	**2.7%**
Operating Income (Loss)	**$ (2,119)**	**$ (2,567)**	**$ 447**	**17.4%**
Total Non-Operating Activities	**-**	**-**	**-**	**-**
Income (Loss) before Capital Contributions	**$ (2,119)**	**$ (2,567)**	**$ 447**	**-17.4%**

SAN DIEGO METROPOLITAN TRANSIT SYSTEM
OTHER ACTIVITIES
CONSOLIDATED
COMPARISON TO BUDGET - FISCAL YEAR 2026
OCTOBER 31, 2025
(in $000's)

	YEAR TO DATE			
	ACTUAL	BUDGET	VARIANCE	VAR. %
Passenger Revenue	$ -	$ -	$ -	-
Other Revenue	158	140	17	12.4%
Total Operating Revenue	**$ 158**	**$ 140**	**$ 17**	**12.4%**
Personnel costs	$ 234	$ 226	$ (8)	-3.6%
Outside services	54	70	16	23.4%
Materials and supplies	0	0	0	79.0%
Energy	2	2	0	8.1%
Risk management	57	28	(29)	-102.9%
General & administrative	37	40	3	7.1%
Vehicle/facility leases	9	10	0	3.7%
Administrative Allocation	15	15	-	0.0%
Total Operating Expenses	**$ 408**	**$ 391**	**$ (17)**	**-4.4%**
Operating Income (Loss)	**$ (251)**	**$ (251)**	**$ 0**	**0.1%**
Total Non-Operating Activities	**-**	**-**	**-**	**-**
Income (Loss) before Capital Contributions	**$ (251)**	**$ (251)**	**$ 0**	**-0.1%**

Metropolitan Transit System

Agenda Item No. 11

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Imperial Avenue Division (IAD) Generator Upgrades – Change Order

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to:

1) Ratify MTS Doc. No. PWB371.3-23 (Attachment A), with Global Power Group, Inc., for IAD Generator Upgrades in the amount of $40,019.29 for Contract Change Order (CCO) 03 for temporary battery backup power to the Annex building server room for power outages required during construction;

2) Ratify MTS Doc. No. PWB371.4-23 (Attachment B), in the amount of $23,769.41 for CCOs 01 and 02 for adding camlocks to all generators and to construct concrete pad modifications to the 275kW generator pad; and

3) Authorize the CEO to approve MTS Doc. No. PWB371.5-23 (CCO 4) (in substantially the same format as Attachment C), in the amount of $48,179.07 to provide new electrical conduit and concrete pad for the new 150 kW emergency backup generator at the Service Lanes building.

Budget Impact

The total cost of amendment (MTS Doc. No. PWB371.5-23 (CCO 4)) is estimated to be $48,179.07, and the total contract cost of this contract is estimated to be $695,967.77. This project is funded by Capital Improvement Program (CIP) 3008117101 – IAD Generator Replacement.

The total Board-approved authority, inclusive of today's proposed action, is shown below:

Date	Contract and Amendments	Board Action	Amount	Board Funding Authority
10/19/2023 (Board Agenda Item (AI) 18)	Original Contract	On 10/19/2023, Board authorized CEO to execute contract for $671,600.00 and any change orders within contingency of $87,600.00	$584,000.00	Board authorized $671,600.00 in total, which includes $584,000.00 for contract and up to $87,600.00 in contingency
6/5/25	PWB371.1-23	CEO executed pursuant to Board authorization	$0	N/A - Time only extension
8/21/25	PWB371.2-23	CEO executed pursuant to Board authorization	$0	N/A - Time only extension
11/19/25	PWB371.3-23 (CCO 03)	CEO executed pursuant to Board authorization; Today's action would ratify this amendment	$40,019.29	Within contingency; resulted in a new contingency balance of $47,580.71
11/21/25	PWB371.4-23 (CCO 01 & 02)	CEO executed pursuant to Board authorization; Today's action would ratify this amendment	$23,769.41	Within contingency; resulted in a new contingency balance of $23,811.30
12/18/25	PWB371.5-23 (CCO 04)	Today's action would authorize CEO to execute this amendment, as it exceeds the previously approved contingency	$48,179.07	Not within contingency; requires an additional $24,367.77 in authorized funding
		TOTALS	**$695,967.77**	

DISCUSSION:

On October 19, 2023 (AI 18), the MTS Board of Directors authorized a construction contract with Global Power Group, Inc., in the amount of $671,600.00, for the removal and replacement of IAD Bus Maintenance Facility's: 750 kW backup emergency generator within the compressed natural gas (CNG) facility; the 150 kW generator at the Service Lanes; and the 275 kW generator at the Annex building server room. These generators would be replaced with new tier III generators that meet the latest state and local environmental compliance.

As part of the Board's original authorization of $671,600.00, it included $584,000.00 for the contract and $87,600.00 in contingency cover potential change orders during construction. Throughout the course of construction, there has been additional work to modify the existing 275 kW and 150 kW generator facilities and provide additional temporary backup power. The additional costs for all extra work (CCO 1-4) total to $111,967.77, fully expending the originally

authorized contingency of $87,600.00. An additional $24,367.77 is needed to process these final change orders and complete the project.

During construction, the Contractor determined that the dimensions of the new 150 kW generator would require a larger spatial footprint compared to the size and location of the existing generator. This included a reorientation of the new generator pad and a high vertical clearance away from the Service Lane buildings to meet local fire and building code requirements. The relocation required demolition of the old generator pad and replacing it with a new walkway concrete to match the adjacent existing grade, demolition of existing concrete pavement to form and pour the new pad location, and routing new conduit to the new pad. The following is a summary of the CCOs.

Amendment 3 (CCO 03)
CCO 03, in the amount of $40,019.29, provided temporary battery backup power to the Annex building server room for power outages required during construction. This CCO was executed under the Board approved contingency. Today's Board action would ratify this amendment.

Amendment 4 (CCO 01 and 02)
CCO 01 and 02, in the amount of $23,769.41, added camlocks to all generators and constructed concrete pad modifications to the 275kW generator pad. This CCO was executed under the Board approved contingency. Today's Board action would ratify this amendment.

Amendment 5 (CCO 04)
CCO 04, in the amount of $48,179.07, provided new electrical conduit and concrete pad for the new 150 kW emergency backup generator at the Service Lanes. This CCO has not been executed, as there was not a sufficient balance within the remaining Board approved contingency. Today's Board action authorizes the CEO to execute this amendment. This is the final amendment and CCO for this project.

Therefore, the staff recommends that the MTS Board of Directors:

1) Ratify MTS Doc. No. PWB371.3-23 (Attachment A), with Global Power Group, Inc., for IAD Generator Upgrades in the amount of $40,019.29 for CCO 03 for temporary battery backup power to the Annex building server room for power outages required during construction;

2) Ratify MTS Doc. No. PWB371.4-23 (Attachment B), in the amount of $23,769.41 for CCOs 01 and 02 for adding camlocks to all generators and to construct concrete pad modifications to the 275kW generator pad; and

3) Authorize the CEO to approve MTS Doc. No. PWB371.5-23 CCO 4 (in substantially the same format as Attachment C), in the amount of $48,179.07 to provide new electrical conduit and concrete pad for the new 150 kW emergency backup generator at the Service Lanes building.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachments: A. MTS Doc. No. PWB371.3-23 (CCO 03)
B. MTS Doc. No. PWB371.4-23 (CCOs 01 & 02)
C. MTS Doc. No. PWB371.5-23 (CCO 04)

Metropolitan Transit System

CONSTRUCTION CHANGE ORDER

Project Name:	Imperial Avenue Division (IAD) Generator Upgrades		**Date:** 11/6/2025
To:	San Diego Metropolitan Transit System		**Amendment Number** 3
From *(Contractor)*:	Global Power Group, Inc.,	**Contract Number:** PWB371.0-23	**MTS CCO Number** 3

SUBCONTRACTORS AND OTHER THIRD PARTY CONTRACTORS

Any time there is a change to a Subcontractor or Other Third Party Contractors resubmit Attachment: SUBCONTRACTORS and THIRD PARTY CONTRACTORS. Any change to these forms after bid submittal must be made in accordance with Public Contract Code sections 4100 et seq., as applicable, and as permitted by MTS.

OVERALL DESCRIPTION OF WORK

This CCO is prepared in accordance with and incorporates Section Changes and Extra Work Payment of the Contract Documents and consists of the following:

A. FOR UNIT PRICE CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Bid Item	Quantity	QTY Change	Amount
				Subtotal A:	$ -

B. FOR LUMP SUM CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Amount
CCO 3	Provide extended temporary battery backup power to the IT server rooms during the 275kW generator replacement work.	$ 40,019.29
	Subtotal B:	$ 40,019.29

C. FOR TIME & MATERIALS CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Bid Item	Amount
		Payroll Costs:	
		Equipment Costs	
		Materials Costs	
		Consultant Costs	
		Supplemental Costs	
		Consultant Costs	
		Other - Describe Services	
		Bonds & Insurance total:	
		Contractor Overhead & Profit on Subcontractors:	
		Contractor Overhead & Profit total:	
		Subtotal C:	$ -
		Total = (A+B+C)	$ 40,019.29

Original Contract value:	$ 584,000.00
Adjustment by Previous Amendment(s)	$ -
Adjustment by this Change Order	$ 40,019.29
New Contract Amount	**$ 624,019.29**

D. TIME CHANGE CCOS ONLY (AS APPLICABLE)

Summarized reason for change: This amendment also extends the contract to 1/31/26 to allow for the submission of the final pending change order and closeout the project.

The Contract Time due to this Change Order will be (Increased or Unchanged):	Increased	by	123	days
Original Completion Date:			**6/11/2025**	
Adjustment to Completion Date by Previous Change Order(s) [Number of Calendar Days]:			**111**	
New Completion Date adjusted by this Change Order:			**1/31/2026**	

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising out of or related to the subject of this Change Order and acknowledges that the compensation (time and cost) set forth herein comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing this Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for any acceleration or interruption of schedules, extended overhead costs, delay, and all impact or cumulative impact on all Work under this Contract. The signing of this Change Order acknowledges full mutual accord and satisfaction for the change and that the stated time and/or cost constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor hereby releases and agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of, or as a result of, this Change Order and/or its impact on the remainder of the Work under the Contract.

Contractor — Date: 11/24/25

Sharon Cooney
MTS Chief Executive Officer — Date: 11/19/2025

Follow all applicable procedures and provide all appropriate documentation as required by the Contract Documents.

Metropolitan Transit System

CONTRACT CHANGE ORDER (CCO)

IAD Generator Upgrades			
Contractor:	Global Power Group, Inc.		
Contract Number:	PWB371.0-23	PO Number:	4500058840
CCO Number:	3	Contractor PCO Number(s):	3
CCO Total:	$40,019.29		

Scope Summary of the Extra Work as Part of this Change Order:

CCO #3: This change order is to provide extended temporary battery backup power to the IT server rooms during the 275kW generator replacement work. The 275kW emergency power backup generator at the Imperial Avenue Division (IAD) Administration Building will require a series of outages to replace the backup generator. For the contractor to perform the work, the required outages to disconnect the existing generator system and swap out the temporary to the permanent can last up to an hour. This will disconnect all power to the administrative building during that time.

IAD server rooms consist of an uninterruptible power supply (UPS) battery backup to provide power during power interruptions, however, MTS' IT Department was not sure the amount of time the current battery backup system could sustain power. On 12/20/24, MTS' on-call UPS servicer, SacPower, conducted a study to confirm backup power times and what would be needed to provide additional temporary backup power to the server for at least an hour. Based on their final report provided on 1/17/25, temporary battery backup units could be rented and installed to allow one hour of additional backup power. The report provided details, locations, and type of equipment that could be rented and installed. In addition, SacPower provided a quote for this cost. However, due to on-call contract limitations, MTS declined and decided to have the contractor provide UPS battery backup services for the IT server rooms.

Global Power decided to use SacPower for the battery backup service. This change order is to provide temporary backup battery power for two IT server rooms at the IAD Administration Building.

Global Power Group $1,198.69
SacPower Quote $36,972.00

Total this change order inclusive of all labor, equipment and markup: **$40,019.29**

Recommended by: Natalie Ven, MTS Date: 6/9/225

SacPower
You're On™

Elite
APC

Created Date	3/3/2025	Quote Number	00017772
Expiration Date	3/25/2025		

Contact Name	Natalie Ven
Account Name	San Diego Metropolitan Transit System
Ship To Name	IAD Server Room
Ship To	100 16th St. San Diego, CA 92101

Product	Quantity	Item Description	Sales Price	Total Price
LABOR7X24/01	1.00	Additional UPS Runtime for Generator Project with Installation & Start-up Services 7x24. SOW: • Supply & Install (2) 5kVA 208V to 120V Step-down Transformer units for 5kVA UPS, (20) 192V Battery Packs for 5kVA UPS, (9) 192V Battery Packs for 15kVA SURT UPS, and (1) 3-Bay Symmetra LX XR Battery Frame. • Start-up service for all equipment. • After-hours or Saturday service scheduling. • Removal of all equipment after generator cutover is complete.	$36,972.00	$36,972.00

Subtotal	$36,972.00
Tax	$0.00
Shipping and Handling	$0.00
Grand Total	$36,972.00

Total Weight (lbs.): 0

Delivery	1-2 Weeks ARO
Terms of Payment	Net 30
Prepared By	Jeff Geiger
Email	jgeiger@sacpower.com
Phone	(916) 923-2772

Global Power GROUP, INC.

PREVAILING WAGE DETERMINATION

Customer: San Diego Metro Transit System (GPG8172)

LOCALITY:	COUNTY OF SAN DIEGO			EMPLOYER PAYMENTS						STRAIGHT-TIME		OVERTIME HOURLY RATE		
DETERMINATION	CRAFT (JOURNEY LEVEL)	ISSUE DATE	EXPIRATION DATE	BASIC HOURLY RATE	HEALTH AND WELFARE	PENSION	VACATION/ HOLIDAY	TRAINING	OTHER PAYMENTS	HOURS	TOTAL HOURLY RATE	DAILY	SATURDAY	SUNDAY AND HOLIDAY
SDI-2024-2	ELECTRICIAN**													
	INSIDE WIREMAN TECHNICIAN	8/22/2024	6/1/2025	56.50	7.16	9.70	-	0.87	0.24	8.00	74.47	103.56	103.56	132.66
SDI-2024-2	APPRENTICE-ELECTRICIAN													
	2ND YEAR/1ST SEMESTER	8/22/2024	6/1/2025	27.12	4.50	4.46	-	3.00	-	8.00	39.08	53.05	53.05	67.01
SD-23-102-4-2024-1	LABORER (BUILDING CONSTRUCTION)													
	GROUP 1	8/22/2024	6/30/2025	42.71	9.25	11.24	5.20	0.80	0.48	8.00	69.68	91.04	91.04	112.39
SD-23-102-3-2024-1	LABORER (ENGINEERING CONSTRUCTION)													
	GROUP 1	8/22/2024	6/30/2025	43.83	9.25	11.24	3.00	0.80	2.80	8.00	70.92	92.84	92.84	114.75
SD-23-63-3-2024-2	OPERATOR ENGINEER													
	GROUP 1	8/22/2024	6/30/2025	56.40	13.20	16.65	4.95	1.10	0.39	8.00	92.69	120.89	120.89	149.09
	GROUP 2	8/22/2024	6/30/2025	57.18	13.20	16.65	4.95	1.10	0.39	8.00	93.47	122.06	122.06	150.65
	GROUP 3	8/22/2024	6/30/2025	57.47	13.20	16.65	4.95	1.10	0.39	8.00	93.76	122.50	122.50	151.23
	GROUP 4	8/22/2024	6/30/2025	58.96	13.20	16.65	4.95	1.10	0.39	8.00	95.25	124.73	124.73	154.21
	GROUP 8	8/22/2024	6/30/2025	59.29	13.20	16.65	4.95	1.10	0.39	8.00	95.58	125.23	125.23	154.87

**Note: Wages posted abov

Apprenticeship Ratios:
Electrician 5:1

MTS DBE PROGRAM - INFORMATION FOR BIDDER LIST AND COMMERCIAL USEFUL FUNCTION

MTS is required by Disadvantaged Business Enterprise (DBE) Regulations at 49 CFR Part 26 to collect and report data about DBE and non-DBE contractors and subcontractors who seek to work on MTS's projects. MTS may also use this data to set MTS's overall DBE goals and to assist in monitoring commercial useful function in order to count DBE participation toward meeting MTS's overall DBE goals.

INSTRUCTIONS: Each prime contractor and each subcontractor bidding/submitting a proposal is **required** to complete this form as part of their bid or proposal. If multiple subcontractors, copy this form.

1. Firm Name:	Sacramento Computer Power, Inc.
2. Firm's Full Address (street, city, state, and zip code):	829 W. Stadium Lane Sacramento, CA 95834
3. NAICS code for work seeking to perform:	
4. If applicable, please check any certification that your firm currently maintains:	☐ DBE ☒ SB – Small Business ☐ DVBE – Disabled Veteran Owned Business ☐ LGBTBE – LGBT Owned Business ☐ MBE – Minority Owned Business ☐ PDBE – Persons with Disability Owned Business ☐ WBE – Woman Owned Business
5. Only if DBE certified firm, please check one (1) type of work your firm is seeking to perform on this bid/proposal (as defined at enclosed MTS DBE Program: Commercial Useful Function – Guidance for DBE Contractors):	☐ Construction/Maintenance Services ☐ Professional Services ☐ Other Services – e.g. broker ☐ Manufacturer of Materials/Supplies ☐ Regular Dealer of Materials/Supplies ☐ Distributer of Materials/Supplies ☐ Other (not listed above) Material Supplier ☐ Trucking
6. Race of majority owner of firm:	White
7. Gender of majority owner of firm:	Male
8. Year firm was established:	1988
9. Please check your firm's applicable annual gross receipt range:	☐ Less than $1,000,000 ☒ $1,000,0001 - $15,000,000 ☐ $15,000,001 - $30,720,000 ☐ $30,720,001 - $50,000,000 ☐ Greater than $50,000,000

SIGNATURE ACKNOWLEDGES AND AFFIRMS ACCURACY OF COMPLETED FORM

SUBCONTRACTOR	PRIME CONTRACTOR
Signature: [signature]	Signature: _____
Date: 11/7/25	Date: _____

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER INELIGIBLE AND VOLUNTARY EXCLUSIONS LOWER THAN TIER COVERED TRANSACTIONS

CONTRACTOR AND SUBCONTRACTOR'S STATEMENT OF ELIGIBILITY

(Bidder to provide one completed Form for the Prime Contractor and any Subcontractors)

The prime/subcontractor certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification.

QUESTIONNAIRE

Has the Contractor, or any officer, principal, affiliates or employee of the Contractor ever been debarred. suspended, proposed for debarment, declared ineligible or otherwise prevented from bidding on, or completing a federal, state, or local government project?

☐ **Yes**

☒ **No**

If the answer is yes, or where the prime/subcontractor is unable to certify any of the statements in the above certifications, such prime/subcontractor shall attach an explanation (i.e. date, background, resolution) with this form.

Note: Failure to provide this form at the time of Bid will not result in a finding of a non-responsive bid. Submittal of this form for The Prime Contractor and all Subcontractors is required for a Bidder to be deemed "Responsible." MTS encourages Bidders to complete and submit all forms at the time of bid.

SUBCONTRACTOR (Copy this form if needed for additional subcontractors)		**PRIME CONTRACTOR**	
Business Name:	Sacramento Computer Power Inc.	Business Name:	Global Power Group, Inc.
License No. (if applicable):		License No. (if applicable):	870741
DUNS No.:	55-557-3302	DUNS No.:	

ACKNOWLEDGED AND AGREED

Print Name:	Jeff Geiger	Print Name:	Adam Eidson
Title:	Acct Mgr	Title:	Project Manager
Signature:	Jeff Geiger	Signature:	Adam Eidson
Date:	11/7/25	Date:	11/04/2025

CHANGE ORDER 1

Metropolitan Transit System

CONSTRUCTION CHANGE ORDER

Project Name:	Imperial Avenue Division (IAD) Generator Upgrades		**Date:** 11/13/2025
To:	San Diego Metropolitan Transit System		**Amendment Number** 4
From *(Contractor)*:	Global Power Group, Inc.,	**Contract Number:** PWB371.0-23	**MTS CCO Number** 1 & 2

SUBCONTRACTORS AND OTHER THIRD PARTY CONTRACTORS

Any time there is a change to a Subcontractor or Other Third Party Contractors resubmit Attachment: SUBCONTRACTORS and THIRD PARTY CONTRACTORS. Any change to these forms after bid submittal must be made in accordance with Public Contract Code sections 4100 et seq., as applicable, and as permitted by MTS.

OVERALL DESCRIPTION OF WORK

This CCO is prepared in accordance with and incorporates Section Changes and Extra Work Payment of the Contract Documents and consists of the following:

A. FOR UNIT PRICE CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Bid Item	Quantity	QTY Change	Amount
				Subtotal A:	$ -

B. FOR LUMP SUM CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Amount
CCO 2	Add camlocks to 150kw, 275kW, and 750kW Generators.	$ 10,688.57
	Subtotal B:	$ 10,688.57

C. FOR TIME & MATERIALS CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Bid Item	Amount
CCO 1	275 kW extra work.	*Payroll Costs:*	$ 12,618.09
		Equipment Costs	
		Materials Costs	
		Consultant Costs	
		Supplemental Costs	
		Consultant Costs	
		Other - Describe Services	
		Bonds & Insurance total:	$ 167.87
		Contractor Overhead & Profit on Subcontractors:	
		Contractor Overhead & Profit total:	$ 294.88
		Subtotal C:	$ 13,080.84
		Total = (A+B+C)	$ 23,769.41

Original Contract value:	$ 584,000.00
Adjustment by Previous Amendment(s)	$ 40,019.29
Adjustment by this Change Order	$ 23,769.41
New Contract Amount	**$ 647,788.70**

D. TIME CHANGE CCOS ONLY (AS APPLICABLE)

Summarized reason for change:				
The Contract Time due to this Change Order will be (Increased or Unchanged):	Unchanged	by		days
Original Completion Date:			**6/11/2025**	
Adjustment to Completion Date by Previous Change Order(s) [Number of Calendar Days]:			**111**	
New Completion Date adjusted by this Change Order:			**1/31/2026**	

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising out of or related to the subject of this Change Order and acknowledges that the compensation (time and cost) set forth herein comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing this Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for any acceleration or interruption of schedules, extended overhead costs, delay, and all impact or cumulative impact on all Work under this Contract. The signing of this Change Order acknowledges full mutual accord and satisfaction for the change and that the stated time and/or cost constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor hereby releases and agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of, or as a result of, this Change Order and/or its impact on the remainder of the Work under the Contract.

Nov 24 2025 — Sharon Cooney — 11/21/2025

Contractor **Date:** **MTS Chief Executive Officer** **Date:**

Follow all applicable procedures and provide all appropriate documentation as required by the Contract Documents.

Metropolitan Transit System

CONTRACT CHANGE ORDER (CCO)

IAD Generator Upgrades			
Contractor:	Global Power Group, Inc.		
Contract Number:	PWB371.0-23	PO Number:	4500058840
CCO Number:	1	Contractor PCO Number(s):	1
CCO Total:	$13,080.83		

Scope Summary of the Extra Work as Part of this Change Order:

1. CCO #1: This change order is to provide conduit adjustments and modifications to the existing concrete slab to accommodate the new 275 kW generator equipment upgrades.

   As part of the contract scope, the existing emergency power backup generator that serves the IAD administration building is being replaced and upgraded to meet the latest San Diego Air Pollution Control District (APCD) permit requirements. On 5/22/25, during scheduled swap out of the old generator for the new one, it was determined that the existing conduit stub outs needed adjustments to properly connect to the new generator inlet. As a result, to fit the new generator, the existing concrete slab would need to be partially demolished to reroute existing conduit. This was not part of the original scope of work and was considered extra work.

   To avoid further disruption to the schedule, minimize department wide power outage coordination, keeping IT staff on standby, and time sensitive City construction permits, the contractor was directed by the MTS PM to perform the necessary construction as a time and materials (T&M) change order.

   The extra work performed included underground utility mark out service, a subcontractor to demo and replace part of the existing concrete slab, rebar tie-in for new concrete to existing, the contractor re-routing and adjusting the existing conduit, and additional cure time for the new concrete to reach load strength.

   Total: **$13,080.83**

Global Power
GROUP, INC.

October 20, 2025

Natalie Ven
San Diego Metropolitan Transit System
1255 Imperial Ave., Suite 1000
San Diego, Ca 92101
Natalie.ven@sdmts.com
619-595-1021

RE: CO# 001 – 275kW T&M Pad Work

Natalie,

Global Power Group, Inc. respectfully submits this change order request to correct the discrepancy in the 275kW generators pad by removing the existing issues and installing a new corrected pad.

Scope of Work

- Perform underground utility locates for safety before digging
- Remove existing Generator pad discrepancies
- Repour removed pad area for the 275kW generator for proper alignment

We propose to furnish all necessary labor and materials for the scope above for $13,080.83

Global Power

12060 Woodside Ave, Lakeside, Ca 92040

SD Metro Transit Project Manager: Natalie Ven 619-595-1021
Contract No: PWB371.0-23
Project Title: Imperial Avenue Division (IAD) Generator Upgrades
Location: 1255 Imperial Ave, San Diego, CA 92101
Description of Work: 275kW T&M Pad Work

COR No: CCO 001 Ref No:
Date Submitted: October 20, 2025
Project Manager: Adam Eidson 619-438-8673
Job No: GPG8172
Original Contract Value: $584,000.00
Current Change Order Value: $13,080.83
Previous Change Order 1 Total:
Previous Change Order 2 Total:
Previous Change Order 3 Total:
New Proposed Contract Value: $597,080.83

LABOR	Hours		Hourly Rate	Extended Amounts
				$ -
Electrician - Foreman SD	REG	14.00	$ 74.47	$1,042.58
Electrician - Journeyman SD	REG	0.00	$ 74.47	$0.00
Building Laborer - Group 1	REG	13.25	$ 69.68	$923.26
Cost of Labor				$1,965.84

MATERIAL				
Description	Qty	U.M.	Unit Cost	Ext. Amount
Subtotal				$0.00
(A) California Sales Tax				
Total Cost of Material				**$0.00**

SUBCONTRACTED WORK				
Description	Qty	U.M.	Unit Cost	Ext. Amount
PPM	1		9500	$ $9,500.00
				$
CPL Scan	1		645	$ $645.00
Total Cost of Subcontracted Work				**$10,145.00**

EQUIPMENT	Days	Rate	Extended Amounts
Total Cost of Equipment			**$0.00**

Total Cost of Labor		$1,965.84
Labor Mark-up	15.00%	$294.88
Total Cost of Equipment		$0.00
Equipment Mark-up	15.00%	$0.00
Total Cost of Material		$0.00
Material Mark-up	15.00%	$0.00
(B) California Sales Tax		-
Total Cost of Subcontracted Work		$10,145.00
Subcontracted Work Mark-up	5.00%	$507.25
Sub-total		$12,912.97
Bond & Insurance	1.30%	$167.87
Other		
Total Cost		**$13,080.83**

Global Power GROUP, INC.

Service Job # or Job Walk Name: N/A

Date: Thursday, May 29, 2025

Project Lead: David Bautista

Project #: GPG8172

Project Manager: Cinna Brown

Project Name: SD Metro Transit

Prevailing Wage?: Yes

Customer: Remove & Replace 3 Generators

State or Federal?: Federal

Log of Work: "Tools In-Hand" (*Detailed description of all work performed, conditions affecting work, and percentage of completion*)

David Bautista and Adam McGuire: Drove in new ground rod. Assisted with concrete pour. Pulled in wire into ATS going to Switchgear and distribution board. Safed off wire and left in place ready for the next shutdown. Mounted door newly modified ATS door.
David Bautista: Terminated and torqued wire inside of ATS.
Adam McGuire: Modified ATS door to swing open more than 90 degrees.
PPM
Jamie Murillo and Pedro G Nolsco: Prepared area for concrete pour. Poured and finished concrete.

Material Picked Up	EMPLOYEE	VENDOR	VEHICLE

EQUIPMENT USED	HOURS	EMPLOYEE	COMMENTS

LABOR USED ***Excludes Drive Time & Service Time***

NAME	EE TYPE	CRAFT	HOURS	EE	SUB	COMMENTS
David Bautista	Electrician	Inside Wireman	7.5	X		Please see Log of Work
Adam McGuire	Laborer	Group 1	6.75	X		Assisted with Log of Work
Jamie Murillo	N/A	Group 1	6		X	Laborer
Pedro G Nolsco	N/A	Group 1	4		X	Laborer

Additional Project Notes "Service Work":

We jointly certify that the above work was performed, and the quantities are correct as listed.

Completed By: David Bautista — Project Lead

Approved By: Cinna Brown — Project Manager

Global Power GROUP, INC.

Service Job # or Job Walk Name:

Date: Tuesday, May 27, 2025

Project Lead: David Bautista

Project #: GPG8172

Project Manager: Cinna Brown

Project Name: SD Metro Transit

Prevailing Wage?: Yes

Customer: Remove & Replace 3 Generators

State or Federal?: State

Log of Work: "Tools In-Hand" (*Detailed description of all work performed, conditions affecting work, and percentage of completion*)

David Bautista: Cut conduits coming out of ground to size for generator feed. Marked out all conduit for knock outs on new ATS cabinet.
Adam McGuire: Relocated conduit stubs into new generator conduit window. Knocked out new ATS cabinet for conduits.
David Bautista and Adam McGuire: Moved new ATS into place and mounted ATS to strut mounted on wall. Secured all conduits in place.

Material Picked Up	EMPLOYEE	VENDOR	VEHICLE
Fittings and conduit	David Bautista	CES	52

EQUIPMENT USED	HOURS	EMPLOYEE	COMMENTS

LABOR USED ***Excludes Drive Time & Service Time*

NAME	EE TYPE	CRAFT	HOURS	EE	SUB	COMMENTS
David Bautista	Electrician	Electrician	6.5	X		Please see Log of Work
Adam McGuire	Laborer	Group 1	6.5	X		Assisted with Log of Work

Additional Project Notes "Service Work":

We jointly certify that the above work was performed, and the quantities are correct as listed.

Completed By: David Bautista
Project Lead

Approved By: Cinna Brown
Project Manager

VENDOR NAME			PURCHASE ORDER	PO#	DATE
PPM Inc.				117602	03/25/2025
ADDRESS			12060 Woodside Ave, Lakeside,CA 92040	FORM OF PAYMENT	
3740 Oceanic Way #307					
				REQUESTED BY	
				Cinna Brown	
CITY	STATE	ZIP CODE	Ph. 619-579-1221 Fax 619-579-1666	PO WRITER	
Oceanside	CA	92056		Kiera Henry	
PHONE				QUOTED AMT	SALES/ORDER#
(760) 754-2848				$9,500.0000	Proposal II
VENDOR ACCOUNT NUMBER					
STORAGE LOCATION					
PO NOTE					

Global Power GROUP, INC.

Job#	GL Code / Part Number	Description	Qty	Rate	Amount	Rcv'd
GPG8172	N/A	Work Includes: • Saw cut demo and dispose of concrete at location necessary for conduit relocation • Set forms, rebar and place concrete for restoration • Haul and dispose of debris	1	$9,500.0000	$9,500.0000	Yes

CUSTOMER COPY

SENT 06/27/2025

PPM Contracting

1903 W. Vista Way STE A
Vista, CA 92083-6017
Lic# 866856

PO #: 117602

Invoice

Date	Invoice #
6/25/2025	16520

Bill To	Ship To
Global Power Group, Inc. 12060 Woodside Ave. Lakeside, CA 92040	

P.O. Number	Project
117602	Metro 275 Generator...

Quantity	Item Code	Description	Price Each	Amount
	Construction Servi...	GPG8172- Metro 275 Generator Pad 100% Completion Saw Cut demo and dispose of concrete at location necessary for conduit relocation	9,500.00	9,500.00

Total	$9,500.00
Payments/Credits	$0.00
Balance Due	$9,500.00

Phone #	Fax #	E-mail
7607542848	760-434-4888	GREG@PERFORMANCEPLUMBIN...

3740 OCEANIC WAY #307
OCEANSIDE CA 92056
PHONE 760-754-2848
LICENSE#866856
Lic. #866856 A,B & C-36

PROPOSAL

Date: 5/27/25

Project: MTS Generator Pad Conduit Re location
Contractor: Global Power Group Inc.
Att: Cinna

PPM Inc. agrees to furnish and provide necessary labor, material and tools. To do, perform and complete in a good workman like manner the following per plans & specs:
We appreciate the opportunity to provide you with a proposal for the above-mentioned project. The following should clarify our scope of work.

Work Includes

- Saw cut demo and dispose of concrete at location necessary for conduit relocation
- Set forms, rebar and place concrete for restoration
- Haul and dispose of debris

Exclusions:
The following items are not included in our proposal and should not be considered as part of our base scope of work:

- Permits or fees.
- Engineering or engineering fees.
- Seismic engineering.
- Any OSHPD work or inspections.
- Any work not specifically mentioned above.
- Temp services or fees
- Accelerated schedule/OT.

All of the above work to be completed for the sum of: dollars **Total: $9,500.00**
Any alteration or deviations from the above involving extra cost of material or labor will be executed only on written orders for same and will become an extra charge over the sum mentioned above.
This proposal is void if not accepted within 60 days.

MTS DBE PROGRAM - INFORMATION FOR BIDDER LIST AND COMMERCIAL USEFUL FUNCTION

MTS is required by Disadvantaged Business Enterprise (DBE) Regulations at 49 CFR Part 26 to collect and report data about DBE and non-DBE contractors and subcontractors who seek to work on MTS's projects. MTS may also use this data to set MTS's overall DBE goals and to assist in monitoring commercial useful function in order to count DBE participation toward meeting MTS's overall DBE goals.

INSTRUCTIONS: Each prime contractor and each subcontractor bidding/submitting a proposal is **required** to complete this form as part of their bid or proposal. If multiple subcontractors, copy this form.

1. Firm Name:	Performance Plumbing & Mechanical Inc.
2. Firm's Full Address (street, city, state, and zip code):	1903 W Vista Way STE A, Vista, CA 92083
3. NAICS code for work seeking to perform:	238220
4. If applicable, please check any certification that your firm currently maintains:	☐ DBE ☑ SB – Small Business ☐ DVBE – Disabled Veteran Owned Business ☐ LGBTBE – LGBT Owned Business ☐ MBE – Minority Owned Business ☐ PDBE – Persons with Disability Owned Business ☐ WBE – Woman Owned Business
5. Only if DBE certified firm, please check one (1) type of work your firm is seeking to perform on this bid/proposal (as defined at enclosed MTS DBE Program: Commercial Useful Function – Guidance for DBE Contractors):	☐ Construction/Maintenance Services ☐ Professional Services ☐ Other Services – e.g. broker ☐ Manufacturer of Materials/Supplies ☐ Regular Dealer of Materials/Supplies ☐ Distributer of Materials/Supplies ☐ Other (not listed above) Material Supplier ☐ Trucking
6. Race of majority owner of firm:	Caucasion
7. Gender of majority owner of firm:	Male
8. Year firm was established:	2005
9. Please check your firm's applicable annual gross receipt range:	☐ Less than $1,000,000 ☑ $1,000,0001 - $15,000,000 ☐ $15,000,001 - $30,720,000 ☐ $30,720,001 - $50,000,000 ☐ Greater than $50,000,000

SIGNATURE ACKNOWLEDGES AND AFFIRMS ACCURACY OF COMPLETED FORM

SUBCONTRACTOR

Signature: _____

Date: 11/10/2025

PRIME CONTRACTOR

Signature: _____

Date: 11/10/2025

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER INELIGIBLE AND VOLUNTARY EXCLUSIONS LOWER THAN TIER COVERED TRANSACTIONS

CONTRACTOR AND SUBCONTRACTOR'S STATEMENT OF ELIGIBILITY

*****(Bidder to provide one completed Form for the Prime Contractor and any Subcontractors)*****

The prime/subcontractor certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification.

QUESTIONNAIRE

Has the Contractor, or any officer, principal, affiliates or employee of the Contractor ever been debarred, suspended, proposed for debarment, declared ineligible or otherwise prevented from bidding on, or completing a federal, state, or local government project?

☐ **Yes**

☒ **No**

If the answer is yes, or where the prime/subcontractor is unable to certify any of the statements in the above certifications, such prime/subcontractor shall attach an explanation (i.e. date, background, resolution) with this form.

Note: Failure to provide this form at the time of Bid will not result in a finding of a non-responsive bid. Submittal of this form for The Prime Contractor and all Subcontractors is required for a Bidder to be deemed "Responsible." MTS encourages Bidders to complete and submit all forms at the time of bid.

SUBCONTRACTOR (Copy this form if needed for additional subcontractors)		**PRIME CONTRACTOR**	
Business Name:	Performance Plumbing & Mechanical Inc.	Business Name:	Global Power Group, Inc.
License No. (if applicable):	866856	License No. (if applicable):	870741
DUNS No.:	809227809	DUNS No.:	

ACKNOWLEDGED AND AGREED

Print Name:	Greg Taylor	Print Name:	Adam Eidson
Title:	President	Title:	Project Manager
Signature:	Greg Taylor	Signature:	Adam Eidson
Date:	10/22/2025	Date:	10/21/2025

FLEET COMPLIANCE CERTIFICATION

Bidder hereby acknowledges that they have reviewed the California Air Resources Board's policies, rules and regulations and are familiar with the requirements of Title 13, California Code of Regulations, Division 3, Chapter 9, effective on January 1, 2024 (the "Regulation"). Bidder hereby certifies, subject to penalty for perjury, that the option checked below relating to the Bidder's fleet, and/or that of their subcontractor(s) ("Fleet") is true and correct:

☑ The Fleet is subject to the requirements of the Regulation, **and the appropriate Certificate(s) of Reported Compliance have been attached hereto.**

☐ The Fleet is exempt from the Regulation under section 2449.1(f)(2), and a signed description of the subject vehicles, and reasoning for exemption has been attached hereto.

☐ Bidder and/or their subcontractor is unable to procure R99 or R100 renewable diesel fuel as defined in the Regulation pursuant to section 2449.1(f)(3). Bidder shall keep detailed records describing the normal refueling methods, their attempts to procure renewable diesel fuel and proof that shows they were not able to procure renewable diesel (i.e. third-party correspondence or vendor bids).

☐ The Fleet is exempt from the requirements of the Regulation pursuant to section 2449(i)(4) because this Project has been deemed an Emergency, as defined under section 2449(c)(18). Bidder shall only operate the exempted vehicles in the emergency situation and records of the exempted vehicles must be maintained, pursuant to section 2449(i)(4).

☐ The Fleet does not fall under the Regulation or are otherwise exempted, and a detailed reasoning is attached hereto.

Did you attach the appropriate Certificate(s) of Reported Compliance? **Yes ☑** **No ☐**

Name of Bidder: Performance Plumbing & Mechanical Inc.

Signature: Greg Taylor

Name: Greg Taylor

Title: President

Date: 10/22/2025

CALIFORNIA
AIR RESOURCES BOARD

CLEAN
TRUCK CHECK

Affirmation of Fleet Wide Compliance

Certification ID: 217362

This certificate affirms that

Entity ID: E140630
Performance Plumbing & Mechanical Inc.
3740 Oceanic Way
307
Oceanside, CA 92056

has attested in the Clean Truck Check electronic reporting system to report a complete list of vehicles subject to Heavy-Duty Inspection and Maintenance (HD I/M) Regulation and the California Air Resources Board (CARB) hereby verifies that as of 10/22/2025, all of the attested vehicles are compliant with the Clean Truck Check.*

A complete list of the attested vehicles is listed in the following page(s).

*This Affirmation of Fleet Wide Compliance shall be used for the fleet's purposes of proving their fleet compliance status with their freight contractors and brokers. This Affirmation of Fleet Wide Compliance shall not constitute proof of a vehicle compliance with the Clean Truck Check beyond the issued date.

S.No	VIN Numbers
1	1FD0W4GT4MEC43630
2	1HTMMAAL0BH369212
3	1FD0X5HT0KEG45305
4	1FD0W5GT3CEB31809

PO #: 118881

Cable, Pipe & Leak Detection

GLOBAL POWER GROUP
12060 WOODSIDE AVENUE
LAKESIDE, CA 92040-

(619) 579-1221
ap@GPGPOWER.COM

INVOICE	#944012-2
SERVICE DATE	May 22, 2025
INVOICE DATE	May 22, 2025
PAYMENT TERMS	Net 30
DUE DATE	Jun 21, 2025
AMOUNT DUE	$645.00

SERVICE ADDRESS
100 16th St *PW*
San Diego, CA 92101

RECEIVED: JUN 11 2025
PO WRITER: Alicia
GPG - PO:
NOTE:
QB - POSTED:

CONTACT US
1483 North 2nd Street, 201
El Cajon, CA 92021

(619) 873-1530
Accounting@cpldetection.com

Service completed by: Ryan Trim

INVOICE

	QTY	UNIT PRICE	LINE TOTAL
Utility Service - Prevailing Wage Rate - 2 Hr. Minimum Service rate with a two-hour minimum ($620.00) Customer needs us to scan for utilities there also might be some rebar as well. POC: Cina (619) 438-8595	2.0	$310.00	$620.00
Utility Service - Utility Fuel Surcharge	1.0	$25.00	$25.00
Service - Utility Locating Disclaimer Access to all areas in and around work site, including utility rooms, manholes utility vaults, shut off valves, sewer/drain lines, and other structures may be necessary to complete the mark out. As-built drawings/facility maps may be needed to locate utilities that are non-conductive and/or find structures that are not visible. Depths and line size to be provided where available; depths will be considered estimated until potholed/verified. Storm Drain Lines and Sewer lines over 6" in diameter may require CCTV to locate and will be charged at an additional rate. Trips or requests for locating outside of scope will be charged at the hourly rates listed on CPL's current rate sheet.	1.0	$0.00	$0.00
All locating and leak detection and utility locating is done with the best trained Technicians and Best available Equipment. However, unknowns underground CANNOT been seen. These processes are NOT an exact science. Hence we must have confirmation or added time rates, as the task and needs to be completed.			
Service Summary - * TECHNICIAN NOTES***** Customer requesting utility Mark out for small 4 ft by 4 ft location Provided power sweep radio sweep and identified utilities around area possible power running through area marked with red paint from power sweep. Was able to locate empty conduits with pushrod and marked with pink paint did not see any other utilities within area of conflict also was able to mark out rebar grid for customer.	1.0	$0.00	$0.00

Services subtotal: $645.00

Subtotal	$645.00
Job Total	**$645.00**
Amount Due	**$645.00**

Thank you for choosing CPL

See our Terms & Conditions

PURCHASE ORDER

Global Power GROUP, INC.

12060 Woodside Ave,
Lakeside,CA 92040

Ph. 619-579-1221
Fax 619-579-1666

VENDOR NAME	Cable Pipe & Leak Detection
ADDRESS	1483 N 2nd Street, Suite #201
CITY / STATE / ZIP CODE	El Cajon / CA / 92021
PHONE	800-450-5325
PO#	118881
DATE	05/27/2025
FORM OF PAYMENT	On Account
REQUESTED BY	Cinna Brown
PO WRITER	Cinna Brown
QUOTED AMT	$645.0000
SALES/ORDER#	944012-2
VENDOR ACCOUNT NUMBER	
STORAGE LOCATION	
PO NOTE	Inv. 944012-2

Job#	GL Code / Part Number	Description	Qty	Rate	Amount	Rcv'd
GPG8172	N/A	Utility Service - Prevailing Wage- 2Hr. Minimum*(**2 HOURS OF WORK MORE IF NEEDED IT IS 300 PER HOUR	2	$310.0000	$620.0000	Yes
GPG8172	N/A	Utility Service Fuel Surcharge	1	$25.0000	$25.0000	Yes

CUSTOMER COPY

SENT 06/12/2025

MTS DBE PROGRAM - INFORMATION FOR BIDDER LIST AND COMMERCIAL USEFUL FUNCTION

MTS is required by Disadvantaged Business Enterprise (DBE) Regulations at 49 CFR Part 26 to collect and report data about DBE and non-DBE contractors and subcontractors who seek to work on MTS's projects. MTS may also use this data to set MTS's overall DBE goals and to assist in monitoring commercial useful function in order to count DBE participation toward meeting MTS's overall DBE goals.

INSTRUCTIONS: Each prime contractor and each subcontractor bidding/submitting a proposal is **required** to complete this form as part of their bid or proposal. If multiple subcontractors, copy this form.

1. Firm Name:	Cable, Pipe, & Leak Detection
2. Firm's Full Address (street, city, state, and zip code):	1483 N. 2nd St. #201 El Cajon, CA 92021
3. NAICS code for work seeking to perform:	561990
4. If applicable, please check any certification that your firm currently maintains:	❑ DBE ☒ SB – Small Business ❑ DVBE – Disabled Veteran Owned Business ❑ LGBTBE – LGBT Owned Business ❑ MBE – Minority Owned Business ❑ PDBE – Persons with Disability Owned Business ❑ WBE – Woman Owned Business
5. Only if DBE certified firm, please check one (1) type of work your firm is seeking to perform on this bid/proposal (as defined at enclosed MTS DBE Program: Commercial Useful Function – Guidance for DBE Contractors):	❑ Construction/Maintenance Services ❑ Professional Services ❑ Other Services – e.g. broker ❑ Manufacturer of Materials/Supplies ❑ Regular Dealer of Materials/Supplies ❑ Distributer of Materials/Supplies ❑ Other (not listed above) Material Supplier ❑ Trucking
6. Race of majority owner of firm:	Caucasian
7. Gender of majority owner of firm:	Male
8. Year firm was established:	1976
9. Please check your firm's applicable annual gross receipt range:	❑ Less than $1,000,000 ☒ $1,000,0001 - $15,000,000 ❑ $15,000,001 - $30,720,000 ❑ $30,720,001 - $50,000,000 ❑ Greater than $50,000,000

SIGNATURE ACKNOWLEDGES AND AFFIRMS ACCURACY OF COMPLETED FORM

SUBCONTRACTOR

Signature: Hannah Rivers

Date: 11/14/25

PRIME CONTRACTOR

Signature: _____

Date: 11/14/2025

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER INELIGIBLE AND VOLUNTARY EXCLUSIONS LOWER THAN TIER COVERED TRANSACTIONS

CONTRACTOR AND SUBCONTRACTOR'S STATEMENT OF ELIGIBILITY

*****(Bidder to provide one completed Form for the Prime Contractor and any Subcontractors)*****

The prime/subcontractor certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification.

QUESTIONNAIRE

Has the Contractor, or any officer, principal, affiliates or employee of the Contractor ever been debarred, suspended, proposed for debarment, declared ineligible or otherwise prevented from bidding on, or completing a federal, state, or local government project?

☐ **Yes**

☒ **No**

If the answer is yes, or where the prime/subcontractor is unable to certify any of the statements in the above certifications, such prime/subcontractor shall attach an explanation (i.e. date, background, resolution) with this form.

Note: Failure to provide this form at the time of Bid will not result in a finding of a non-responsive bid. Submittal of this form for The Prime Contractor and all Subcontractors is required for a Bidder to be deemed "Responsible." MTS encourages Bidders to complete and submit all forms at the time of bid.

SUBCONTRACTOR (Copy this form if needed for additional subcontractors)		**PRIME CONTRACTOR**	
Business Name:	Cable, Pipe, & Leak Detection	Business Name:	Global Power Group, Inc.
License No. (if applicable):	860181	License No. (if applicable):	870741
DUNS No.:	87-715-6344	DUNS No.:	

ACKNOWLEDGED AND AGREED

Print Name:	Shannon Evans	Print Name:	Adam Eidson
Title:	A/R	Title:	Project Manager
Signature:	Shannon Evans	Signature:	Adam Eidson
Date:	10/21/2025	Date:	10/21/2025

FLEET COMPLIANCE CERTIFICATION

Bidder hereby acknowledges that they have reviewed the California Air Resources Board's policies, rules and regulations and are familiar with the requirements of Title 13, California Code of Regulations, Division 3, Chapter 9, effective on January 1, 2024 (the "Regulation"). Bidder hereby certifies, subject to penalty for perjury, that the option checked below relating to the Bidder's fleet, and/or that of their subcontractor(s) ("Fleet") is true and correct:

☐ The Fleet is subject to the requirements of the Regulation, **and the appropriate Certificate(s) of Reported Compliance have been attached hereto.**

☐ The Fleet is exempt from the Regulation under section 2449.1(f)(2), and a signed description of the subject vehicles, and reasoning for exemption has been attached hereto.

☐ Bidder and/or their subcontractor is unable to procure R99 or R100 renewable diesel fuel as defined in the Regulation pursuant to section 2449.1(f)(3). Bidder shall keep detailed records describing the normal refueling methods, their attempts to procure renewable diesel fuel and proof that shows they were not able to procure renewable diesel (i.e. third-party correspondence or vendor bids).

☐ The Fleet is exempt from the requirements of the Regulation pursuant to section 2449(i)(4) because this Project has been deemed an Emergency, as defined under section 2449(c)(18). Bidder shall only operate the exempted vehicles in the emergency situation and records of the exempted vehicles must be maintained, pursuant to section 2449(i)(4).

☒ The Fleet does not fall under the Regulation or are otherwise exempted, and a detailed reasoning is attached hereto.

Did you attach the appropriate Certificate(s) of Reported Compliance? **Yes ☐** **No ☐**

Name of Bidder: Cable, Pipe & Leak Detection

Signature: Shannon Evans

Name: Shannon Evans

Title: A/R

Date: 10/21/2025

CHANGE ORDER 2

Metropolitan Transit System

CONTRACT CHANGE ORDER (CCO)

IAD Generator Upgrades			
Contractor:	Global Power Group, Inc.		
Contract Number:	PWB371.0-23	PO Number:	4500058840
CCO Number:	2	Contractor PCO Number(s):	2
CCO Total:	$10,688.57		

Scope Summary of the Extra Work as Part of this Change Order:

1. PCO #2: This change order is for all labor, materials, and equipment to add cam locks stations to the new 150kW, 275kW, and 750kW generators. After contract execution, it was determined by the MTS IAD Maintenance Facilities Supervisor that the new generators should include cam locks to allow temporary power shutoff and isolation from the main to perform routine testing and maintenance. The existing generators never included cam lock switches, which made routine maintenance and testing procedures timely and costly. Adding cam locks to the new generators will save time and money for all future routine testing and maintenance.

Subtotal: **$10,688.57**

Total this change order inclusive of all labor, equipment and markup: **$10,688.57**

Change Order Request Recap

Contract No: PWB371.0-23
Project Title: Imperial Avenue Division (IAD) Generator Upgrades
Location: 1255 Imperial Ave. San Diego, CA 92101
Description of Work: Add cam locks to generators from contract PWB371.0-23

COR No: COO 002 Rel No:
Date Submitted: February 19, 2025
G.C./Agency:
Job No: GPC68172

LABOR	Hours		Hourly Rate	Extended Amounts
				$ -
Electrician	REG	40.00	$ 74.47	$2,978.80
	REG			
	REG			
	REG			
				$ -
			Cost of Labor	$2,978.80
			Labor Mark-up	15.00% $446.82
			Total Cost of Labor with Surcharge	$3,425.62

EQUIPMENT	Hours	Hourly Rate	Extended Amounts
			$ -
Total Cost of Equipment			$0.00

MATERIAL				
Description	Qty	U.M.	Unit Cost	Ext. Amount
Singlepole, 300/400A Ang Rec, Scrw, Bn	6	EA	36.67	220.02
Singlepole, 300/400A Ang Rec, Scrw, Or	6	EA	36.67	220.02
Singlepole, 300/400A Ang Rec, Scrw, Yl	6	EA	36.67	$220.02
Singlepole, 300/400A Ang Rec, Scrw, Wh	6	EA	36.67	$220.02
Singlepole, 300/400A Ang Rec, Scrw, Gn	6	EA	36.67	$220.02
Welding Cable-4/0	300	FT	$8,432.19	$2,529.66
750-250 Mcm Non-UL Polaris Insulated Mu	18	EA	$115.04	$2,070.72
3/0-6 Awg Polaris Insulated Multi-TAp C	4	EA	$54.95	$219.80
3/0-6 Awg Polaris Insulated Multi-TAp C	6	EA	$42.95	$257.70
Freight charges will apply for materials	1	EA	$300.00	$300.00
			Subtotal	$6,477.98
			Material Mark-Up	10.00% $647.80
			Total Cost of Material	$7,125.78

SUBCONTRACTED WORK				
Description	Qty	U.M.	Unit Cost	Est. Amount
N/A				$ -
				$ -
				$ -
				$ -
			Total Cost of Subcontracted Work	$ -

Total Cost of Labor		$2,978.80
Labor Mark-up	15.00%	$446.82
Total cost of Labor		$3,425.62
Total Cost of Equipment		
Equipment Mark-up	15.00%	
Total Cost of Material		$6,477.98
Material Mark-up	10.00%	$647.80
Total cost of Material		$ $7,125.78
Total Cost of Subcontracted Work		$ -
Subcontracted Work Mark-up	15.00%	$ -
Sub-total		$10,551.40
Bond & Insurance	1.30%	$137.17
Other		
Total Cost		$10,688.57

Metropolitan Transit System

CONSTRUCTION CHANGE ORDER

Project Name:	Imperial Avenue Division (IAD) Generator Upgrades			**Date:**	12/4/2025
To:	San Diego Metropolitan Transit System			**Amendment Number**	5
From *(Contractor)*:	Global Power Group, Inc.,	**Contract Number:**	PWB371.0-23	**MTS CCO Number**	4

SUBCONTRACTORS AND OTHER THIRD PARTY CONTRACTORS

Any time there is a change to a Subcontractor or Other Third Party Contractors resubmit Attachment: SUBCONTRACTORS and THIRD PARTY CONTRACTORS. Any change to these forms after bid submittal must be made in accordance with Public Contract Code sections 4100 et seq., as applicable, and as permitted by MTS.

OVERALL DESCRIPTION OF WORK

This CCO is prepared in accordance with and incorporates Section Changes and Extra Work Payment of the Contract Documents and consists of the following:

A. FOR UNIT PRICE CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Bid Item	Quantity	QTY Change	Amount
				Subtotal A:	$ -

B. FOR LUMP SUM CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Amount
CCO 4	150 kW extra work	$ 48,179.07
	Subtotal B:	$ 48,179.07

C. FOR TIME & MATERIALS CCOS ONLY (AS APPLICABLE)

Contractor REF#	Description	Bid Item	Amount
		Payroll Costs:	
		Equipment Costs	
		Materials Costs	
		Consultant Costs	
		Supplemental Costs	
		Consultant Costs	
		Other - Describe Services	
		Bonds & Insurance total:	
		Contractor Overhead & Profit on Subcontractors:	
		Contractor Overhead & Profit total:	
		Subtotal C:	$ -

Total = (A+B+C)	$ 48,179.07

Original Contract value:	$ 584,000.00
Adjustment by Previous Amendment(s)	$ 63,788.70
Adjustment by this Change Order	$ 48,179.07
New Contract Amount	**$ 695,967.77**

D. TIME CHANGE CCOS ONLY (AS APPLICABLE)

Summarized reason for change:

The Contract Time due to this Change Order will be (Increased or Unchanged):	Unchanged	by		days

Original Completion Date:	**6/11/2025**
Adjustment to Completion Date by Previous Change Order(s) [Number of Calendar Days]:	**111**
New Completion Date adjusted by this Change Order:	**1/31/2026**

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising out of or related to the subject of this Change Order and acknowledges that the compensation (time and cost) set forth herein comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing this Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for any acceleration or interruption of schedules, extended overhead costs, delay, and all impact or cumulative impact on all Work under this Contract. The signing of this Change Order acknowledges full mutual accord and satisfaction for the change and that the stated time and/or cost constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor hereby releases and agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of, or as a result of, this Change Order and/or its impact on the remainder of the Work under the Contract.

Contractor **Date:** **MTS Chief Executive Officer** **Date:**

Follow all applicable procedures and provide all appropriate documentation as required by the Contract Documents.

Cable, Pipe & Leak Detection

GLOBAL POWER GROUP
12060 WOODSIDE AVENUE
LAKESIDE, CA 92040-

(619) 579-1221
BBENDON@GPGPOWER.COM

INVOICE	#939401
SERVICE DATE	Mar 18, 2025
INVOICE DATE	Mar 14, 2025
PAYMENT TERMS	Net 30
DUE DATE	Apr 13, 2025
AMOUNT DUE	**$925.00**

SERVICE ADDRESS

1462 Imperial Ave *PW*
San Diego, CA 92101

CONTACT US

1483 North 2nd Street, 201
El Cajon, CA 92021

(619) 873-1530
Accounting@cpldetection.com

Service completed by: Aaron Buber, Donald Bell

INVOICE

Services	qty	unit price	amount
Utility Service - Prevailing Wage Rate - 2 Hr. Minimum	3.0	$300.00	$900.00
CIB: Global Power Group 619 438 8595 COTW: Global Power Group 619 438 8595 Description of work to be performed: Customer needs us to locate all utilities underground in the MTS bus yard to be able to do some dig work. Job #GPG8172 DIR# 504475 PO# 117403 Are you a contractor? YES Is this job PW? YES Estimated size of area are we marking? less than 200 sqft Inside or outside? Outside Specific utilities? ALL PVC/Plastic water lines may need to be thumped. Advise customer of risks. Would you like to add mapping to your service? (additional charge)			
Utility Service - Utility Fuel Surcharge	1.0	$25.00	$25.00
Utility Locating Disclaimer	1.0	$0.00	$0.00
Access to all areas in and around work site, including utility rooms, manholes/utility vaults, shut off valves, sewer/drain lines, and other structures may be necessary to complete the mark out. As-built drawings/facility maps may be needed to locate utilities that are non-conductive and/or find structures that are not visible. Depths and line size to be provided where available; depths will be considered estimated until potholed/verified. Storm Drain Lines and Sewer lines over 6” in diameter may require CCTV to locate and will be charged at an additional rate. Trips or requests for locating outside of scope will be charged at the hourly rates listed on CPL's current rate sheet.			

Services subtotal: $925.00

Subtotal	$925.00
Job Total	**$925.00**
Amount Due	**$925.00**

Technician notes: 3-18-25. 645 - 945. Met with Tom from MTS. Located utilities for new generator pad and trench. Water lines nonconductive with no tracer wire. Lost signals on some utilities. Pictures taken uploaded on company cam

✓ Signed on 03/18/25 for $625.00



See our Terms & Conditions

PROPOSAL II

Date: 2/13/25

Project: MTS Generator Pad
Contractor: Global Power Group Inc.
Att: Cinna

PPM Inc. agrees to furnish and provide necessary labor, material and tools. To do, perform and complete in a good workman like manner the following per plans & specs:
We appreciate the opportunity to provide you with a proposal for the above-mentioned project. The following should clarify our scope of work.

Work Includes

- Saw cut demo and dispose of concrete at location of new gen pad and conduit trench line
- Excavated soil for new gen pad and electrical trench
- Install up to 10' of new 2" electrical conduit
- For, rebar and place new gen pad, 17'x 5'6" x 1'4" Per detail 4 on plan sheet provided
- Backfill compact electrical trench line
- Re pour concrete at trench line, Including repair of existing gen pad
- Saw cut demo and dispose of 2'x2' sections of concrete at 14 locations around the new gen pad for placement of new bollards
- Excavate 14 18"x3'9" holes
- Install 14 6" bollards 3' above grade and 3'6" bellow using 3000psi concrete
- Solid grout all bollards
- Paint safety yellow
- Haul off and dispose of excess dirt and concrete debris

Exclusions:
The following items are not included in our proposal and should not be considered as part of our base scope of work:

- Permits or fees.
- Engineering or engineering fees.
- Seismic engineering.
- Any OSHPD work or inspections.
- Any work not specifically mentioned above.
- Temp services or fees
- Accelerated schedule/OT.

All of the above work to be completed for the sum of: dollars **Total: $33,710.00**
Any alteration or deviations from the above involving extra cost of material or labor will be executed only on written orders for same and will become an extra charge over the sum mentioned above.
This proposal is void if not accepted within 60 days.

QUALLS ENGINEERING | STRUCTURAL ENGINEERING SERVICES

January 17, 2025

VIA EMAIL

Cinna Brown
Global Power Group
12060 Woodside Ave
Lakeside, CA 92040

Email: cbrown@gpgpower.com

Subject: Structural Engineering Services Proposal

Project: MTS Anchorage
100 16th Street
San Diego, CA 92101

Dear Cinna Brown:

In accordance with your request, we have prepared the following agreement to provide structural engineering services for the above-referenced project. This agreement is between Qualls Engineering, hereinafter referred to as "Engineer" and Global Power Group hereinafter referred to as "Client".

PROJECT UNDERSTANDINGS

1. Project consists of a proposed anchorage and concrete pad design for a new outdoor generator located at 100 16th Street, San Diego, CA 92101 per drawings you have supplied to our office.
2. The proposed anchorage to be constructed primarily of concrete construction. The new foundation design will be typical concrete slab on grade with turned down perimeter footings.
3. It is the responsibility of the owner to ensure completeness and accuracy of drawings and that the architectural design is finalized prior to the start of the engineer's work. Note that any changes to the structural design not directly related to the building plan check process will be billed on a time and materials fee basis per the standards of the contract below.
4. A soils report will not be provided for this project therefore the foundation design will be based on the minimum soil values per chapter 18 of the 2022 CBC.
5. Governing Code – 2022 California Building Code.

SCOPE OF SERVICES

Engineer agrees to perform the scope of services as notated on Addendum A to this agreement, "Detailed Scope of Services".

Initial _____

QUALLS ENGINEERING | STRUCTURAL ENGINEERING SERVICES

FEE SCHEDULE

Base Services

Structural engineering services as outlined in the “Scope of Services” section of this Agreement **$ 2,400.00**

Additional Engineering Services

Engineers’ fees are based on the information available at the time at which they were proposed. If the scope of Engineer's work changes for any reason during the course of the project, Engineer shall be compensated for any extra work on a "time and materials" basis either according to the “Fee Schedule” section of this agreement or at the then current “Fee Schedule”.

If required for “Additional Services” and/or “Changed Conditions”.

Principal Engineer……	$ 250.00
Project Engineer……..	$ 220.00
Staff Engineer……..	$ 190.00
Drafting Technician…….	$ 100.00
Administration……..	$ 55.00

PAYMENT SCHEDULE

Retainer to begin work (due at signing of Agreement)	$ 1,000.00
Balance due upon the release of the Engineer’s work to the Client or the Client’s representative	$ 1,400.00
Total -	**$ 2,400.00**

PAYMENT METHODS

Qualls Engineering Inc. accepts the below payment methods:

- Cash or Check to 4403 Manchester Ave #203, Encinitas, CA 92024
- ACH Transfer
- Bank Wire Transfer
- Credit Card Payment – 4% processing fee

Initial _____

QUALLS ENGINEERING | STRUCTURAL ENGINEERING SERVICES

STANDARD OF CARE
In providing services under this Agreement, the Engineer will endeavor to perform in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

CHANGED CONDITIONS
If, during the term of this Agreement, circumstances or conditions that were not originally contemplated by or known to the Engineer are revealed, to the extent that they affect the scope of services, compensation, schedule, allocation of risks or other material terms of this Agreement, the Engineer may call for renegotiation of appropriate portions of this Agreement. The Engineer shall notify the Client of the changed conditions necessitating renegotiation, and the Engineer and the Client shall promptly and in good faith enter into renegotiation of this Agreement to address the changed conditions. If terms cannot be agreed to, the parties agree that either party has the absolute right to terminate this Agreement, in accordance with the Termination provision hereof.

REQUESTS FOR CLARIFICATION OR INTERPRETATION
Requests for clarification or interpretation of the Contract Documents from Client's Contractor shall be responded to with reasonable promptness by the Engineer. If the information requested, however, is apparent from field observations, is contained in the Contract Documents or is reasonably inferable from them, the Contractor shall be responsible to the Client for all reasonable costs charged by the Engineer to the Client for the Additional Services required to provide such information.

UNAUTHORIZED CHANGES
In the event the Client consents to, allows, authorizes, or approves of any structural changes to the plans, specifications or other construction documents, and these changes are not approved in writing by the Engineer, the Client recognizes that such changes and the results thereof are not the responsibility of the Engineer. Therefore, the Client agrees to release the Engineer from any liability arising from the construction, use or result of such changes. In addition, the Client agrees, to the fullest extent permitted by law, to indemnify and hold the Engineer harmless from any damage, liability, or cost (including reasonable attorneys' fees and costs of defense) arising from such changes, except only those damages, liabilities and costs arising from the sole negligence or willful misconduct of the Engineer.

ASSIGNMENT
Neither party of this Agreement shall transfer, sublet or assign any rights under or interest in this Agreement (including but not limited to monies that are due or monies that may be due) without the prior written consent of the other party. Subcontracting to subconsultants normally contemplated by the Engineer shall not be considered as assignment for purposes of this Agreement.

DISPUTE RESOLUTION
In efforts to resolve any conflicts that arise during the design and construction of the Project or following the completion of the Project, the Client and the Engineer agree that all disputes between them arising out of or relating to this Agreement, or the Project shall be submitted to non-binding mediation unless the parties mutually agree otherwise.
The Client and Engineer further agree to include a similar mediation provision in all agreements with independent contractors and consultants retained for the project and to require all independent contractors and consultants also to include a similar mediation provision in all agreements with their subcontractors, subconsultants, suppliers and fabricators, thereby providing for mediation as the primary method for dispute resolution between the parties to all those agreements.

LIMITATION OF LIABILITY
In recognition of the relative risks and benefits of the project to both the Client and the Engineer, the risks have been allocated such that the Client agrees, to the fullest extent permitted by law, to limit the liability of the Engineer and his subconsultants to the Client and to all construction contractors and subcontractors on the project for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, so that the total aggregate liability of the Engineer and his subconsultants to all those named shall not exceed the Engineer's total fee for services rendered on this project. Such claims and causes include but are not limited to negligence, professional errors or omissions, strict liability, breach of contract or warranty.

CONSEQUENTIAL DAMAGES
Notwithstanding any other provision of this Agreement, and to the fullest extent permitted by law, neither the Client nor the Engineer, their respective officers, directors, partners, employees, contractors or subconsultants shall be liable to the other or shall make any claim for any incidental, indirect or consequential damages arising out of or connected in any way to the Project or to this Agreement. This mutual waiver of consequential damages shall include, but is not limited to, loss of use, loss of profit, loss of business, loss of income, loss of reputation or any other consequential damages that either party may have incurred from any cause of action including negligence, strict liability, breach of contract and breach of strict or implied warranty. Both the Client and the Engineer shall require similar waivers of consequential damages protecting all the entities or persons named herein in all contracts and subcontracts with others involved in this project.

SUSPENSION OF SERVICES
If the project is suspended for more than thirty (30) calendar days in the aggregate, the Engineer shall be compensated for the services performed and charges incurred prior to receipt of notice to suspend. If the project is suspended for more than ninety (90) calendar days in the aggregate, the Engineer may, at his option, terminate this Agreement upon giving notice in writing to the Client.

SEVERABILITY
Any term or provision of this agreement found to be invalid under any applicable statue or rule of law shall be deemed omitted and the remainder of this agreement shall remain in full force and effect.

TERMINATION
This Agreement may be terminated by either party upon a seven (7) day written notice should the other party fail substantially to perform in accordance with its terms, through no fault of the other. In the event of termination due to the fault of others than the Engineer, the Engineer shall be paid for services performed to termination date.

If this Agreement is acceptable, please sign and return a copy of this Agreement to initiate this work. Engineer will begin work on this project upon receiving a signed copy of this Agreement and the indicated retainer.

Sincerely,

1/17/25

Brian Qualls, P.E., CA License # 77372 Date	Cinna Brown Date
Principal	Global Power Group

QUALLS ENGINEERING | STRUCTURAL ENGINEERING SERVICES

Addendum A: DETAILED SCOPE OF SERVICES

Y= Included (Engineer will provide)
R= Recommended (Engineer can provide as add'l service)
N= Not Included (Engineer may provide as additional service)
O= Not Included (Must be provided by another consultant)

	Y	R	N	O	Comments
A. Schematic Design Phase					
1. Meet with client to review and define scope of services			X		
2. Establish structural design criteria	X				
3. Assist in selection of structural systems	X				
4. Prepare studies of alternative structural systems			X		
5. Identify pre-engineered structural elements	X				
B. Design Development Phase					
1. Prepare preliminary foundation layout (sketch)			X		
2. Prepare preliminary framing layouts(s) (sketch)			X		
3. Prepare preliminary structural design calculations for major elements			X		
4. Prepare or edit outline specifications for structural items (prepared by other)			X		
5. Prepare typical detail sketches			X		
6. Submit design development documentation for Client approval			X		
7. Assist preparing preliminary opinion of construction costs				X	This service is not provided
C. Construction Document Phase					
1. Prepare structural design of primary structural system(s): Foundation Design, Vertical-Load Calculations, Lateral-Load Calculations	X				PDF Only
2. Elements to be designed by others (Not included in our "'Scope of Services")			X		i.e. prefab roof trusses, custom fireplaces, custom stairs
3. Provide structural design of "special" foundation systems			X		i.e. Post-tensioned slabs, deepened piers/caissons
4. Review effect of secondary or non-structural elements attached to primary structural system			X		
5. Provide design for miscellaneous site improvements			X		i.e. Site retaining walls, Roof Trellises
6. Provide structural "markups" of: Framing Plans, Foundation Plan, Details	X				PDF Only
7. Provide structural drawings: Structural notes, Foundation Plan, Framing Plan(s), Structural Details	X				PDF Only
8. Assist in establishing testing and special inspection requirements	X				
9. Review structural documents for conformance with structural calculations	X				
10. Provide soils testing, soils reports, and/or soil engineers fees				X	
11. Provide structural clarifications related to engineer's scope	X				
12. Perform permit processing (including plan check fees)				X	This service is not provided
13. Respond to structural plan check corrections relevant to engineer's scope of services	X				
D. Construction Administration Phase (maximum of 4 hours with additional time billed hourly)					
1. Pre-construction meeting with Architect, Contractors, Owner		X			
2. Assist in establishing procedures for testing and inspections				X	
3. Perform "Special Inspection" services as required by the local jurisdiction's building department/official				X	This service is not provided
4. Respond to building department field correction notices			X		
5. Review submittals for pre-engineered structural elements by other			X		i.e. Manuf. Joists, Steel Shop Drawings
6. Site Visits/ Structural Observation a. Make site visits at intervals appropriate to the stage of construction			X		Site visit may be provided for $450
b. Prepare site visit reports			X		
7. Materials testing and inspections: Review testing and inspection reports, Initiate appropriate action to those reports, if required			X		
8. Respond to field requests for alternative construction methods			X		

Initial_____

Global Power GROUP, INC.

12060 Woodside Ave, Lakeside, Ca 92040

SD Metro Transit Project Manager Natalie Ven 619-595-1021
Contract No: PWB371.0-23
Project Title: Imperial Avenue Division (IAD) Generator Upgrades
Location: 1255 Imperial Ave. San Diego, CA 92101
Description of Work Concrete Sub-Contractor Replacement for 150kW Pad

COR No: CCO 004 Ref No:
Date Submitted: November 18, 2025
Project Manager Adam Eidson 619-438-8673
Job No: GPG8172
Original Contract Value $584,000.00
Current Change Order Value $48,179.07
Previous Change Order 1 Total $13,080.83
Previous Change Order 2 Total $18,168.94
Previous Change Order 3 Total $40,019.29

New Proposed Contract Value **$703,448.13**

LABOR	Hours		Hourly Rate	Extended Amounts
				$ -
Electrician - Foreman SD	REG	24.00	$ 74.47	$1,787.28
Electrician - Journeyman SD	REG	40.00	$ 74.47	$2,978.80
Cost of Labor				$4,766.08

MATERIAL				
Description	Qty	U.M.	Unit Cost	Ext. Amount
2" PVC SCH 80 conduit	1	LF	$350.00	$350.00
2" PVS SCH 80 90degree conduit	1	EA	$80.00	$80.00
WIRE 350mcm XHHW-2	1	LS	$3,910.29	$3,910.29
Subtotal				$4,340.29
(A) California Sales Tax				
Total Cost of Material				**$4,340.29**

SUBCONTRACTED WORK				
Description	Qty	U.M.	Unit Cost	Ext. Amount
Structural plans drawn	1		2400	$2,400.00
				$0.00
CPL Scan	1		925	$925.00
TBPCO - New Concrete Subcontractor Subcontractor: Sawcut break and remove existing concrete for new generator pad - 20' x 8', Grade, form, install #5 rebar at 12" oc and pour 16" thick generator pad - 20' x 8', haul off demolition and excavation spoils, prep and pourback sidewalk where old generator currently sits - grey broom finish, supply and install (4) 6" vehicular bollard - painting done by others, Demo and pour back new electrical trench.	1		$31,833.05	$31,833.05
Total Cost of Subcontracted Work				**$35,158.05**

EQUIPMENT	Days	Rate	Extended Amounts
Wire Tugger	1	$ 150.00	$150.00
Total Cost of Equipment			**$150.00**

Total Cost of Labor		$4,766.08
Labor Mark-up	15.00%	$714.91
Total Cost of Equipment		$150.00
Equipment Mark-up	15.00%	$22.50
Total Cost of Material		$4,340.29
Material Mark-up	15.00%	$651.04
(B) California Sales Tax		-
Total Cost of Subcontracted Work		$35,158.05
Subcontracted Work Mark-up	5.00%	$1,757.90
Sub-total		$47,560.78
Bond & Insurance	1.30%	$618.29
Other		
Total Cost		**$48,179.07**

Metropolitan Transit System

Agenda Item No. 12

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

2026 State and Federal Legislative Program (Julia Tuer, Mark Watts, Peter Peyser)

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors approve the 2026 State and Federal Legislative Program (Attachment A).

Budget Impact

None.

DISCUSSION:

The draft 2026 State and Federal Legislative Program is attached for review. The purpose of this program is to help guide and define the MTS legislative advocacy efforts in calendar year 2026. Staff will return to the Board for approval of any amendments that are required to address unforeseen future events or policy initiatives. MTS State and Federal advocates will also provide legislative updates during the meeting.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Attachment: A. Draft 2026 State and Federal Legislative Program

Metropolitan Transit System

DRAFT

2026 Legislative Program









System Summary

Creation
The Metropolitan Transit Development Board (MTDB) was created in 1975 by the passage of California Senate Bill 101 and came into existence on January 1, 1976. In 1984, the Governor signed Senate Bill 1736, which expanded the MTDB governing board from eight to 15 members. In 2002, Senate Bill 1703 merged MTDB's long-range planning, financial programming, project development and construction functions into the regional metropolitan planning organization, the San Diego Association of Governments (SANDAG). In 2005, MTDB changed its name to the San Diego Metropolitan Transit System (MTS).

Board of Directors
15-member Board generally meets once per month. Members are appointed as follows:

- One member of the County of San Diego Board of Supervisors appointed by the Board of Supervisors.
- Four members of the City Council of the City of San Diego, one of whom shall be the Mayor, appointed by the City Council.
- One member of each City Council appointed individually by the City Councils of the Cities of Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, and Santee.
- Two members of the City Council of the City of Chula Vista, one of whom shall be the Mayor, appointed by the City Council.
- The Chairperson of the Board shall be selected from the Board membership by a two-thirds vote of the Board, a quorum being present. The Chairperson shall serve for a term of two years, except that he or she is subject to removal at any time by a two-thirds vote of the Board, a quorum being present.

Subsidiary Corporations
MTS owns assets of: San Diego Trolley, Inc. (SDTI); San Diego Transit Corporation (SDTC); and the San Diego & Arizona Eastern (SD&AE) Railway Company, which owns 108 miles of track and right-of-way.

Areas of Jurisdiction
Approximately 570 square miles of the urbanized areas of San Diego County as well as the rural parts of East County, 3,240 total square miles, serving approximately 3 million people in San Diego County.

Provision of Services
MTS provides bus and rail services directly or by contract with private operators. MTS coordinates all its services and determines the routing, stops, frequencies and hours of operation.

Light Rail
Light rail service is operated by SDTI on five lines (the UC San Diego Blue Line, Orange Line, Green Line, Copper Line, and Silver Line) with a total of 62 stations and 65 miles of rail.

Bus
Almost 100 fixed bus routes and Americans with Disabilities Act (ADA) paratransit service (MTS Access). Fixed route bus services include local, urban, express, premium express and rural routes.

Freight
MTS contracts with the San Diego & Imperial Valley (SD&IV) Railroad to provide freight service to San Diego shippers over SD&AE right-of-way. SD&IV shares certain tracks with SDTI, operating during non-service Trolley hours.

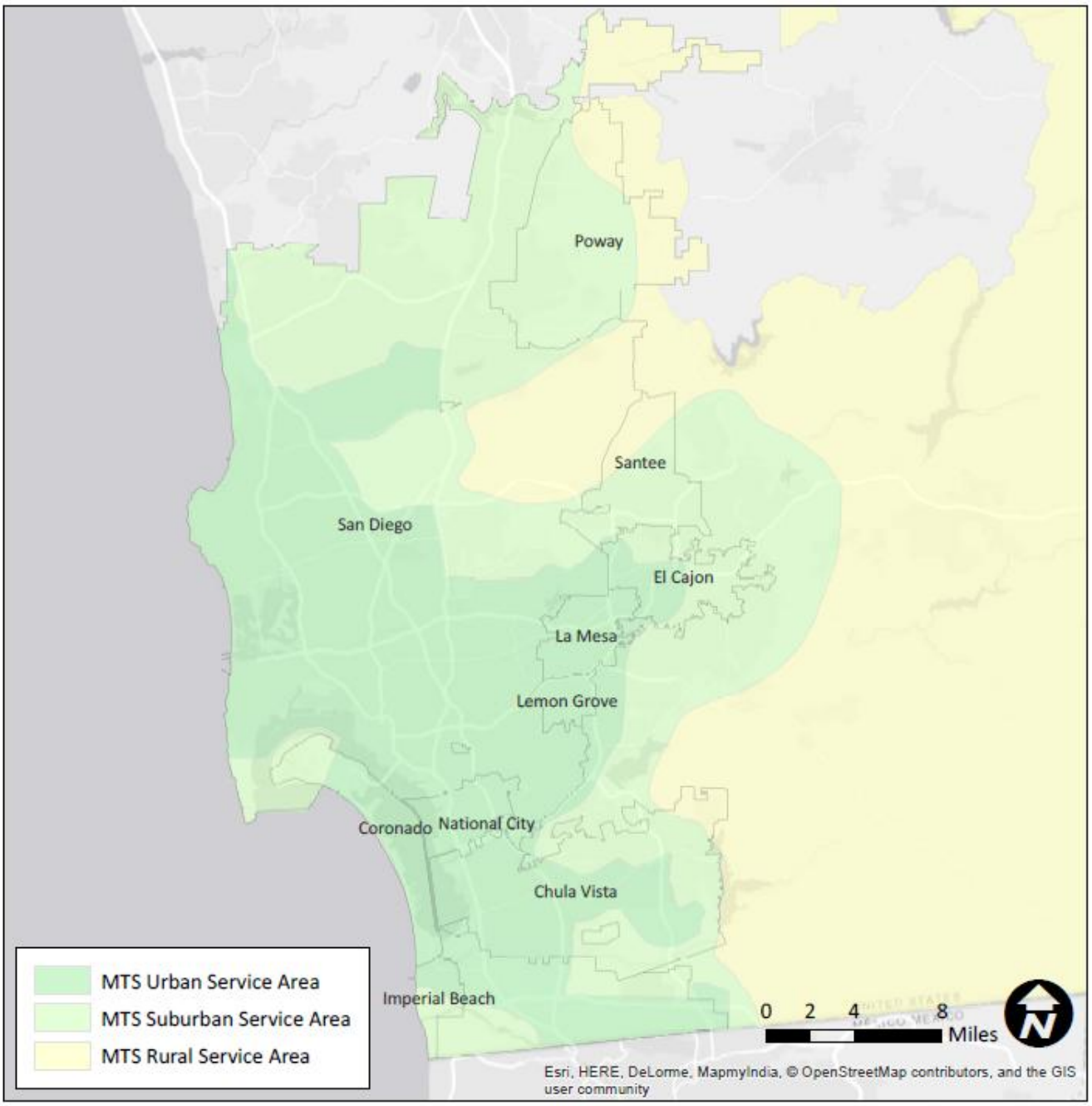
Operating Budget
Approximately $473 million annual operating budget.

Ridership
In Fiscal Year 2025, MTS generated approximately 81.2 million annual passenger trips. MTS is continuing to grow its ridership from the COVID-19 pandemic, focusing on its ridership recovery action plan. To handle ridership demand, the agency schedules 7,000 trips each weekday, and has 160+ Trolley cars and 750+ buses in its fleet.

Planning and Scheduling
MTS is responsible for the service planning, scheduling, and performance monitoring of all MTS transit services. Service adjustments occur three times per year and as needed to improve efficiency and customer service.

Funding
MTS receives funding from various federal, state, and local sources. The primary sources are the California Transportation Development Act (TDA), California State Transit Assistance (STA), Federal Transit Administration (Sections 5307, 5311, 5337 and 5339), TransNet funds (local sales tax) and fares.

For-Hire Vehicle Administration
MTS licenses and regulates taxicabs, jitneys, and other private for-hire passenger transportation services by contract with the Cities of San Diego, Chula Vista, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, and Santee.



San Diego Metropolitan Transit System

Area of Jurisdiction

June 2026



2026 Legislative Program

Local (L) State (S) Federal (F)		Subject Area
		Transit Funding
S, F	1.	Support legislation that would generate new revenue for transit projects and operating costs.
F	2.	Support legislation that would generate an increase in appropriation levels for existing transit operating and capital funding programs.
F	3.	Support new long-term Surface Transportation Reauthorization legislation that provides increased levels of funding and favorable policies for transportation programs.
L, S, F	4.	Seek additional funding from regional, state, federal, and/or other sources. o Other funding may include legislation to expand revenue options through tourism, luxury vehicles or options other than a sales tax.
S, F	5.	Oppose legislation that would reduce direct funding to transit agencies.
S, F	6.	Seek disaster relief funding to reimburse costs incurred due to the January 2024 storm.
S	7.	Oppose legislation that would expand the use of TDA funds to non-transit purposes not currently covered by statute.
S, F	8.	Support legislation that would eliminate the requirement or need of transit agencies to have a farebox recovery and replace with state and/or federal funding, providing a sustainable mechanism to allow for free public transit.
S, F	9.	Support legislation that incentivizes increased transit ridership.
S, F	10.	Support legislation that would help offset the impact on transit budgets caused by increases in fuel and energy costs.
S	11.	Support favorable electric rate setting to incentivize deployment of zero emission bus technology.
S, F	12.	Seek funding to offset the costs associated with implementation and deployment of zero emission bus technologies.
F	13.	Support legislation to bring funding to railroad corridors and seek funding for railroad bridge and infrastructure rehabilitation.
S, F	14.	In partnership with interested cities, seek funding dedicated to grade-separation projects.
S	15.	Support legislation to exempt transit agencies from state sales tax.
S	16.	Support favorable programmatic guidelines for Cap-and-Invest Program-related funding sources and seek awards under all relevant programs. o Support member agency applications for all relevant programs funded by Cap-and-Invest auctions.
S	17.	Oppose attempts to legislate local fare programs or to remove fare setting decisions from transit agencies.
L, S, F	18.	Seek subsidies for specialized fare programs supported by the MTS Board of Directors.

L, S, F	19.	Support the San Diego Association of Governments in seeking funding to continue Youth Opportunity Passes in San Diego.
S, F	20.	Seek opportunities for funding or policies to help improve system infrastructure as a means to increase the safety of transit riders.
S, F	21.	Seek direct funding for the operation of public restrooms and support cost-recovery measures for public restroom access.
F	22.	Oppose attempts to discontinue federal funding for school paratransit services or for nonemergency medical transport.
S, F	23.	Seek funding for the following capital projects: o Kearny Mesa Transit Center o Zero Emission Buses and Electrification Infrastructure o MTS Bus Replacement Vehicles o Bus Stop Improvements o Light Rail Vehicle Replacements o Traction Power Substation Replacements o Grade Separation Projects o Light Rail Vehicle Maintenance Building Expansion o Blue to Green Line Double Tracking
		Homelessness
L, S, F	24.	Seek funding and resources to help persons experiencing homelessness throughout the MTS system.
		Climate Change
S, F	25.	Support state, federal, and other governmental agency efforts that help address issues of climate change.
		Transit-Oriented Development
S, F	26.	Support legislation that provides funding incentives for mixed-use projects and transit-oriented development.
S	27.	Support legislation that aids transit operators' efforts to create high density transit-oriented development.
		Public Safety
F	28.	Oppose attempts to create duplicative rail safety regulatory agencies.
S, F	29.	Oppose legislation or regulations that would have an adverse impact on transit agencies' ability to provide safe transportation to their customers.
S, F	30.	Support legislation which provides funding to public transit agencies for safety and security operations.
		Regulatory Matters
S, F	31.	Support legislation that would facilitate expedited delivery of transit capital projects.
S, F	32.	Oppose unfunded mandates that negatively impact transit operators. o Seek dedicated funding for all newly mandated programs.

S, F	33.	Oppose legislation that adversely limits the use of eminent domain for public transportation projects.
F	34.	Support efforts to increase competition in the fuel market.
S	35.	Support legislation that ensures electricity is prioritized for transit agencies.
S	36.	Oppose legislation that would limit MTS's use of current personal identifiable information data standards to provide better service to customers.
S	37.	Oppose efforts to eliminate or restrict transit exemption provisions in the California Environmental Quality Act (CEQA).
S	38.	Support efforts in researching mechanisms to require Medi-Cal managed care plans to partially reimburse public transit agencies for Medi-Cal eligible paratransit trips.
F	39.	Support efforts in researching mechanisms to allow for public transit agencies to seek partial reimbursement for Medicaid eligible paratransit trips.
S, F	40.	Monitor and respond to legislation in the areas of finance, employment, and safety that could affect agency governance or operations, including issues related to contractors.
F	41.	Oppose efforts to broaden paratransit service eligibility classifications of individuals that could effectively be served through fixed route services.
F	42.	Support limitations on the interpretation of the Americans with Disabilities Act with regard to service animals.
F	43.	Monitor and respond to attempts to alter Access Guidelines in a way that would financially burden transit operators without providing funding.
S	44.	In coordination with the California Transit Association, engage with stakeholders and potentially pursue changes to axle weight limits to reflect the shift to zero-emission buses.
S	45.	Support legislation that provides cities and/or counties with local control over autonomous vehicle deployment.
		Labor Relations
S	46.	Monitor and respond to legislation relating to personnel matters.
S	47.	Support legislation that protects the integrity of collective bargaining agreements. o Oppose efforts to mandate benefits or working conditions.
S	48.	Monitor and respond to legislation designed to clarify provisions of the California Public Employees' Pension Reform Act of 2013.
F	49.	Seek positive closure to the Department of Labor's case regarding the California Public Employees' Pension Reform Act of 2013.
S	50.	In coordination with the California Transit Association, pursue changes to SB 616 (Chapter 309, Statutes of 2023) to specify in law the number of sick days a transit employee may use before facing possible disciplinary action.
		Administration
L, S	51.	Support mechanisms to provide post-conviction relief to individuals with records of MTS violations.
S	52.	Seek legislation that would clarify election procedures applicable to a qualified voter initiative on behalf of MTS.

S	53.	Seek legislation that would exempt MTS from the county's combined rate limitation on imposed transaction and use taxes.
		Support Legislative Programs of Other Agencies or Organizations
L	54.	Support the legislative programs of other agencies, such as the San Diego Association of Governments (SANDAG) and North County Transit District (NCTD), where consistent with the MTS legislative program.
S, F	55.	Support provisions in the legislative programs of other organizations, such as the California Transit Association (CTA) and American Public Transportation Association (APTA), where consistent with the MTS legislative program.

Metropolitan Transit System

2026 Legislative Program

Board of Directors

2026 Legislative Program

- Program purpose is to guide advocacy efforts
  - Not meant to be fully comprehensive
  - Will bring back key specific legislative items, as needed
- Collaborate with regional municipalities and key stakeholders on MTS-related initiatives and priorities

Legislative Priorities

- **Transit funding**
  - Support legislation that would generate new revenues for transit projects and operating costs
  - Support new long-term Surface Transportation Reauthorization legislation that provides increased levels of funding and favorable policies for transportation programs
  - Seek subsidies for specialized fare programs supported by the MTS Board
    - (e.g. new Cap-and-Invest grant program to compete for free transit passes is expected to be released next year)

Legislative Priorities (cont.)

- **Homelessness**
  - Seek funding and resources to implement a program that helps persons experiencing homelessness throughout the MTS system
- **Climate Change**
  - Support state, federal, and other governmental agency efforts that help address issues of climate change
- **Transit-Oriented Development**
  - Support legislation that provides funding incentives for mixed-use projects and transit-oriented development

Legislative Priorities (cont.)

- **Public Safety**
  - Support legislation which provides funding to public transit agencies for safety and security operations
- **Regulatory Matters**
  - In coordination with the California Transit Association, engage with stakeholders and potentially pursue changes to axle weight limits to reflect the shift to zero-emission buses
  - Support legislation that provides cities and/or counties with local control over autonomous vehicle (AV) deployment

Legislative Priorities (cont.)

- **Labor Relations**
  - Support legislation that protects the integrity of collective bargaining agreements (CBAs)
  - In coordination with the California Transit Association, pursue changes to SB 616 (Chapter 309, Statutes of 2023) to specify in law the number of sick days a transit employee may use before facing possible disciplinary action
- Support Legislative Programs of other agencies or organizations, where consistent with the MTS Legislative Program

2025 Recap

- SB 71 (Wiener) CEQA Exemptions for Transit Projects *(Signed by Governor)*
  - Bill extends the current January 1, 2030 sunset date previously established for statutorily authorized CEQA exemptions for transit and transportation projects to January 1, 2040.
  - California Transit Association was a co-sponsor of this bill
- SB 752 (Richardson) Zero-Emission Bus Sales Tax Exemption Sunset Extension *(Held in Senate Appropriations Committee)*
  - Bill would have extended from January 1, 2026 to January 1, 2028, the partial sales and use tax exemption for zero-emission buses first established in 2019 and subsequently renewed in 2022.
  - California Transit Association was a co-sponsor of this bill and will continue exploring advancing this effort in the coming year.

2025 Recap

- AB 394 (Wilson) Enhanced Penalties for Transit Employee Assaults *(Signed by Governor)*
  - Bill enhanced the safety and security of California's public transportation systems by strengthening protections for transit operators, employees, and passengers. Bill expanded existing law to protect all transit employees against battery
  - California Transit Association was a co-sponsor of this bill in partnership with the ATU, Teamsters, and SMART.
- SB 707 (Durazo) Brown Act Reform *(Signed by Governor)*
  - Bill made a number of changes to the Brown Act, including items related to providing two-way teleconferencing opportunities for the public, and reasonably assisting members of the public with translation services. MTS is already in compliance with many of these items. However, there will be some additional changes related to technology disruption processes that will be required mid-2026.

2025 Recap

- AB 1207 (Irwin) Cap-and-Trade Reauthorization *(Signed by Governor)*
  - Bill reauthorized California's Cap-and-Trade program for an additional 15 years, to January 1, 2046, and renamed the program Cap-and-Invest.
- SB 840 (Limon) Greenhouse Gas Reduction Fund *(Signed by Governor)*
  - Bill recast the expenditure plan of the Cap-and-Invest Program. Maintained continuous appropriations to the Transit and Intercity Rail Capital Program (TIRCP) and the Low Carbon Transit Operations Program (LCTOP). Included a new Tier system to guide the order and level of appropriations for specific priorities.

2025 Recap

- **Transit Transformation Task Force (Task Force)**
  - SB 125 (2023) required CalSTA to establish the Task Force to develop policy recommendations to grow transit ridership and improve the transit experience for all users
  - 25-member task force including representatives from CalSTA, various local agencies, academic institutions, nongovernmental organizations, and other stakeholders
    - Sharon Cooney and Mark Watts both served on the Task Force
  - The final meeting of the Task Force took place in September 2025
  - CalSTA created a final report, which was publicly released last week
  - A briefing regarding the experience serving on the Task Force and the report will be provided to the Board in 2026

2026 Proposals

- Seek legislation that would clarify election procedures applicable to a qualified voter initiative on behalf of MTS
- Seek legislation that would exempt MTS from the county's combined rate limitation on imposed transaction and use taxes

State and Federal Legislative Updates

- Mark Watts
  - State Advocate
- Peter Peyser
  - Federal Advocate

State Government Activity Update and Outlook for 2026

- California State Transportation Agency
  - Executive Changes
- California Transportation Commission
  - Appointees
- Legislative Calendar

State Budget Overview

- 2025-2026 Overview
- State revenue forecast for 2026
- Overall multi-year state budget condition
- Cap-and-Invest Program
  - Revenues
  - Allocation

Addressing Transit Funding Needs

- Review of 2025 Legislative Efforts
- Secretary’s Transit Transformation Task Force (TTTF)

Local Agency Revenue Approaches

- Local Voter Tax Imposition Requirements
  - Direct Legislative efforts to reduce
  - Local Initiative process

Statewide Initiative and Legislative Ballot Measures - 2026

- Howard Jarvis Taxpayers Association
- Legislative Initiative – ACA 13 (Ward, 2023)

Federal Outlook for 2026

- Appropriations for FY 2026 and 2027
- Five-Year Reauthorization of Surface Transportation Programs
- Discretionary Grant Applications

Appropriations for FY 2026 and 2027

- Wrap-up of FY 2026 Spending Bill
- FY 2027 Process
- Status of Earmarks

Five-Year Reauthorization of Surface Transportation Programs

- Battle over highway/transit funding split
- Potential inclusion of Trump Administration policy priorities
- Changes to the Capital Investment Grant Program for New Starts and Extensions
- Operating assistance debate
- 2026 election impacts

Discretionary Grant Applications

- BUILD Grants
- Bus Discretionary Grants
- Railroad Crossing Elimination Grants

Recommendation

- That the Board of Directors approve the 2026 Legislative Program.

Questions/Comments

Metropolitan Transit System

Agenda Item No. 13

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Fare Change Study Update (Mark Olson, MTS and Tim Garrett, SANDAG)

INFORMATIONAL ONLY

Budget Impact

None at this time.

DISCUSSION:

The San Diego Association of Governments (SANDAG) is responsible for establishing the Regional Comprehensive Fare Ordinance and, as part of that role, periodically conducts a Regional Transit Fare Structure Study ("Fare Change Study") in coordination with MTS and the North County Transit – San Diego Railroad (NCTD).

At the February 13, 2025 meeting, the MTS Board of Directors directed staff to collaborate with SANDAG and NCTD on a new Fare Change Study as part of the broader financial sustainability strategy to address the agency's projected budget shortfall.

As part of the broader strategy, MTS is evaluating multiple options in addition to fare changes including:

- Exploring a potential revenue measure for the November 2028 ballot
- Adjusting service levels per MTS Board Policy No. 42 "Transit Service Evaluation and Adjustment"
- Shifting select non-essential capital funding to support operations
- Increasing non-fare revenue sources (e.g. advertising)

The financial situation in the coming years could impact service levels—including frequency, number of routes, and service quality. Fare changes could offer significant assistance to help maintain service levels.

Fare revenue represents approximately 20% of the MTS operating budget (about $90 million annually) and is a key source of funding for transit service. MTS periodically updates its fare

San Diego Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego. MTS is also the For-Hire Vehicle administrator for multiple cities in San Diego County.

structure to ensure prices reflect financial needs, market conditions, and ongoing technological improvements.

The last fare change study occurred in 2020 with MTS and NCTD introducing the new fare collection system – PRONTO. At that time, the agencies adopted “best fare” functionality with fare capping, and added unlimited two-hour transfers.

As part of a fare change study, multiple phases of community engagement are conducted to understand rider priorities and how changing fares might affect them.

The current Fare Change Study just completed its first phase of public outreach. This presentation will include a high-level look at current MTS fare costs, peer transit agency fare costs, riders opinion survey results, and an anticipated timeline of activities moving forward.

The MTS Board will not be asked at this time to make any decisions on fare changes. Staff anticipates bringing back recommendations to the Board on any fare changes in 2026.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Metropolitan Transit System

Fare Change Study Update

Board of Directors

Fare Change Study Background

Part of a broader Financial Sustainability Strategy to extend the fiscal cliff beyond 2028

- Exploring a potential revenue measure for the November 2028 ballot
- Adjusting service levels per Board Policy 42
- Shifting select non-essential capital funding to support operations
- Increasing non-fare revenue sources (e.g. advertising)
- Identifying other internal cost savings measures

Fare Change Study Background

- MTS Board voted February 13, 2025, to work with SANDAG and NCTD on a fare change study
- Fares account for approximately 20% of MTS budget (~$90 million annually) to help fund operations and service levels
- MTS periodically conducts fare changes to ensure prices align with current financial conditions, market demands and technology improvements



Recent Fare Changes

Moved toward a more simplified fare structure with introduction of PRONTO

2008

- Increased Trolley one-way fares ~$1.50 to $2.50
- Increased local bus one-way fares $1.75 to $2
- Eliminated free transfers
- Eliminated Trolley zone fare system in favor of flat fare

2009

- Increased Day Passes to $5
- Increased Month Passes:

Adult:
$68 to $72

Senior:
$17 to $18

Youth:
$34 to $36

2019

- Eliminated multi-day Day Passes
- Increased Day Pass from $5 to $6
- Introduction of Senior and Youth Day Pass ($3)
- Lowered Youth Month Pass from $36 to $23
- Increased Senior Month Pass from $18 to $23

2020

- Adopted “best fare” functionality with fare capping
- Added unlimited 2-hour transfers

Peer Fares (Adult)

	TRIMET (Portland)	DART (Dallas)	UTA (Salt Lake City)	MUNI (San Francisco)	EST. 1973 SACRAMENTO REGIONAL TRANSIT (Sacramento)	RTD (Denver)
Adult **One-Way**	**$2.80**	**$3**	**$2.50**	**$3**	**$2.50**	**$2.75**
Adult **Day Pass**	**$5.60**	**$6**	**$5**	**$5.70**	**$7**	**$5.50**
Adult **Month Pass**	**$100**	**$126**	**$85**	**$86**	**$100**	**$88**

Current MTS Fares

Adult **One-Way**	**$2.50**
Adult **Day Pass**	**$6**
Adult **Month Pass**	**$72**

Senior/Disabled/Medicare **One-Way**	**$1.25**
Senior/Disabled/Medicare **Day Pass**	**$3**
Senior/Disabled/Medicare **Month Pass**	**$23**

Youth	**Free**

Pre-Youth Opportunity Pass fare was the same as Seniors

**Day and Month passes include NCTD bus and light rail services .*
COASTER has separate fare structure

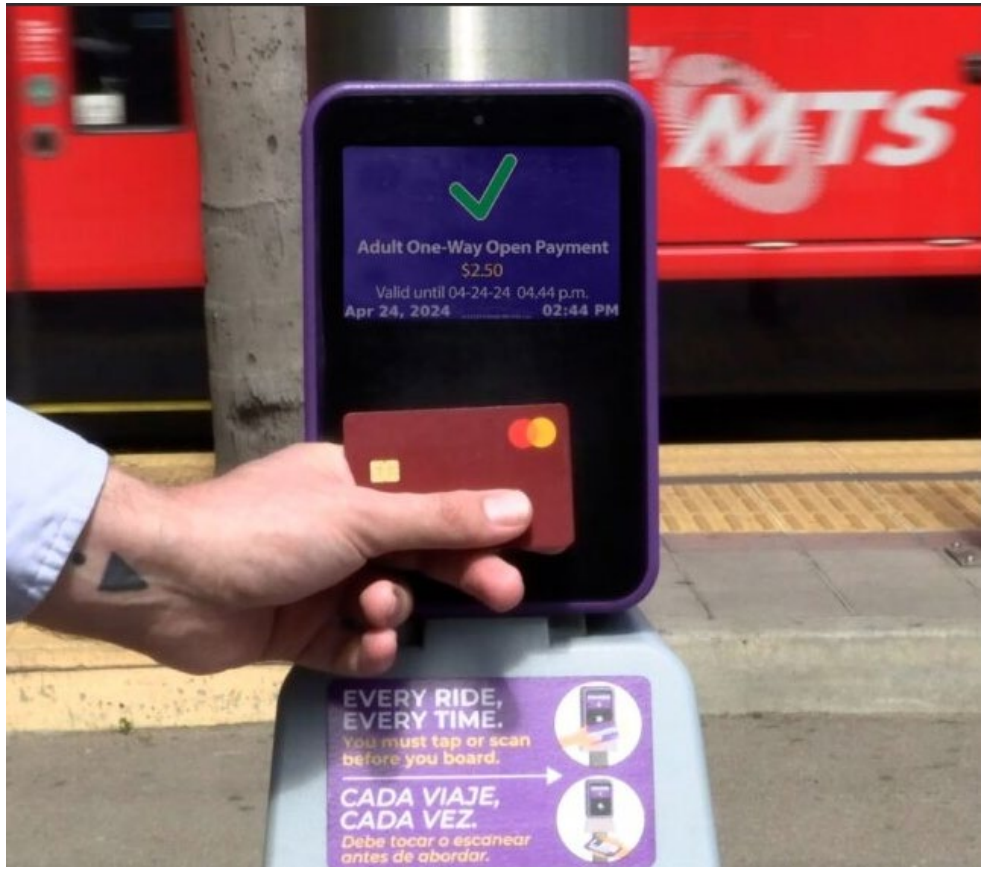
Current MTS Fare Discounts/Promotions

PRONTO Extend	Free transit for those 18-24 years old previously in a foster care system
Family Weekends	Two children 12 and under ride free with paying adult on Sat/Sun
Holiday Friends Ride Free	Free ride for a friend with a fare-paying customer on select holidays
Children 5 & Under Ride Free	Children 5 & Under Ride Free

College Semester Pass	40% discount off Adult Monthly Pass
College Monthly Pass	20% discount off Adult Monthly Pass
Classroom Day Pass Program	$1.50 for a Day Pass
Employer & Business Partner Program	10% - 25% discount off Adult Monthly Pass

Fare Change Study Process

1. Data collection
   - Current ridership and fare revenue, peer agency review
2. Development of fare change scenarios
3. MTS and NCTD Boards and SANDAG Transportation Committee discussion
4. Modeling and analysis
   - Estimated future ridership and fare revenue, Title VI
5. MTS and NCTD Boards will consider potential fare changes, may recommend approval
6. If there are recommended changes, SANDAG Transportation Committee will be asked to consider and approve



Fare Change Study Timeline

OCT - NOV 2025		• MTS and NCTD survey riders to understand their priorities and how changing fares might affect them. • Research potential fare changes to see how much ridership and revenue would be impacted.
JAN - FEB 2026		• Staff propose options for changing fares and get feedback from transit agencies' Board of Directors • Gather more feedback from riders on fare change options at transit centers and public workshops
SPRING 2026		• Staff propose final fare change to Boards (community opportunity to make formal public comments) • MTS and NCTD's Boards of Directors, then SANDAG's Transportation Committee, vote on whether to recommend/approve proposed changes.
SUMMER/FALL 2026		• If approved, fare changes go into effect

Fare Change Study Public Survey

- Public Survey available Oct. 6 – Nov. 7
- **Goals:** Educate about fare change process and understand public sentiment about service levels vs. cost to ride
- **Questions:** Which transit services people ride, how often they ride, rider demographics, rider priorities regarding fares, level of service, and discounts
- More than 5,700 responses received

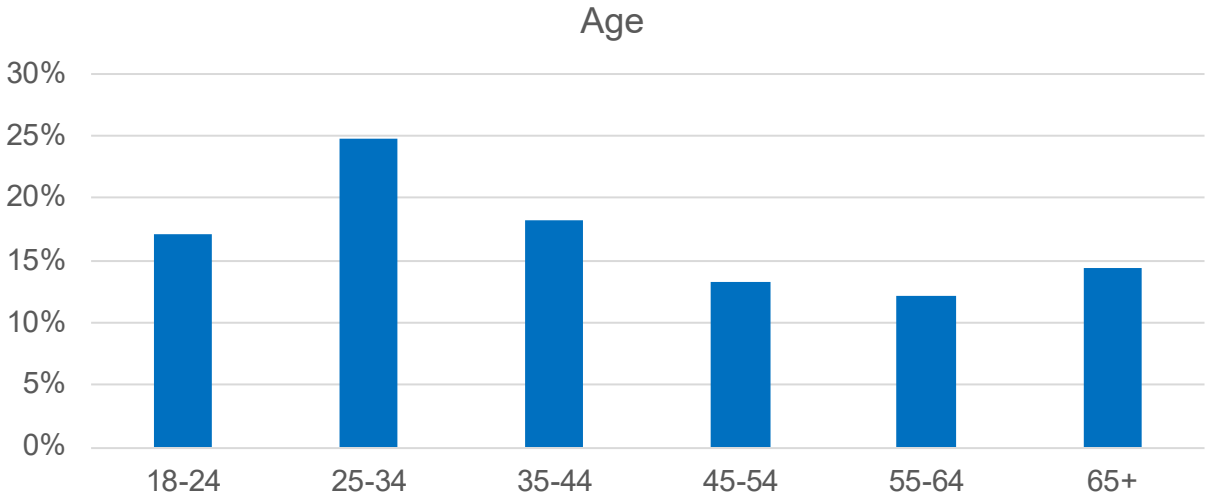


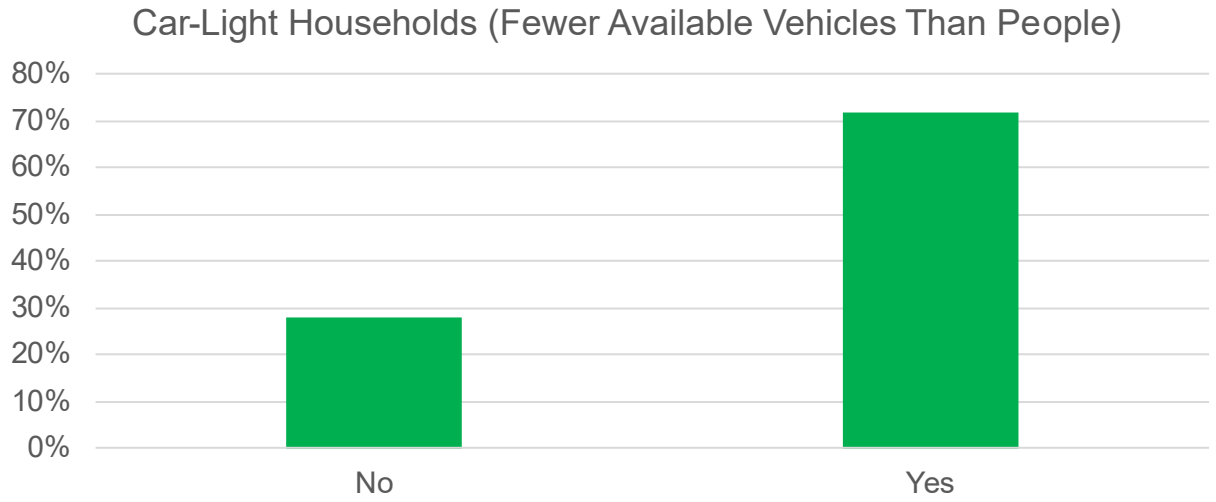
Fare Change Study CAC Survey

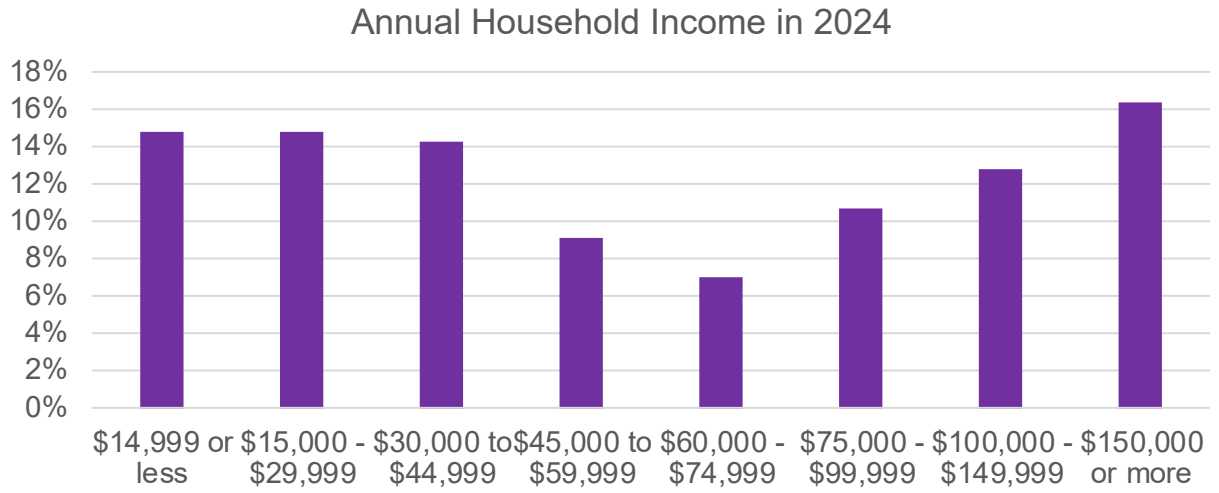
- Same survey questions provided to the MTS Community Advisory Committee
- Meeting on November 19, 2025
- 20 responses
- Participants included representatives from Community Based Organizations, business and civic groups, transit and environmental advocacy groups, labor and university leadership



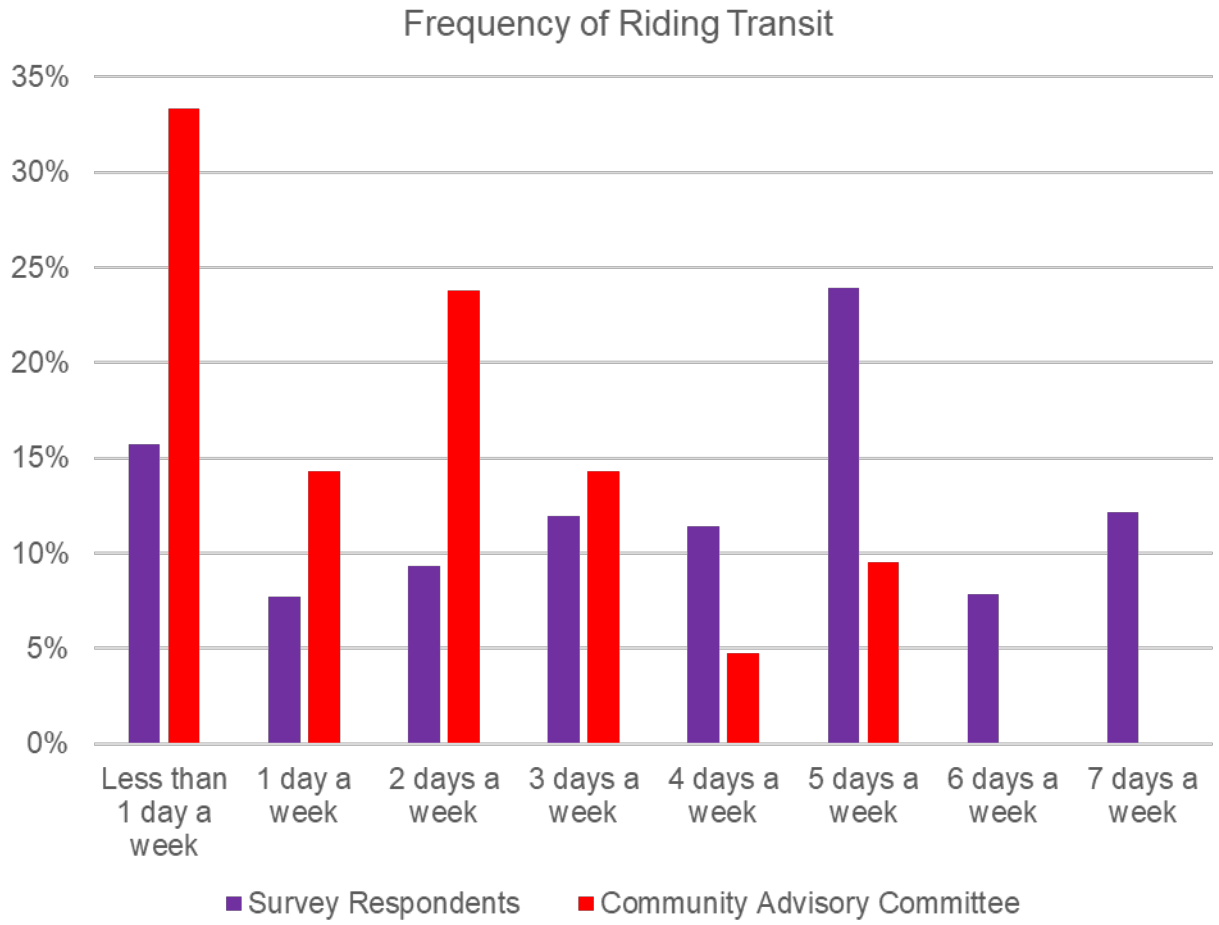
Fare Change Study Draft Survey Results

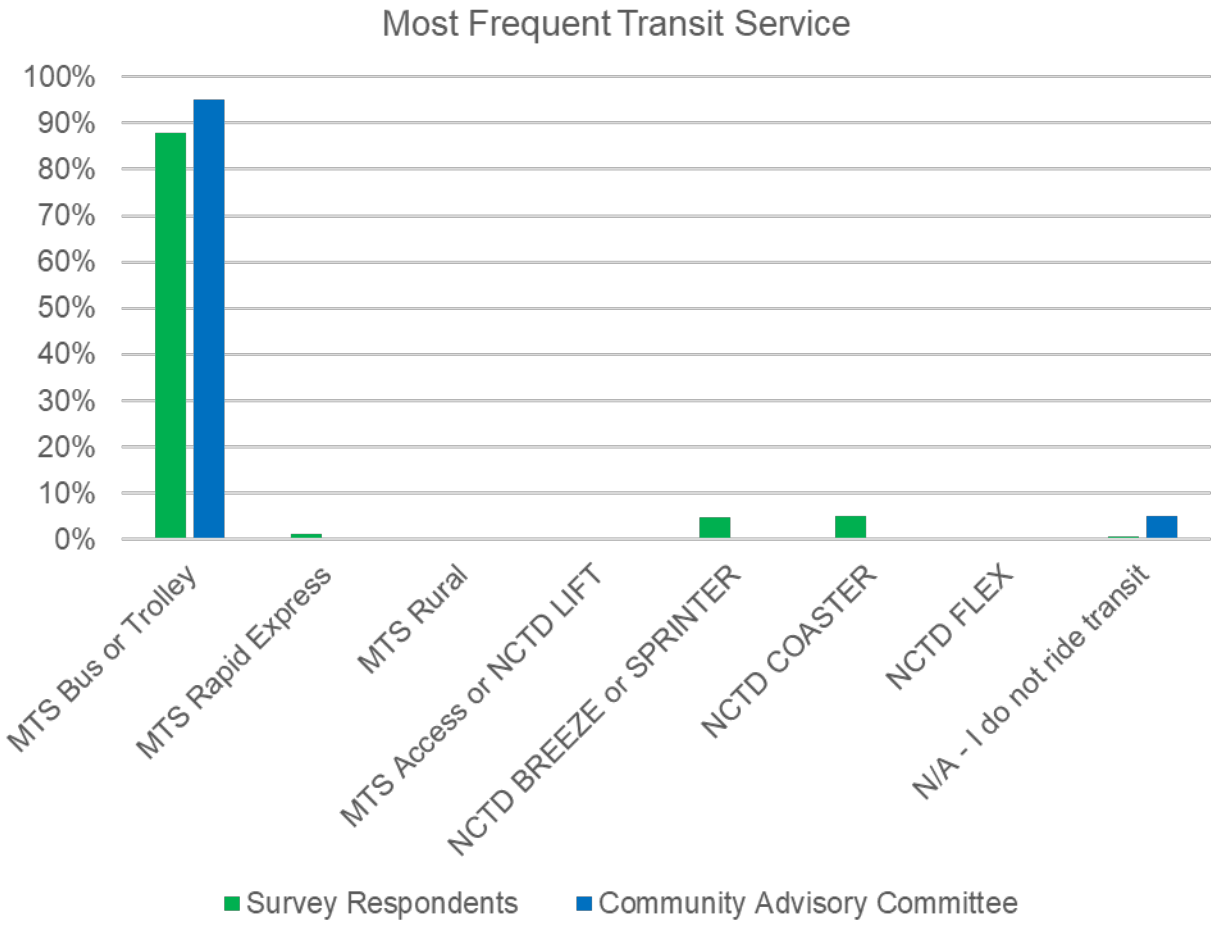




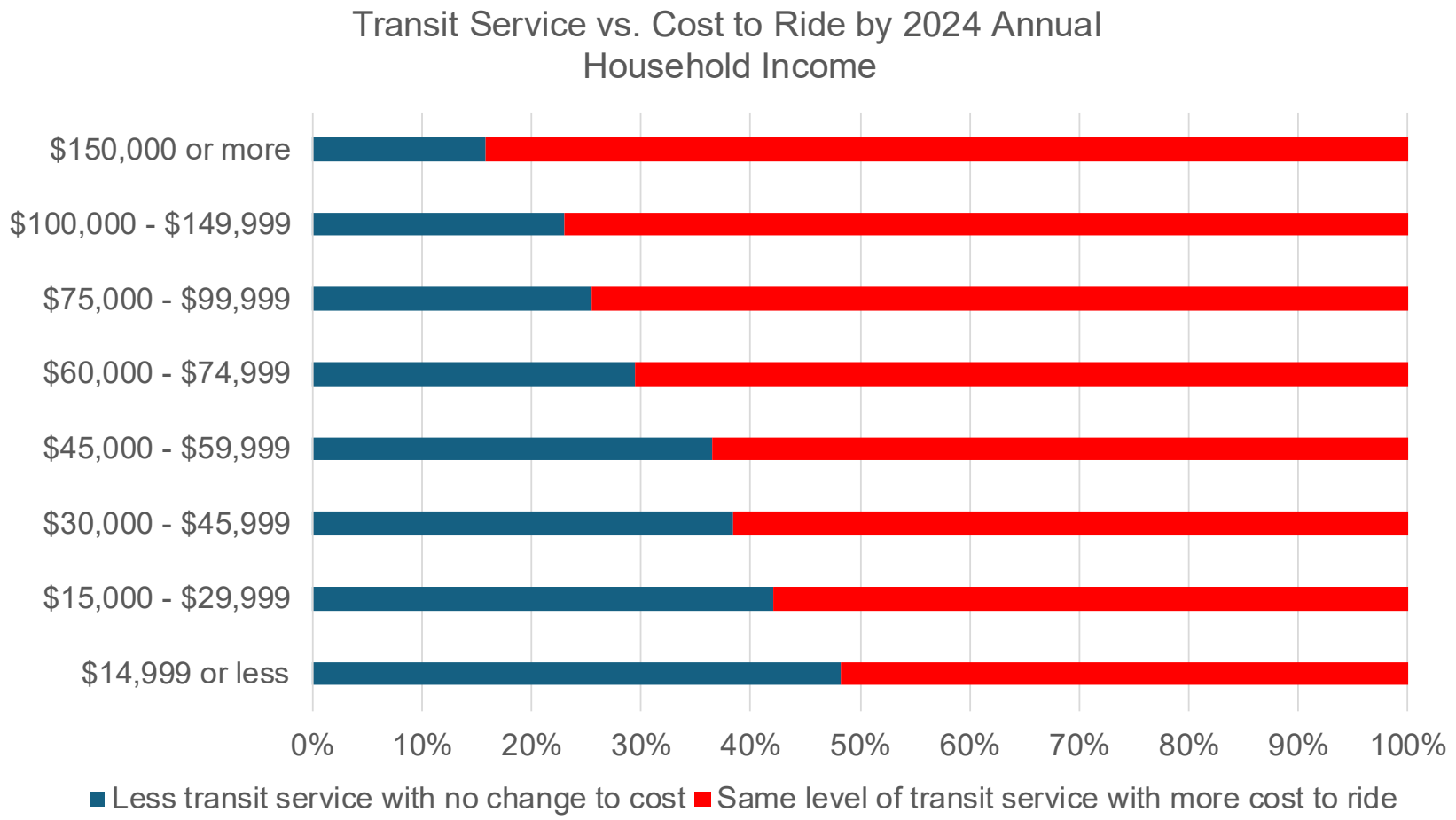


Fare Change Study Draft Survey Results



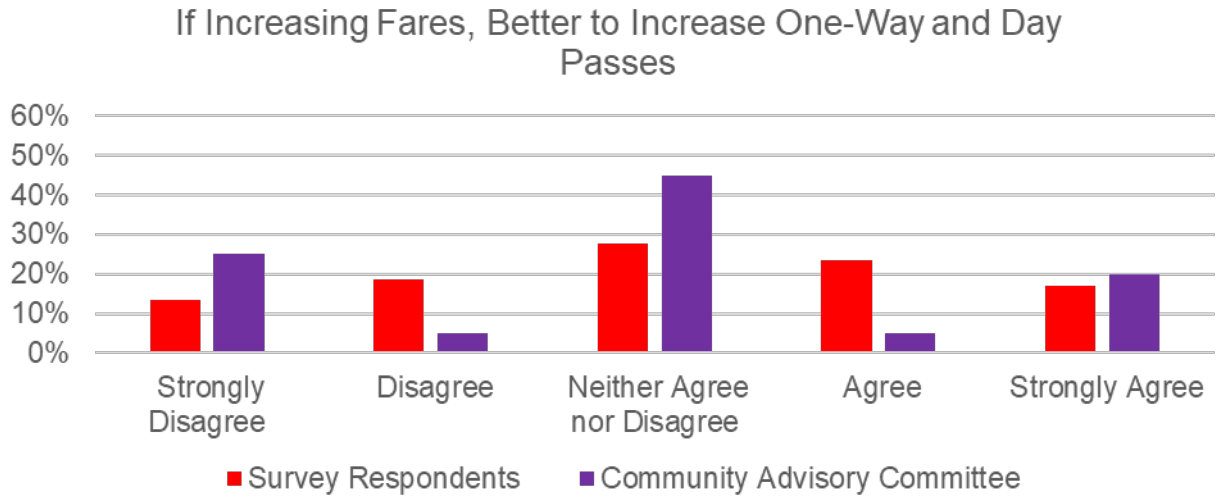


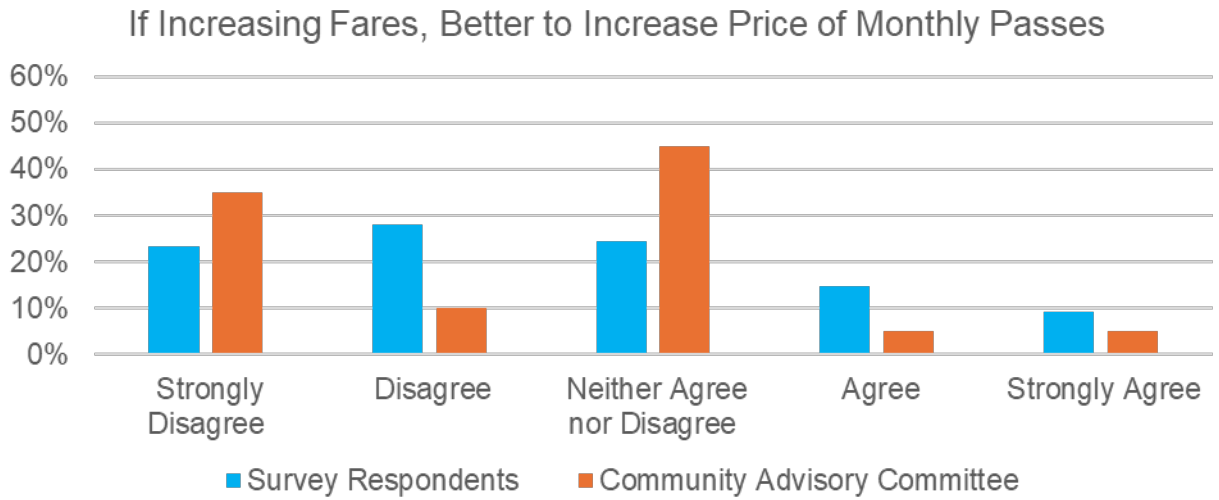
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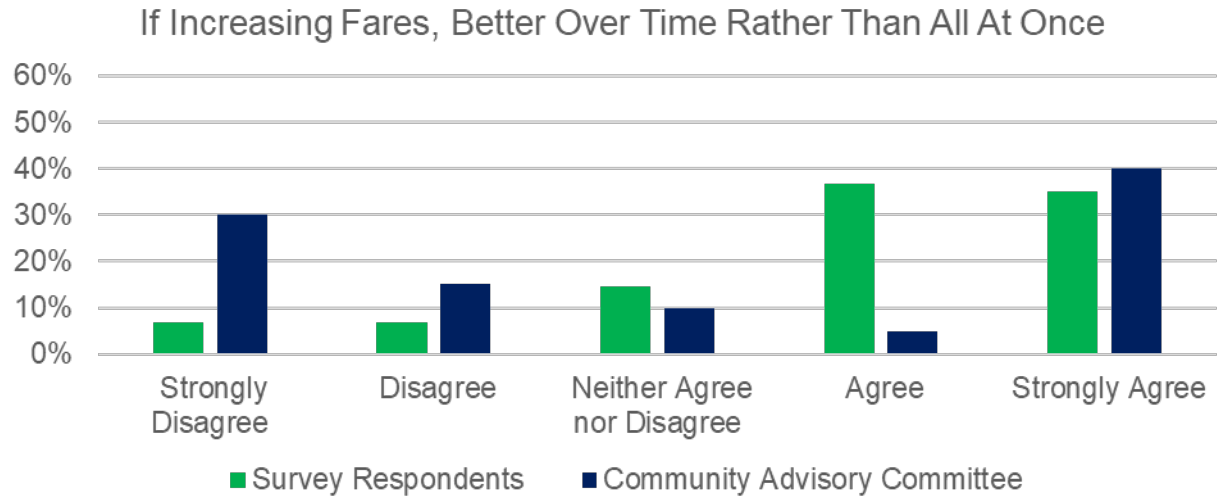


100% of Community Advisory Committee attendees selected “Same level of transit service with more cost to ride”

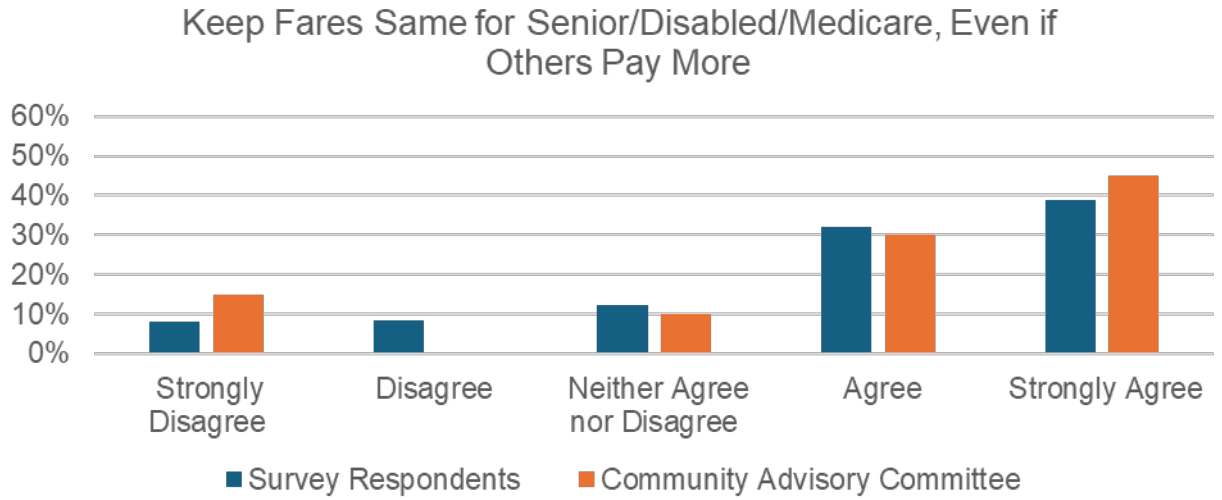
Fare Change Study Draft Survey Results

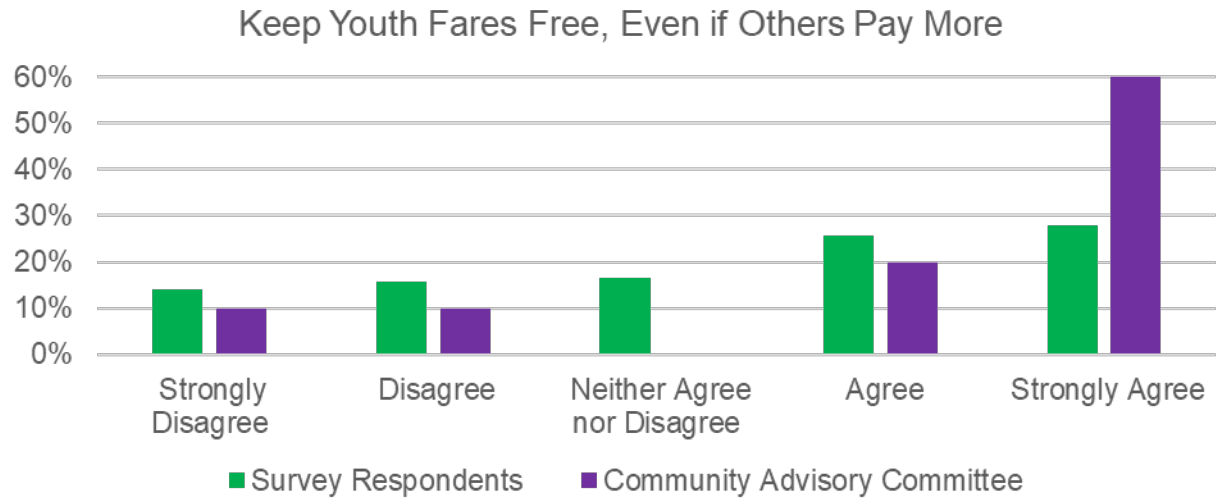


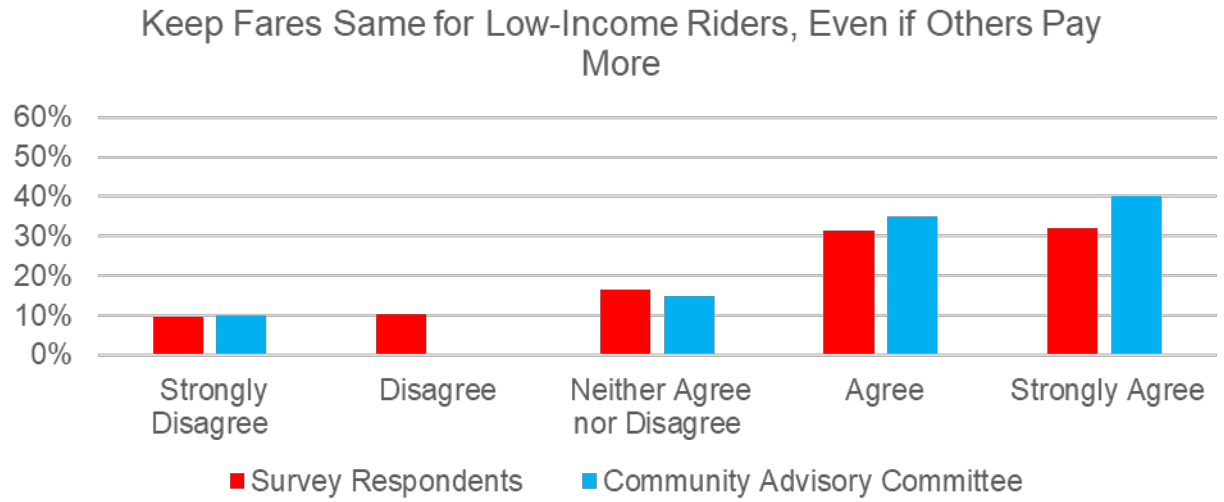




Fare Change Study Draft Survey Results

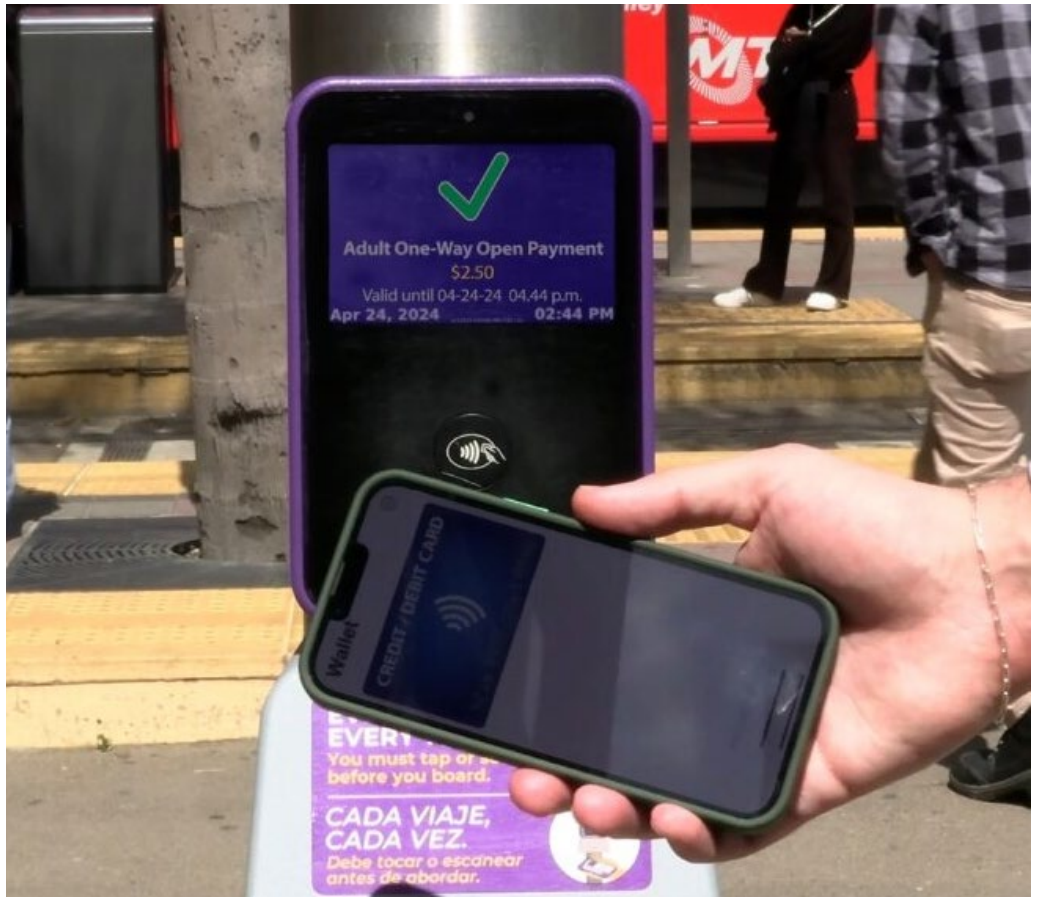






Fare Change Next Steps

- Begin running scenarios for fare changes
- Planning for Phase 2 Public Outreach (Feb-March)
  - Community workshops
  - Fare change scenario discussions



Questions/Comments

Metropolitan Transit System

Agenda Item No. 14

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Fiscal Year 2025 Annual Operating Reports (Brian Riley and Devin Braun)

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

Staff from the Rail and Bus Operating Divisions will provide a comprehensive summary of Fiscal Year 2025 service performance. The presentation will highlight key operational and service outcomes achieved during the year, including updates on safety initiatives, services, capital improvement projects, special events, and other notable accomplishments.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

Metropolitan Transit System

Fiscal Year 2025 Annual Operating Reports

Board of Directors

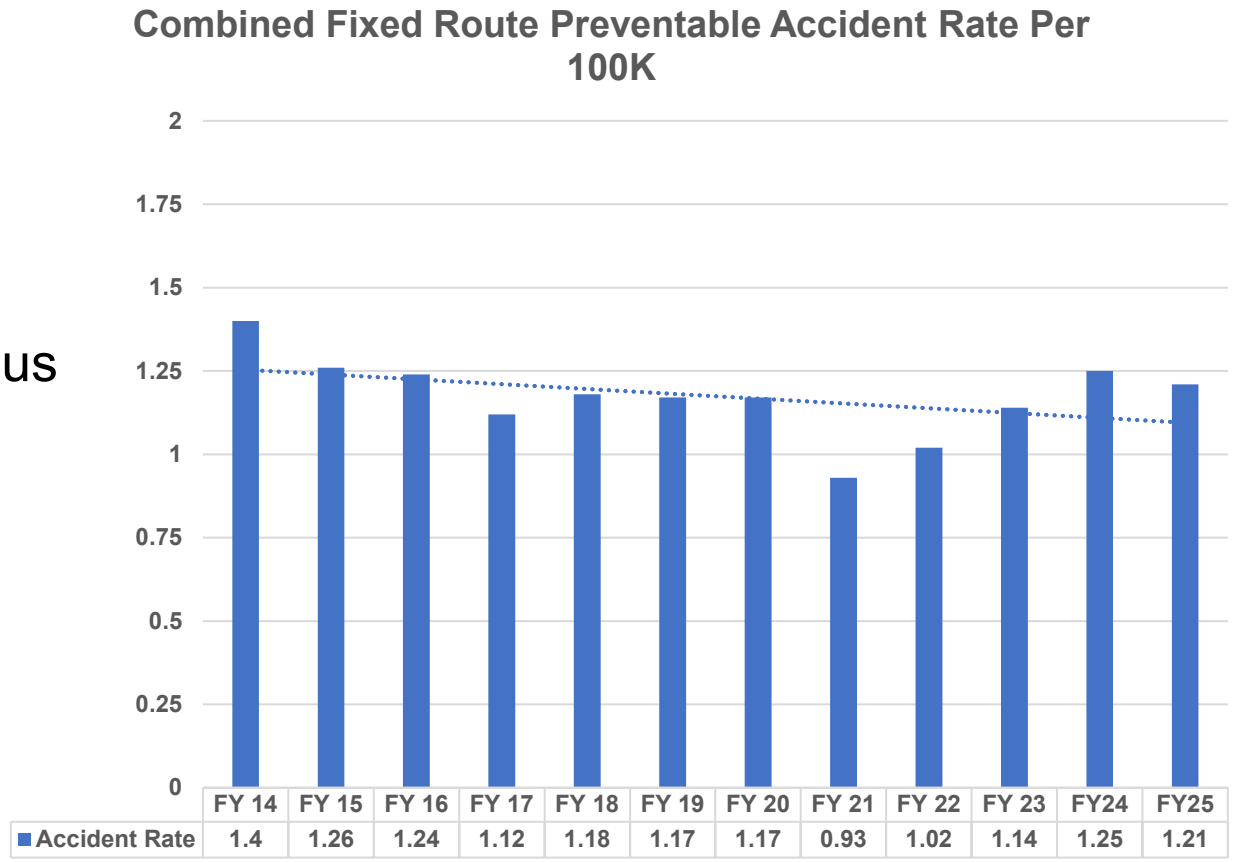
MTS Bus Fiscal Year 2025 Year End Report

Transit Safety

Safety First: Every Trip, Every Day

- Improvement in accident rate in FY25
- Successfully completed CHP inspections at bus divisions
  - No out-of-services buses
- Refreshed the Think FAST Safety campaign





	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY24	FY25
Accident Rate	1.4	1.26	1.24	1.12	1.18	1.17	1.17	0.93	1.02	1.14	1.25	1.21

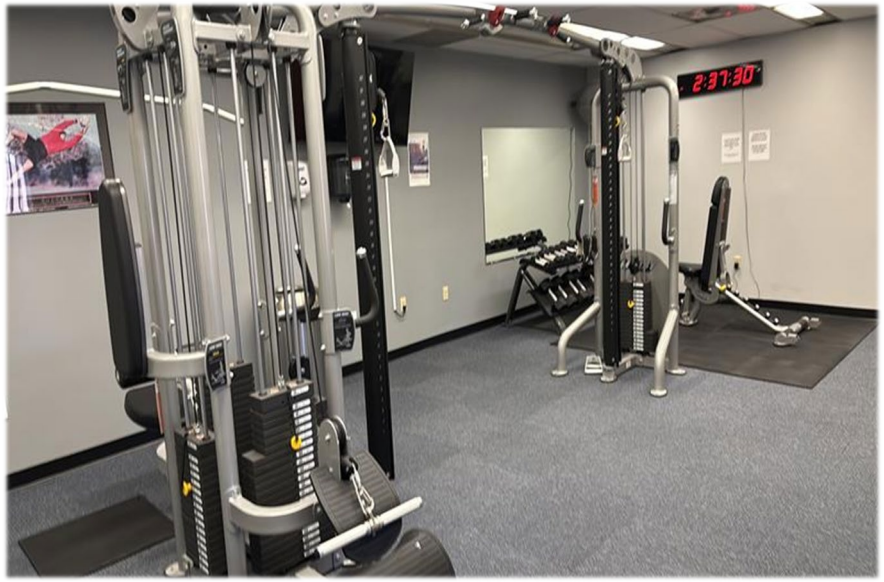


In-House Operations

- Reached full bus operator staffing levels in FY25 (500)
- Added cup holders to newly purchased buses
- Held several "Bites with the Boss" events (popsicles, bagels, barbecue) for employee morale.
- Constructed new gym for bus operators and employees at Imperial Avenue Division









Contracted Services and Passenger Facilities

- Successfully concluded the Bus on Shoulder (BOS) pilot project
- Installed first solar lighting bus stop topper (43rd and El Cajon Blvd)
- Launched overnight bus service (Route 910)







Capital Projects

- Built new fenced in area for rural route buses in Campo, CA
- Completed the install of new bus hoist at the Kearny Mesa Division (KMD)
- Remodeled bathrooms
  - Service lanes, KMD shop, admin building
- Commenced construction at Imperial Ave Division (IAD) for the ZEB charging infrastructure.
- Installed new HVAC units at KMD
- El Cajon Maintenance Division Bird Netting project completed

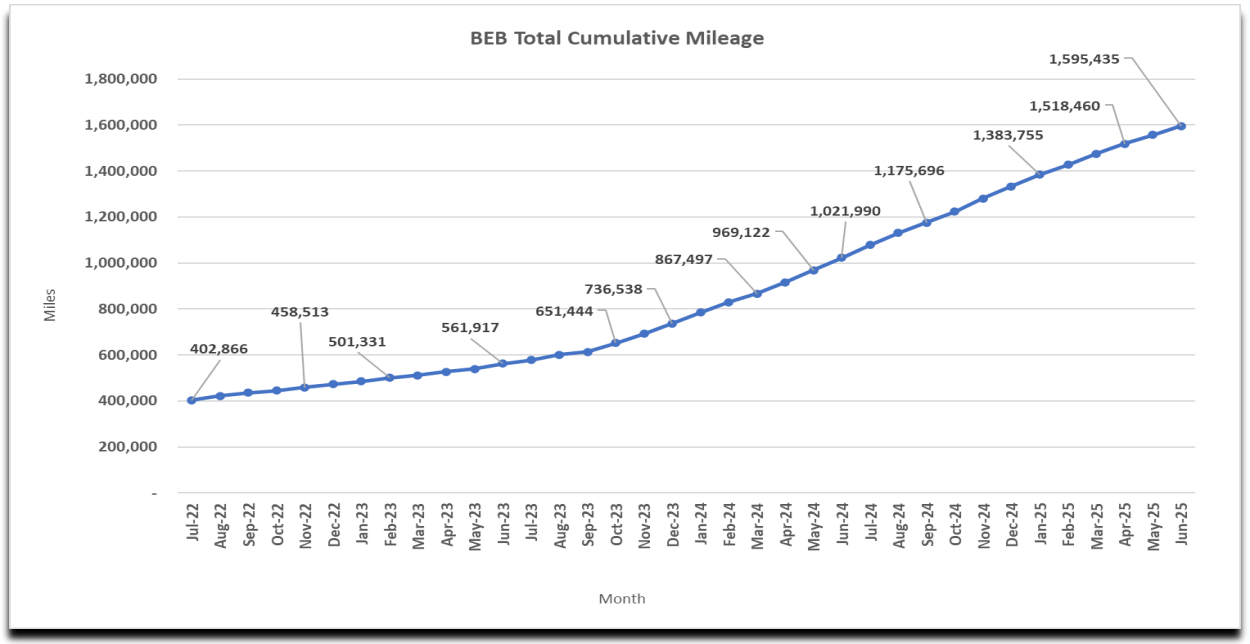






ZEB Transition

- 1.6 Million BEB miles through the end of FY25
  - 1.7 million as of October 2025
- Received 13 40ft New Flyer Battery Electric Buses (BEB)
- BEB Charging
  - KMD Overhead Charging Phase design for 38 charging positions completed
  - Non-Revenue Vehicle charging design for 12 charging positions at IAD with 6 dual plug-in Level II chargers (30% design)
  - EC ZEB Master Planning completed BEB charging in 3 phases for 78 total charging positions





ZEB Transition Continued

- BEB Fire and Life Safety Plan kicked off
  - Review of existing fire detection and suppression systems in place at all divisions and to determine if up to industry or code standards specifically related to ZEB thermal events
- Received two Ford E-Paratransit vans with chargers
- ZEB Transition Plan update
  - Updated cost figures for cost of ownership out until 2040
  - Total cost of ownership estimated to be approximately $833 Million



Fleet Highlights

- Mean distance between failures improved slightly from FY24 to FY25 (in-house)
- Received and placed (5) 60ft CNG buses into service.
- Ordered and completed pre-production for (38) 40’ CNG and (13) 40’ BEB (in service now)
- Migrated to the new Luminator Mset camera system with live view on most in-house buses.
  - Provides streamlined continuous access to video and fleet information in real time.





MTS Access Services

- MTS Access FY25 ridership was nearly 351,000 – an 11% increase from FY24 combined (70% of pre-pandemic levels)
- On Time-Performance increased from 88% in FY24 to 90% in FY25
- Adopted majority of the best practices suggested by the February 2024 APTA Peer Review.
  - Same-day reservations
  - 5-year certification (3-year prior)
  - Discontinued the “Do Not Leave Alone” policy





Support Services

- Received nearly 306,000 customer phone calls with an average wait time of just over 40 seconds and abandonment of less than 3.5%.
- Processed over 11,000 cases of customer feedback, including more than 1,000 customer compliments.
- Completed the transition to full verification of eligibility for all reduced fare riders by expanding the institutional website functionality to allow organizations to verify the eligibility of their participants.
  - PRONTO team processed nearly 30,000 reduced fare cases.
  - Over 99% of reduced fare PRONTO accounts now fully verified.
  - Online Reduced Fare Application was also recognized as the WTS Technology for Transportation Award winner for 2025.
- Provided Passenger Support for more than 270 special events/rail closures/outages



Safety and Service Awards 2025



- Recognized over 400 employees
  - Bus Operators, Maintenance and Support Services
- 14 Bus Operators received million-mile award for first time.











2025 Bus Mechanic Apprenticeship Graduation

- 9 Mechanic Apprentices graduated
- First female graduate





2025 Bus Roadeo

- Partnered with NCTD, hosted at MTS Imperial Avenue Division in February 2025
- First Bus Roadeo in 20 years
- 26 Operators, 6 maintenance Teams from MTS and NCTD
- Winners competed in APTA International Bus Roadeo









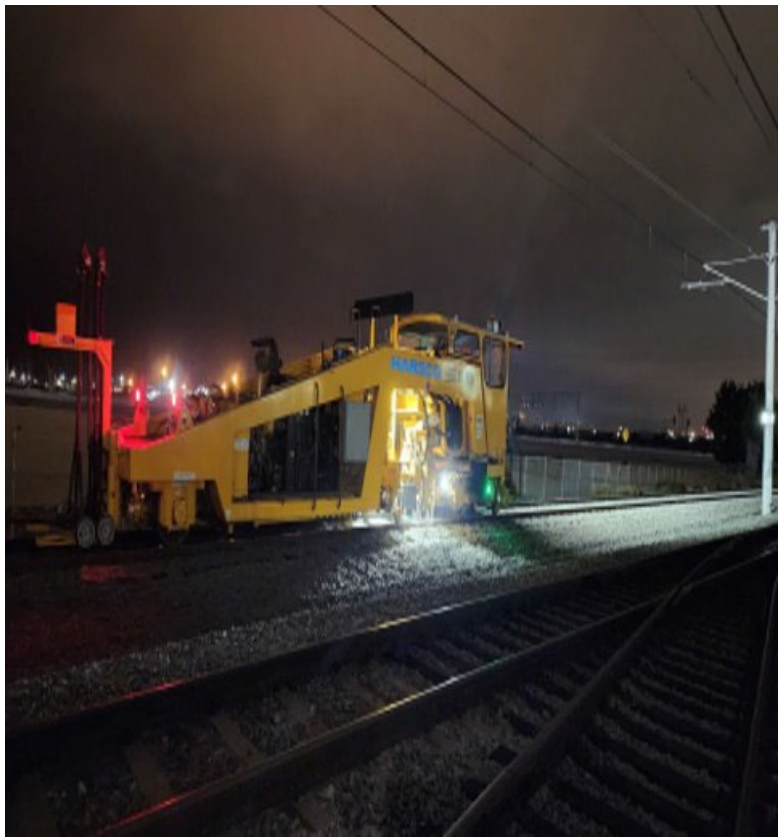


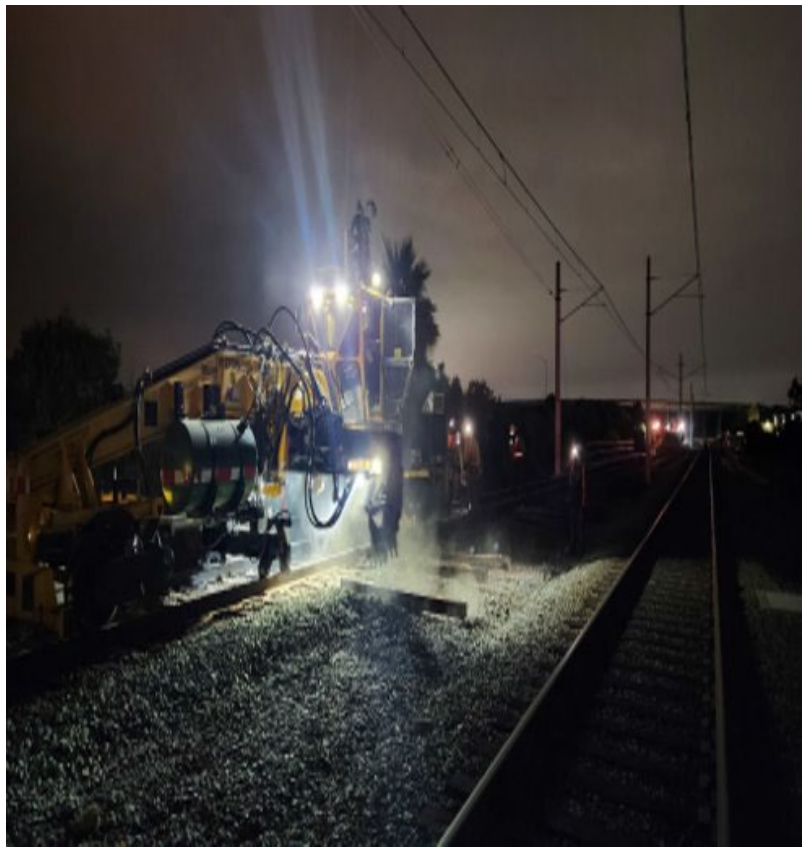
MTS Rail Fiscal Year 2025 Year End Report



CAPITAL IMPROVEMENT PROJECTS

BLUE LINE TIE REPLACEMENT PROGRAM





FTA Bridge Inspection



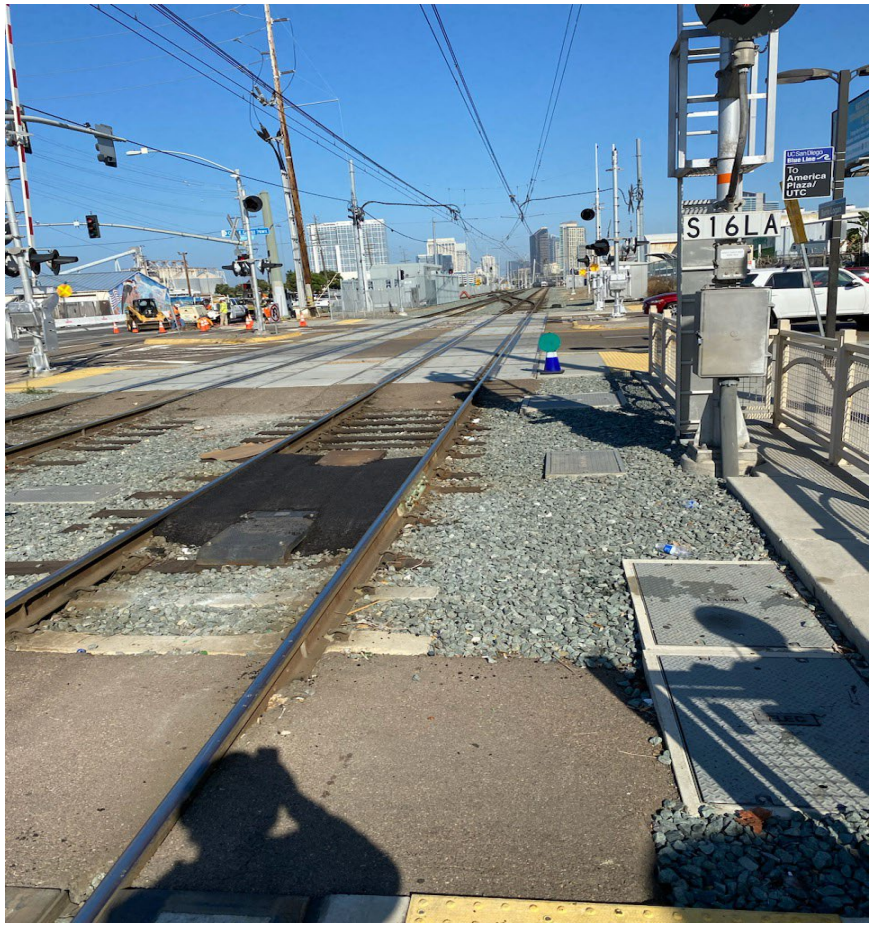


IMPEDANCE BOND COPPER WIRE HARDENING

BEFORE



AFTER



69TH STREET CROSSING SINK HOLE REPAIRS



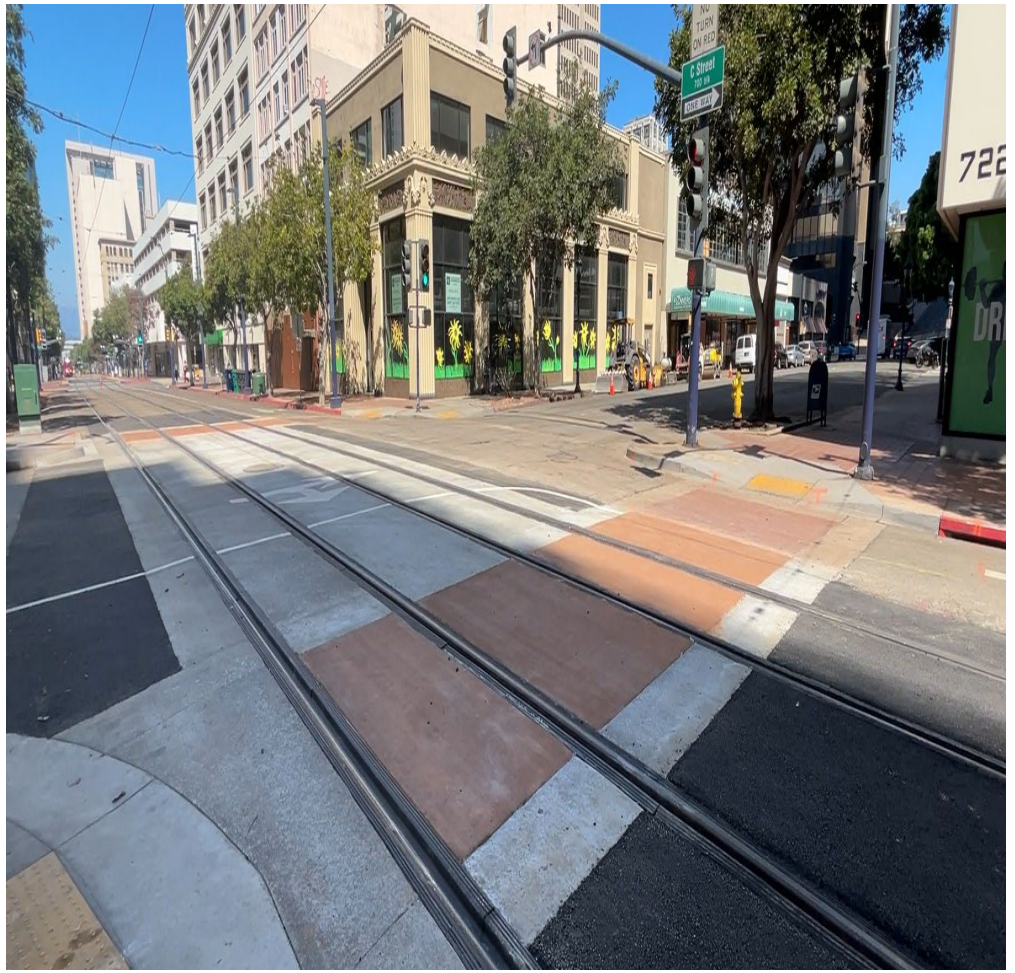






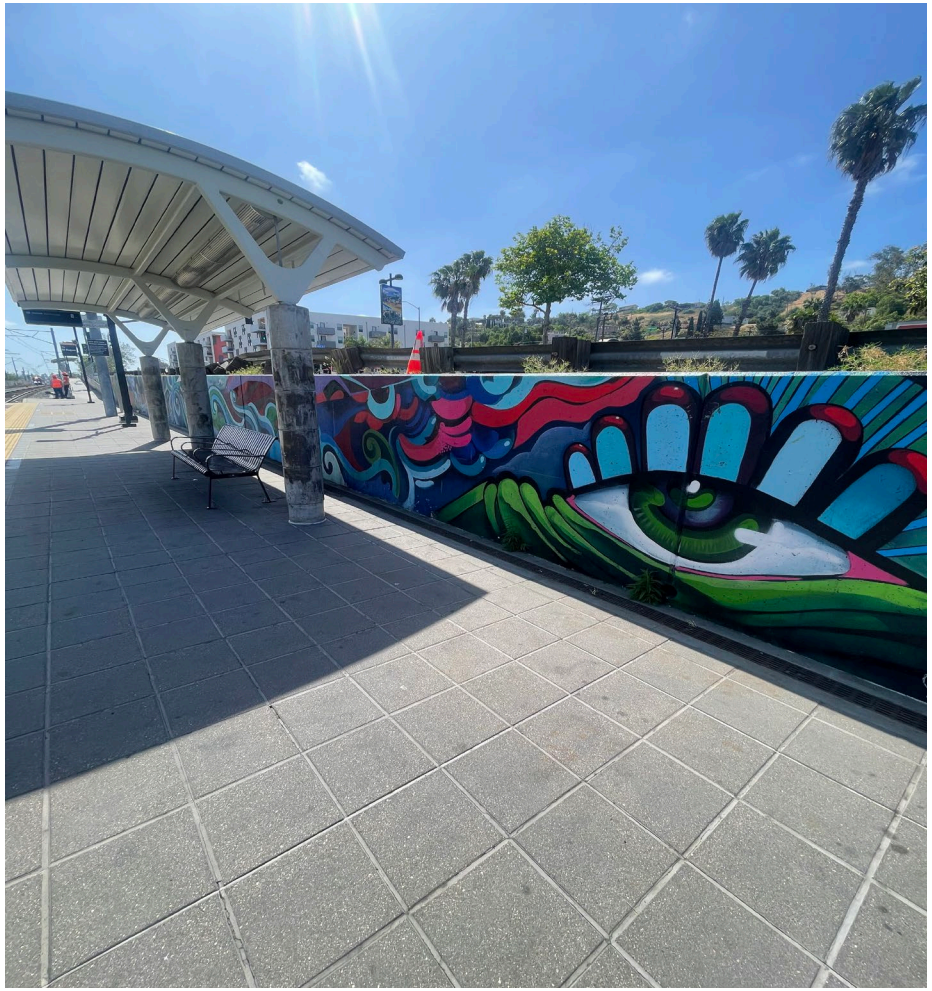
7TH & C STREET CROSSING REPLACEMENT





SYSTEM BEAUTIFICATION PROJECTS

62ND STREET MURAL





E STREET WALL MURAL





E STREET STATION MURAL





GROSSMONT STATION MURAL

BEFORE



AFTER



GROSSMONT STATION MURAL LIGHTING ENHANCEMENTS





BEYER BLVD BRIDGE BEAUTIFICATION









GRANTVILLE LANDSCAPE

BEFORE

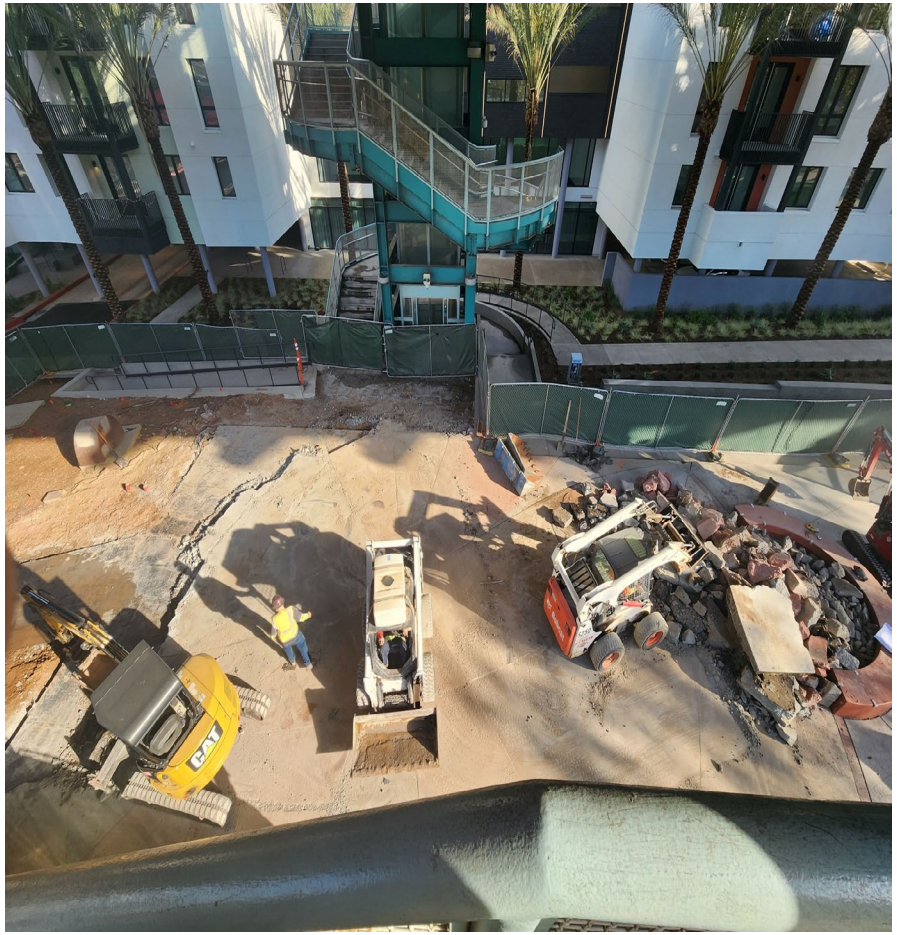


AFTER

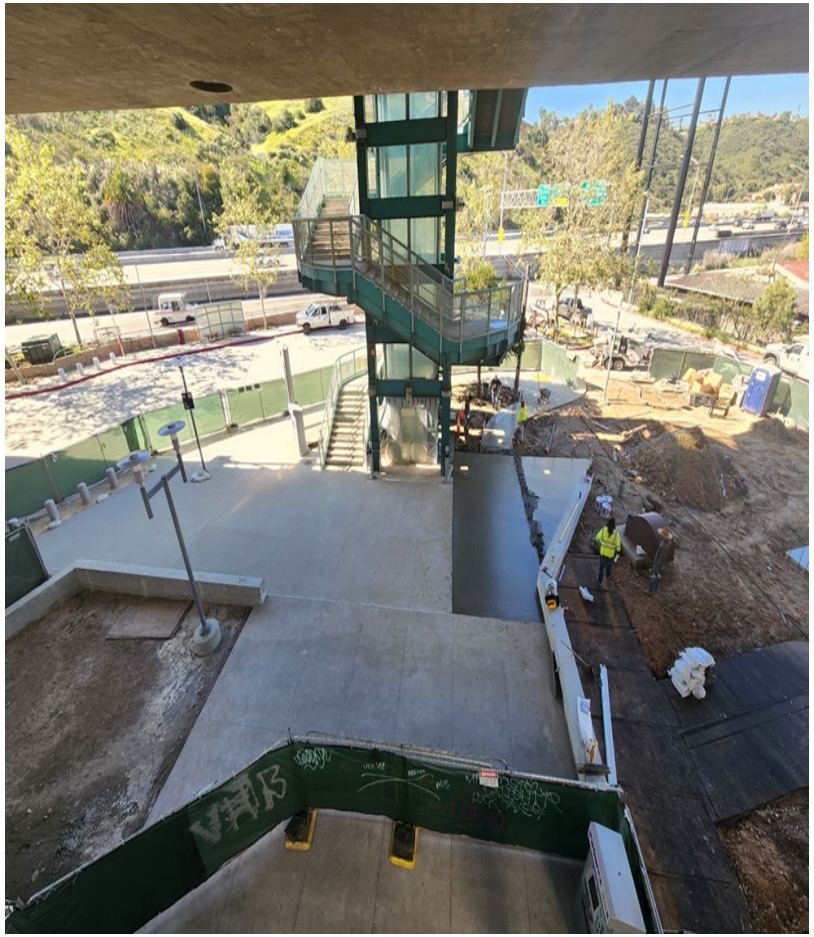


GRANTVILLE SURFACE REFRESH

BEFORE



AFTER



GRANTVILLE PAINTING





SYSTEM CUSTOMER-FACING ELEMENTS

LEMON GROVE DEPOT LIGHTING



OLD TOWN PED TUNNEL LIGHTING



BIG BELLY TRASH CANS REPLACEMENT DOWNTOWN AND BLUE LINE

BEFORE

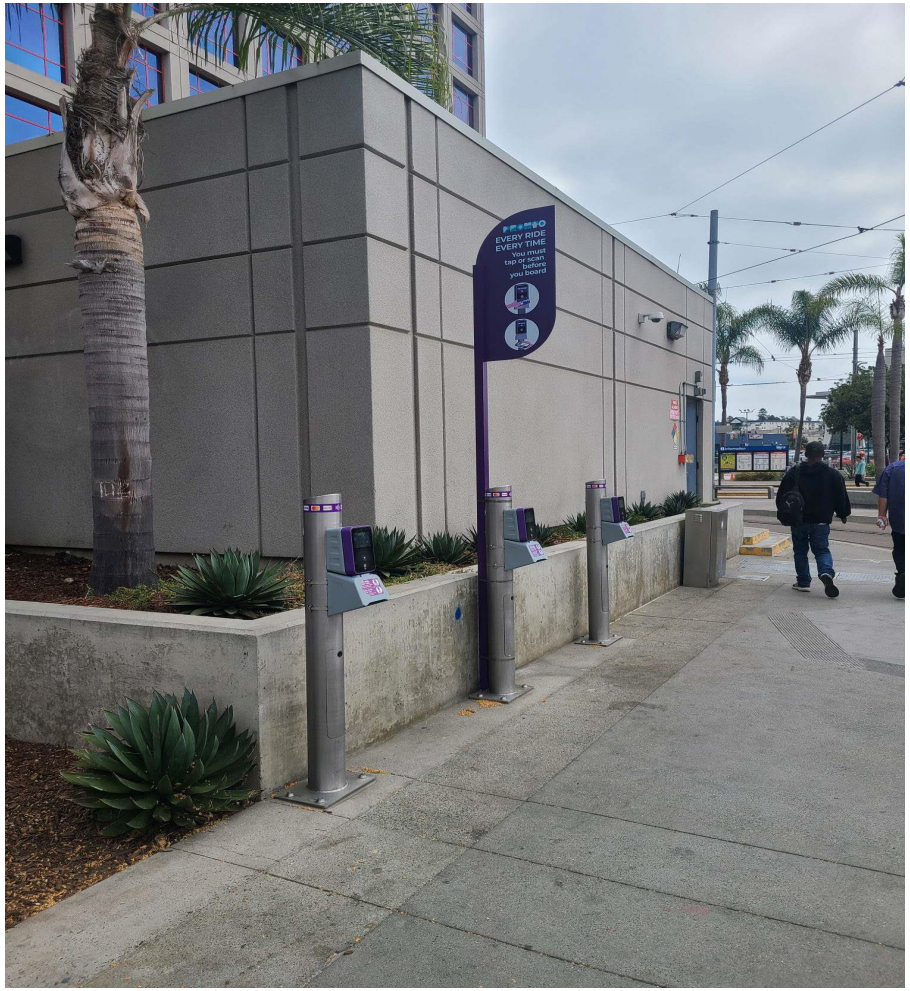


AFTER



STATION VALIDATOR FLAGS







5000-SERIES VEHICLE COMMISSIONING

5000 SERIES VEHICLE COMMISSIONING

SD-10 Procurement

- 22 Option vehicles have been delivered to San Diego, tested, commissioned, and placed in service as of June 2025.



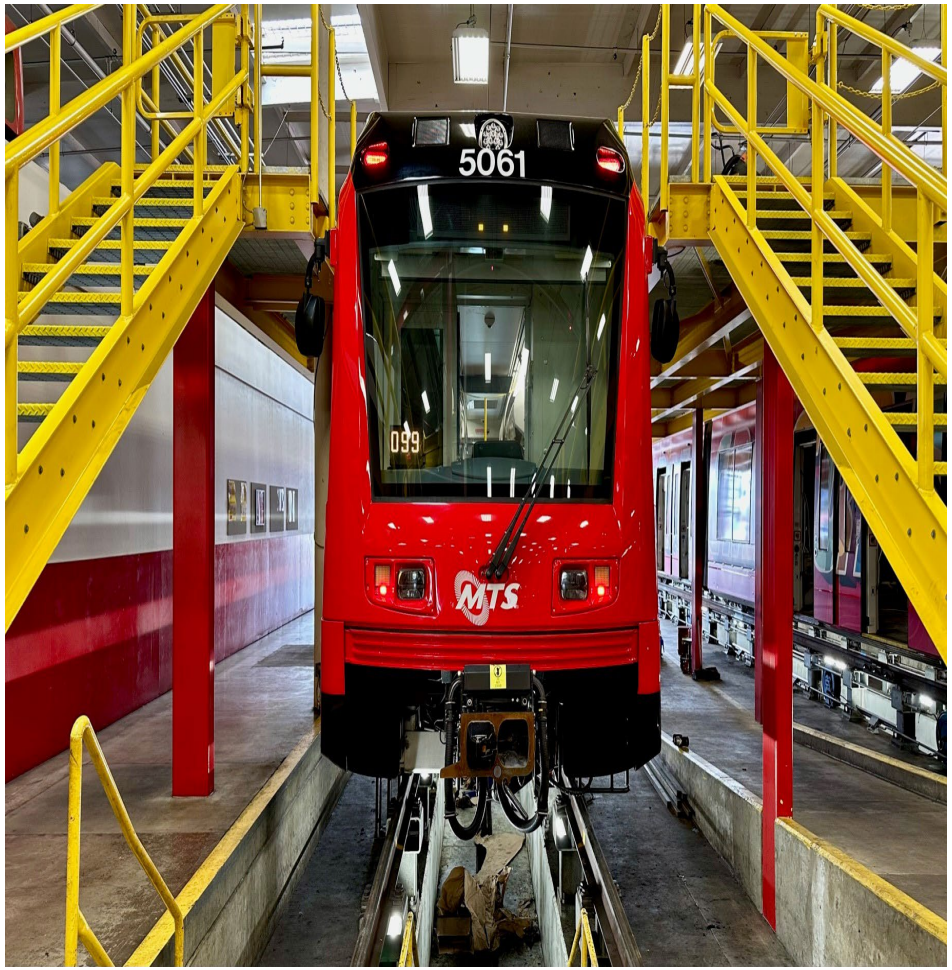
5000 SERIES VEHICLE COMMISSIONING





Vehicle Commissioning 5071-5092







MTS RAIL VEHICLE SECOND LIFE PROGRAM

27 SD100 VEHICLES HAVE BEEN SHIPPED TO MENDOZA TO SUPPORT THE SECOND LIFE PROGRAM





52 SIEMENS SD100 LRV FLEET

- 13 LRVs have been recycled (Cost $10K per unit)
- 39 SD100 LRVs have been donated to provide service in Mendoza, Argentina
- 27 have been shipped, and the anticipated final shipment is in 2026

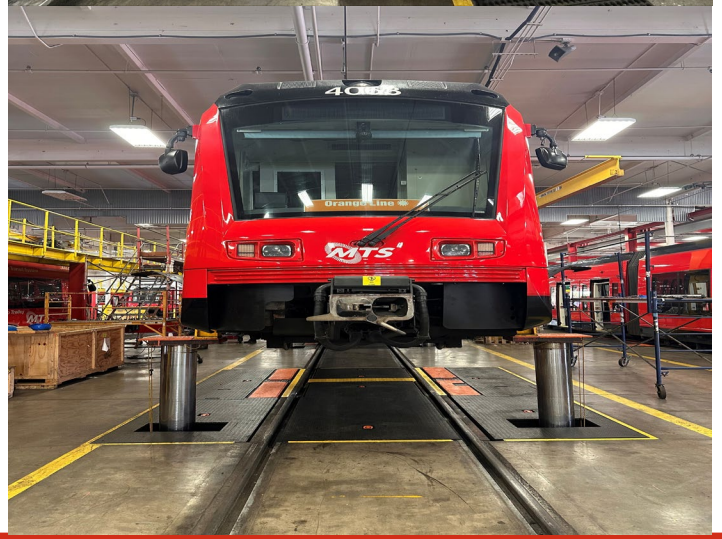


WHEEL TRUE MACHINES & LIFTING HOIST FLOODED EQUIPMENT REPLACEMENT AND REPAIRS



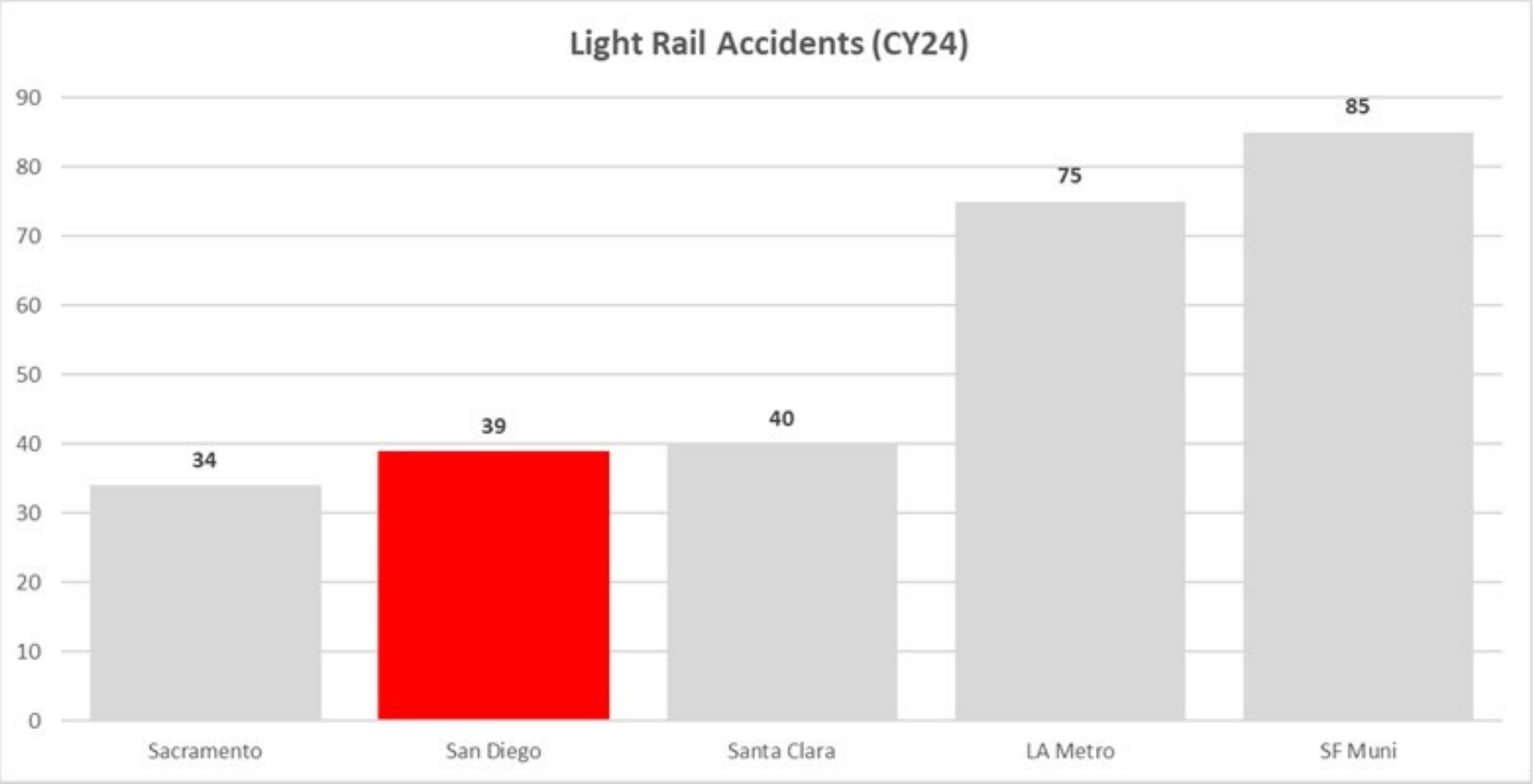




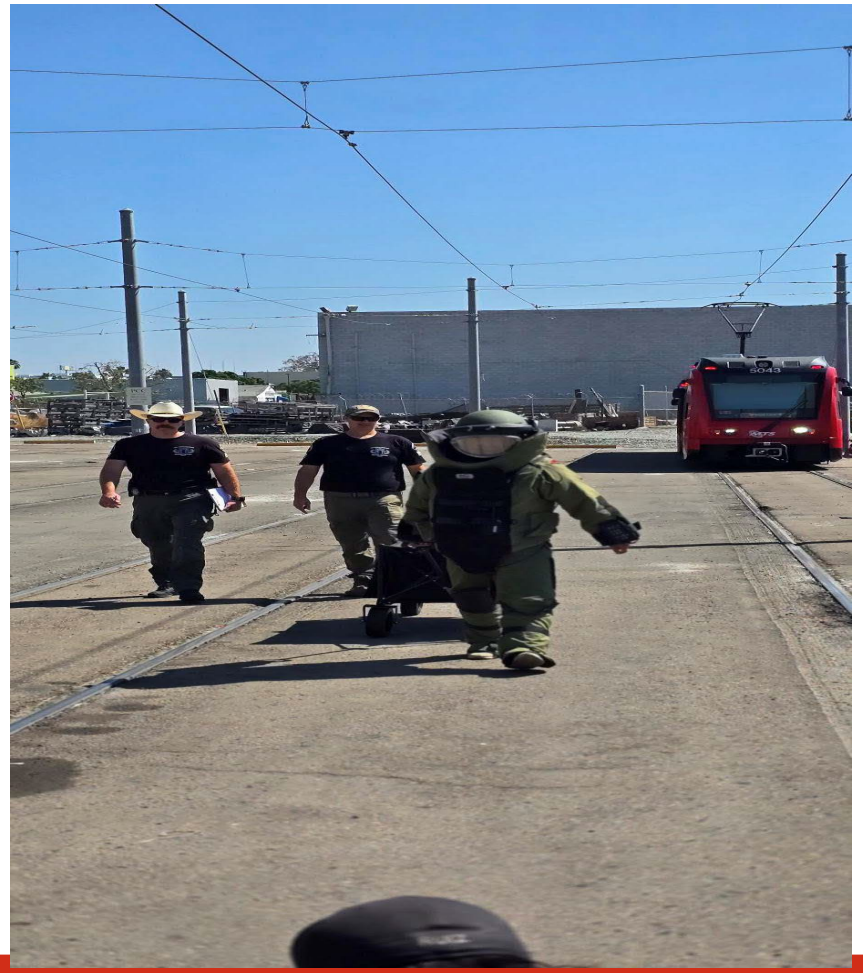



RAIL SAFETY AND
OPERATIONS

ACCIDENTS BENCHMARKING



System and Vehicle Familiarization
Outside Agency Personnel Training & Emergency Drills





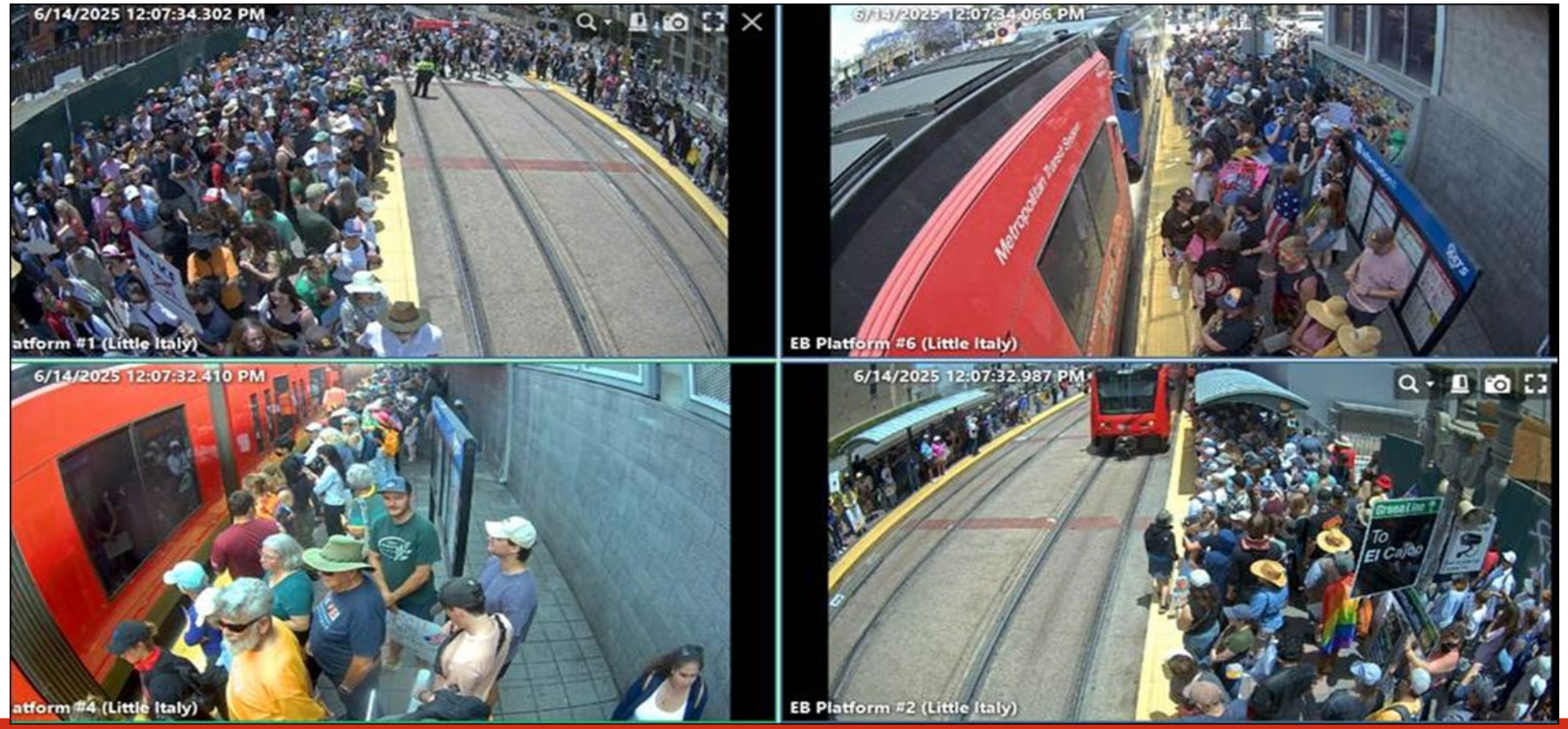
SPECIAL EVENTS FY25

- 263 special events (and on pace for more in CY26)
- 193 of these events required extra service.
- Roughly 1,813 extra trips operated
- Estimated 1,035,380 extra passengers

Event List - Calander Year 2025			
Petco Park	No. of events	Est. Extra Trips	Approximate Extra Ridership
Padres regular season	82	392	481,200
Petco Concerts (Elton John, Chris Brown, Etc)	31	14	8,500
San Diego Rodeo	3	3	5,000
Savanah Bananas	2	12	12,400
WWE Survivor Series	1	***6***	4,500
Snapdragon Stadium			
Snapdrago Soccer Leagues (SDFC + Wave)	35	240	104,000
SDSU Football	7	81	25,200
SDSU Soccer	2	0	400
She Believes Cup	1	6	1,200
International Soccer/Gold Cup	2	4	480
Concerts (Shakira, Niteharts 2 Days)	3	14	8,000
Monster Jam	4	14	8,900
Supercross	1	3	3,400
San Diego State University			
Viejas & OAT Events (Basketball, Concerts, Mojo)	82	32	21,900
Other Major Events			
Comic-Con	4	954	306,200
La Mesa Oktoberfest	1	20	6,100
Big Bay Boom	1	8	8,000
No Kings Protest	1	10	30,000
Closures and Single Tracks			
Full Days	21	-	-
Single Tracks	4	-	-
Totals			
Event Extra Ridership Totals	263	1,813	1,035,380

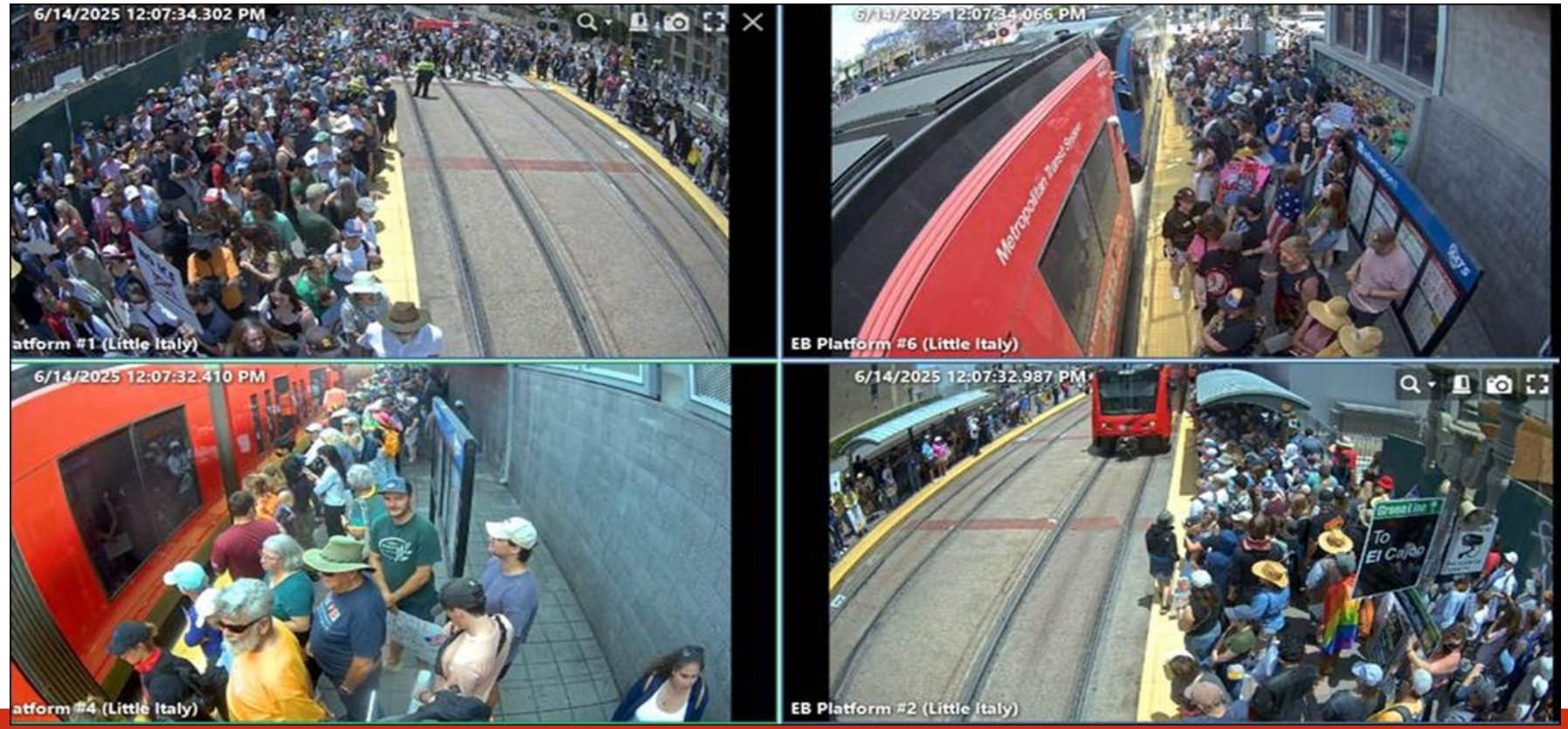
NO KINGS PROTEST JUNE 14, 2025

- Enhanced Service on Blue & Green Lines
- Regular Saturday Ridership Averages 95,000
- 124,000 Passengers (30,000 difference)
- Largest Saturday Crowd Since Comic-Con 2024



NO KINGS PROTEST OCTOBER 18, 2025

- Enhanced Service on Blue & Green Lines
- Regular Saturday Ridership Averages 95,000
- 125,000 Passengers (30,000 difference)
- Largest Saturday Crowd Since Comic-Con 2024



COMIC-CON 2025





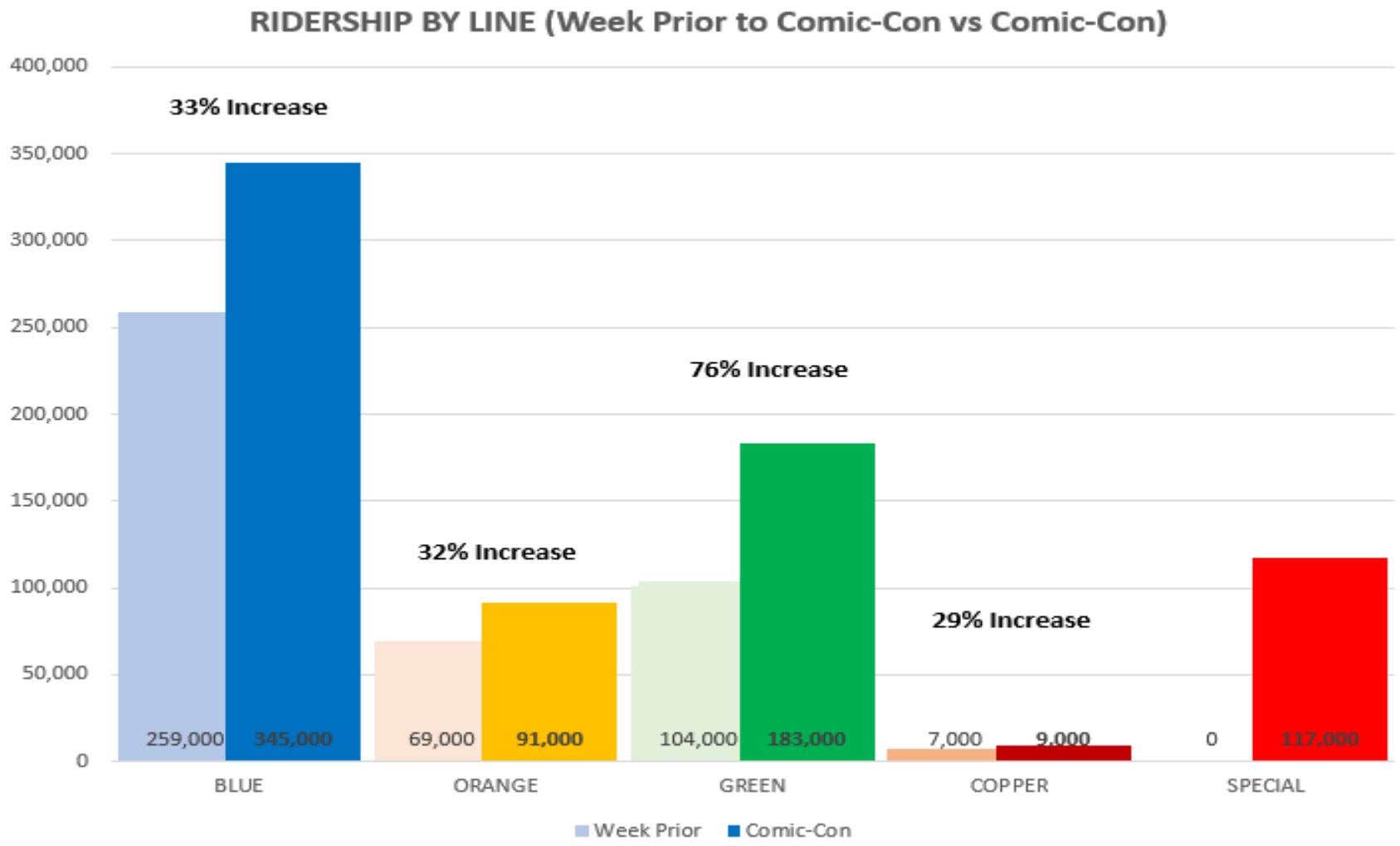
COMIC-CON 2025

- 954 Additional trips operated between Thursday and Sunday to accommodate Comic-Con ridership

2025			
	Comic-Con	Previous Week	NET
Thursday	186,507	124,960	61,547
Friday	206,831	127,680	79,151
Saturday	209,353	98,611	110,742
Sunday	142,939	87,853	55,086
TOTAL	745,630	439,104	306,526
Net Change	306,526		
Pct Change	69.81%		

2024			
	Comic-Con	Previous Week	NET
Thursday	174,590	119,921	54,669
Friday	185,131	121,311	63,820
Saturday	184,105	92,039	92,066
Sunday	138,561	84,273	54,288
TOTAL	682,387	417,544	264,843
Net Change	264,843		
Pct Change	63.43%		

COMIC-CON 2025



Questions/Comments

Metropolitan Transit System

Agenda Item No. 15

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

December 18, 2025

SUBJECT:

Grants Administration Report (Julia Tuer and Kena Teon)

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

The San Diego Metropolitan Transit System (MTS) Grants Team manages all federal and state programs for both formula and competitive grants. These grant opportunities assist in funding portions of MTS's operating and capital budgets. Staff will provide a report on all grant administration activities over the past year.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Julia Tuer, 619.557.4515, Julia.Tuer@sdmts.com

San Diego Metropolitan Transit System (MTS) is a California public agency comprised of San Diego Transit Corp., San Diego Trolley, Inc. and San Diego and Arizona Eastern Railway Company (nonprofit public benefit corporations). MTS member agencies include the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, Santee, and the County of San Diego. MTS is also the For-Hire Vehicle administrator for multiple cities in San Diego County.

Metropolitan Transit System

Grants Administration Report

Board of Directors

Team Structure

The grants team is a cross-functional team comprised of two departments, Government Affairs and Finance that work together closely to secure complex funding opportunities.

Julia Tuer, Manager of Government Affairs
Manages overall grant administration process

Kena Teon,
Grants Administrator

Vanessa Slifer,
Grants Analyst

Eric Cheng, TAM Manager
Manages overall CIP process and provides financial oversight of the grant process

Etta Bowman,
Financial Analyst

Grants Administration Report

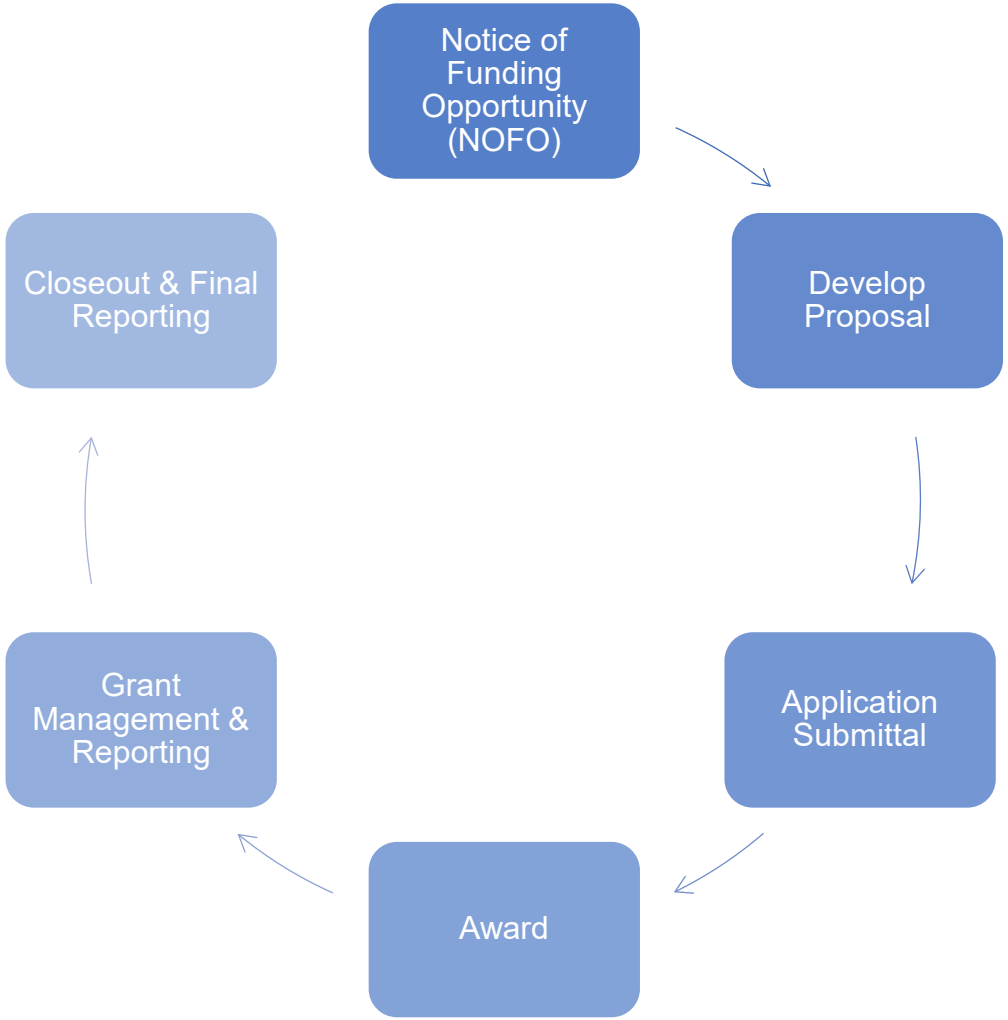
- Administration of Grants
- Regional support and collaboration
- Type of Grants
  - Formula
  - Competitive
- Partnerships
- Audits



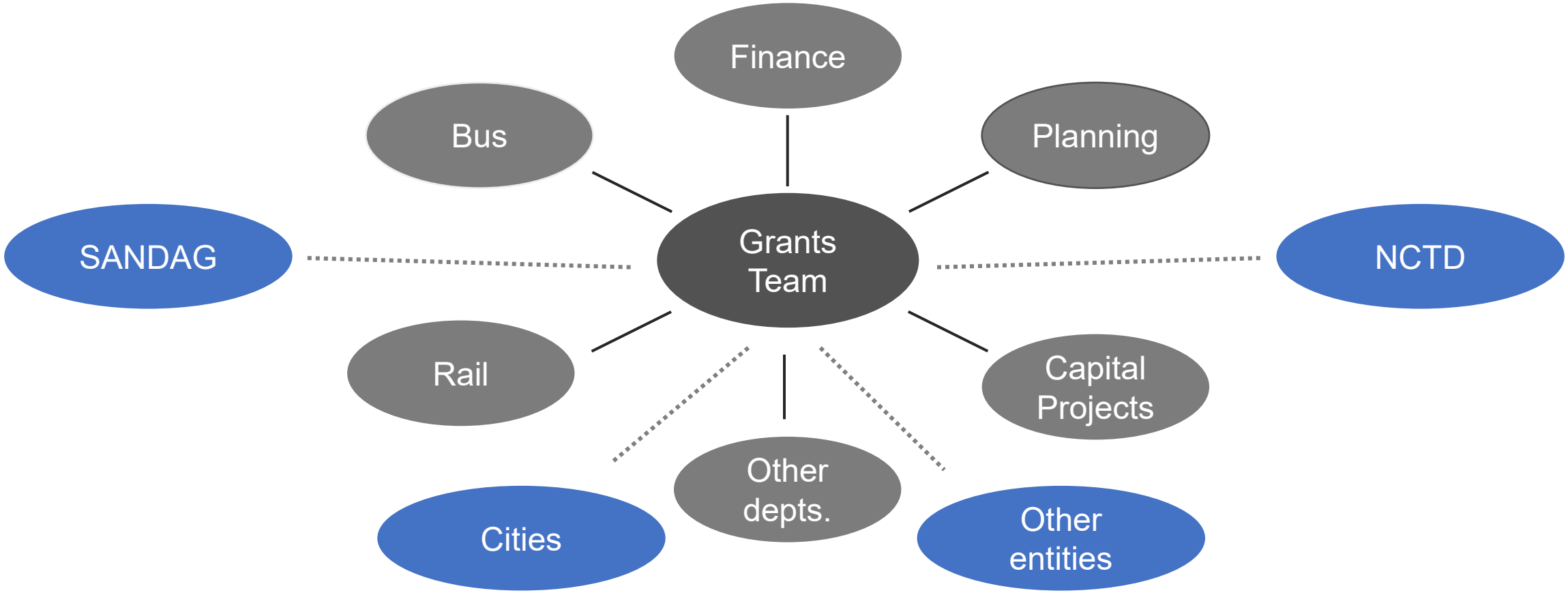
Administration of Grants

The team currently manages 30+ open/active grants and is responsible for:

- NOFO Research
- Staff Communications
- Proposals & Developments
- Submissions
- Implementation
- Project Management and Support
- Financial Tasks and Responsibilities
- Reporting & Compliance Management



Regional Support & Collaboration



Types of Grants: Formula and Competitive

Formula

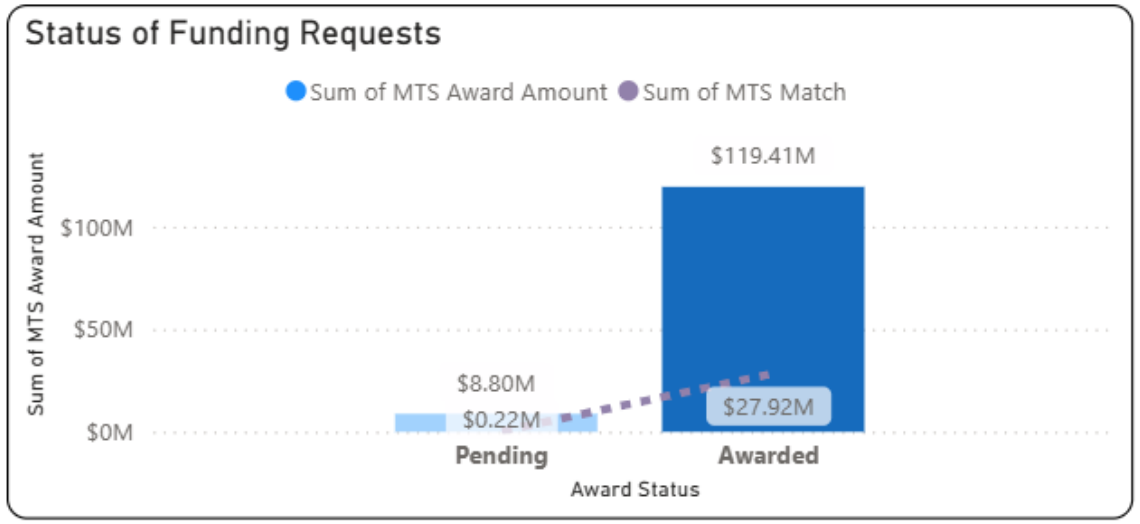
- Annual funds allocated to MTS
  - Does not rely on a competitive process
  - Separate process from one-time direct funding sources (e.g., CARES Act, ARP, SB 125, etc.)
- Primarily used for preventive maintenance and capital projects
- Reimbursement type varies

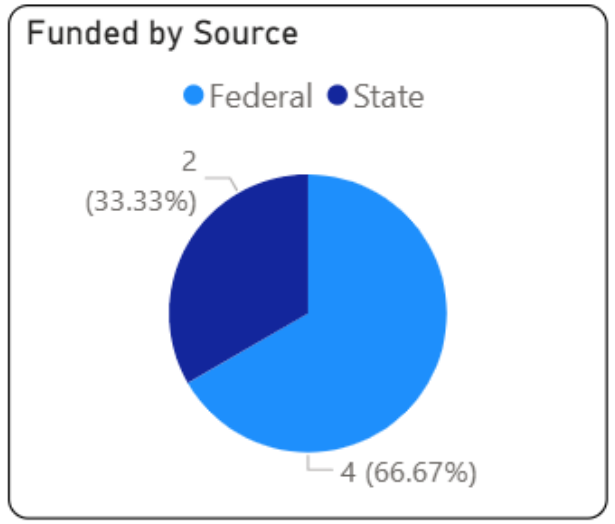
Competitive/Discretionary

- Awarded through a competitive application process (recipients are not pre-determined)
- Unique performance goals, criteria, and timeframes must be met under competitive opportunities
- Paid on a reimbursement basis

Note: Federal Surface Transportation Reauthorization (IIJA aka BIL) set to expire Sept. 30, 2026. Congress to negotiate new reauthorization for federal funding and policies for transit and other surface transportation programs.

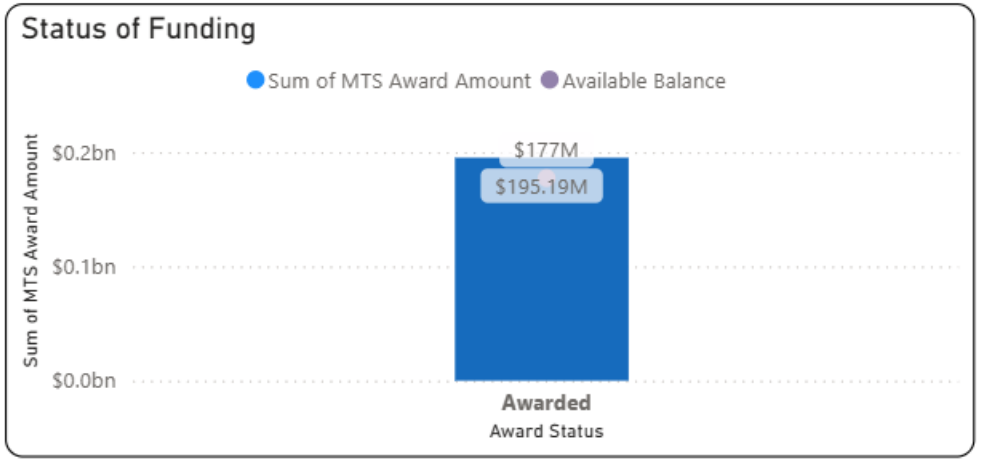
Formula Grant Summary

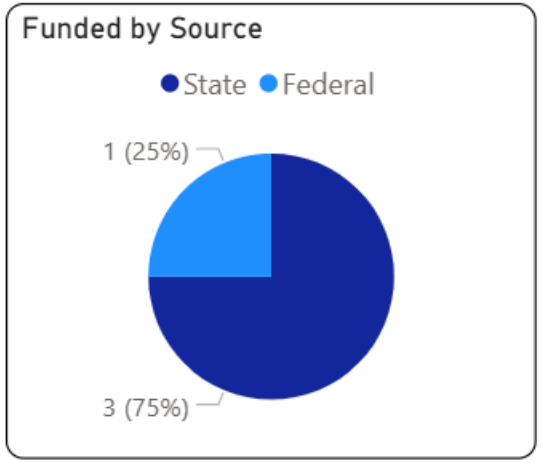


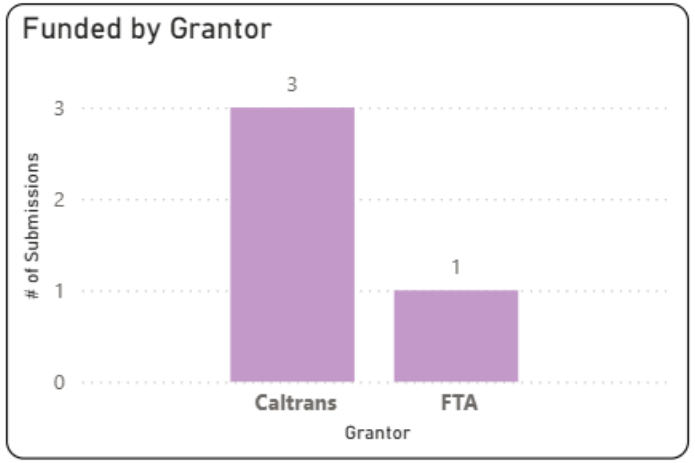


Grantor	Cycle	Program	Project Name	Award Status	MTS Award Amount	MTS Match	Total Application Amount
FTA	FFY24	Section 5307 Urbanized Area	Bus PM, ADA Ops, 40' and 60' CNG Bus Procurement	Awarded	$62,685,434	$15,188,913	$77,874,347
FTA	FFY24	Section 5339 (a) Bus and Bus Facilities Formula	40' CNG Bus Procurement (FY25, qty 7)	Awarded	$4,227,462	$1,056,866	$5,284,328
Caltrans	FY24-25	SB1 State of Good Repair (SGR)	FY26 Bus Procurement	Awarded	$5,815,604	$0	$5,815,604
FTA	FFY24	Section 5337 Rail State of Good Repair	Rail Preventive Maintenance and 5 Rail Projects	Awarded	$46,677,278	$11,669,320	$58,346,598
Caltrans	FY24-25	Low Carbon Transit Operations Program (LCTOP)	Future BEB Procurements	Pending	$8,527,008	$0	$8,527,008
Caltrans	FFY2025	Section 5311 Rural Operations Assistance	Operating and Payroll Assistance	Pending	$273,099	$220,483	$493,582
					$128,205,885	**$28,135,581**	**$156,341,466**

Stimulus / SB 125 Summary

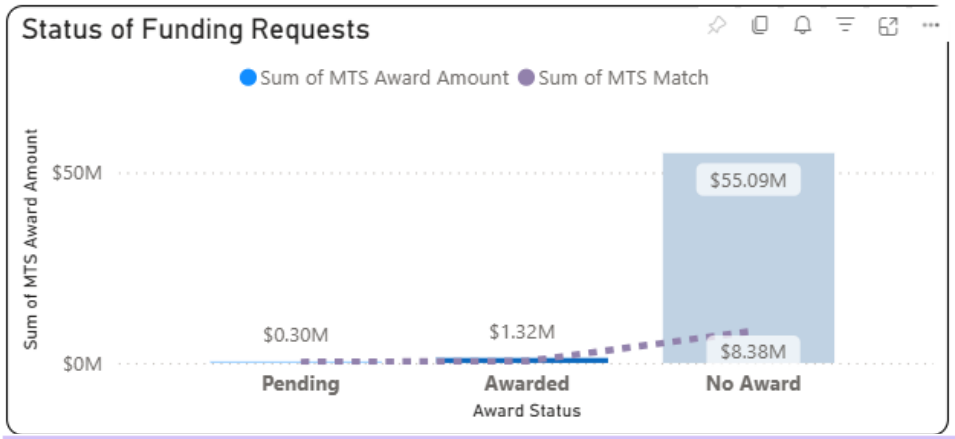


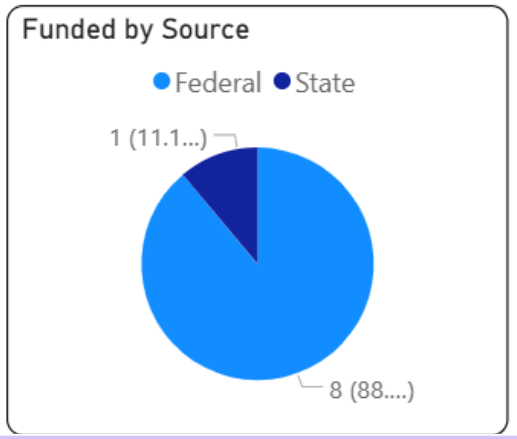


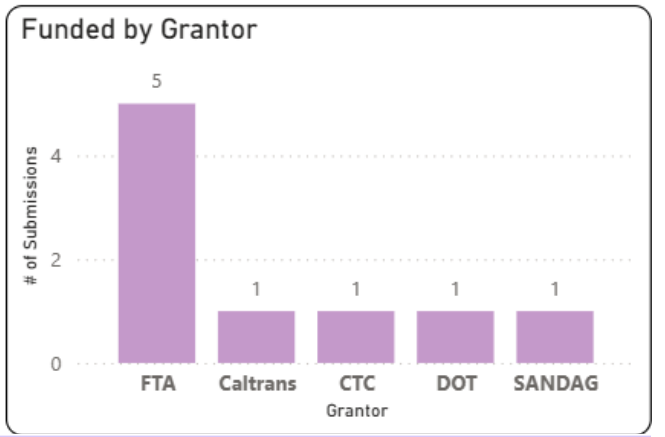


Grantor	Cycle	Program	Project Name	MTS Award Amount	Remaining Balance
FTA	2020	Coronavirus Aid, Relief, and Economic Security (CARES) Act Stimulus	5307 Operating Assistance	$219,987,291	$0
Caltrans	Cycle 1	SB 125 Transit Program - TIRCP Formula	TIRCP $92,515,843 - Operations TIRCP $26,000,000 - Capital	$118,515,843	$100,642,973
Caltrans	Cycle 2	SB 125 Transit Program - TIRCP Formula	TIRCP Y2 $59,407,162 - Operations	$59,407,162	$59,407,162
Caltrans	Cycle 1	SB 125 Transit Program - ZETCP	ZETCP $8,000,976 - Capital ZETCP $9,264,288 - Capital	$17,265,264	$17,265,264
				$415,175,560	**$177,315,399**

Competitive Grant Summary







Submittal Date	Grantor	Cycle	Program	Project Name	Award Status	MTS Award Amount	MTS Match	Total Application Amount
2024-11	FTA	FFY24	Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	Clean Transit Advancement Campus (CTAC)	No Award	$25,000,000	$5,000,000	$30,000,000
2024-10	SANDAG	Cycle 13	Specialized Transportation Grant Program (STGP) Cycle 13 Grant Application	FY25 ADA Bus Procurement (Qty 8 Request)	Awarded	$848,861	$414,363	$1,263,224
2024-07	FTA	FFY24	Strengthening Mobility and Revolutionizing Transportation (SMART)	MTS Bus Eliminating Passenger Pass-Ups Demonstration Project	No Award	$350,000	$0	$350,000
2024-10	CTC	2024	Solutions for Congested Corridors Programs (SCCP)	MTS FY28 BEB Procurement: 25 Buses	No Award	$28,800,000	$3,200,000	$32,000,000
2025-01	FTA	24-25	Sustainable Transportation Planning Grant (STPG) Program	MTS Transit Amenities Study	No Award	$442,650	$57,350	$500,000
2025-06	Caltrans	FFY2025	Section 5311 (f) Intercity Bus Program	Operating and Payroll Assistance	Pending	$300,000	$242,202	$542,202
2024-09	DOT	FY24	Reconnecting Communities Pilot Grant Program (RCP)	Otay Mesa East Transit Planning Study	No Award	$500,000	$125,000	$625,000
2025-01	FTA	24-25	Sustainable Transportation Planning Grant (STPG) Program	Otay Mesa East Transit Planning Study	Awarded	$442,650	$57,350	$500,000
2024-08	FTA	2024	Operation Lifesaver Competitive Rail Transit Safety Education Grants	Rail Safety & Transit Enforcement Educational Projects	Awarded	$29,917	$10,105	$40,022
Total						**$56,714,078**	**$9,106,370**	**$65,820,448**

Competitive Funding Challenges

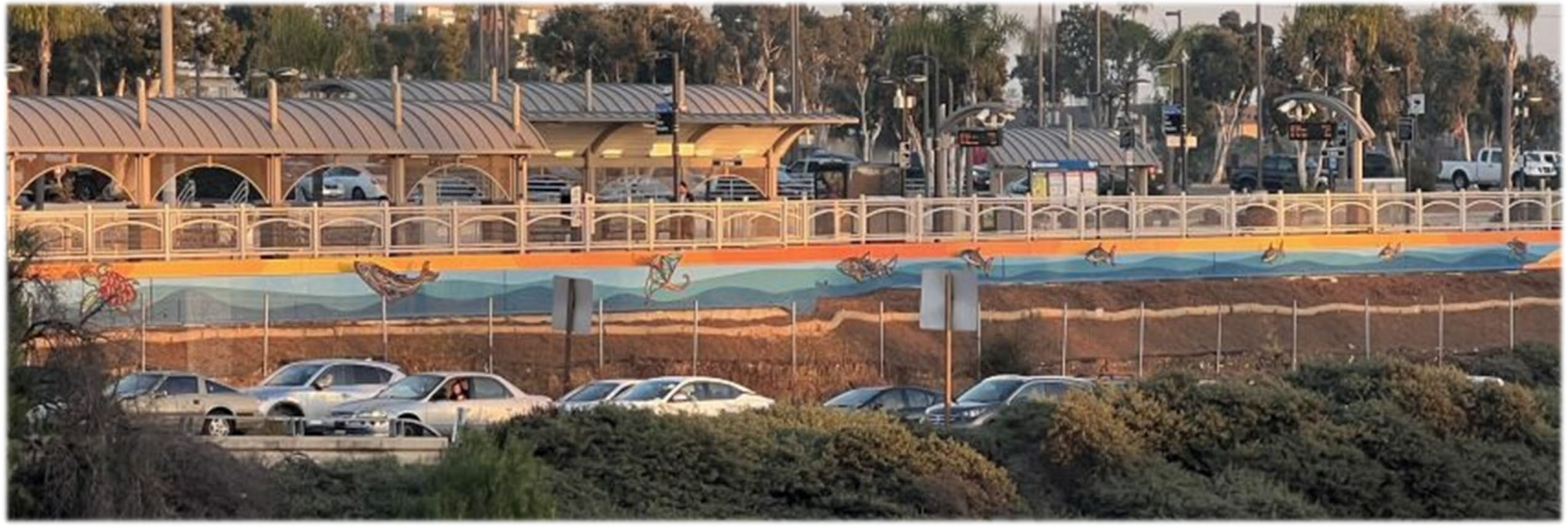
- Programs are massively oversubscribed compared to amount of funding available
- California is one of the most competitive states due to size and amount of high priority projects and transit agencies
- FTA Low or No Emission Program/Buses & Bus Facilities Program
  - $1.5 billion available
  - Last round: 500 applications submitted totaling $9 billion in requests, only 117 applications awarded
- DOT RAISE/BUILD Program
  - $1.5 billion available
  - Last round: 1,048 application submitted, only 148 applications awarded



Operation Lifesaver Program

- **Award Amount**: $30,000
- **Projects funded**:
  - Rail Safety Education
  - Transit Enforcement Education
- **Project Start Date**: October 2024
- **Project End Date**: September 2025







Clean California Local Grant Program

- **Award Amount**: $1M
- **Project Funded**: Installation of station/right-of-way murals and trash/recycling receptacles
- **Project Start Date**: February 2024
- **Project End Date**: December 2024



Transit and Intercity Rail Capital Program – Cycle 5

- **Award Amount**: $1.4M
- **Project Funded**: Orange Line VMS
- **Project Start Date**: May 2024
- **Project End Date**: May 2025

Specialized Transportation Grant Program – Cycle 11

- **Award Amount**: $600,000
- **Project Funded**: Purchase of 7 Paratransit Buses for Access Services



Strategic Partnerships

- Affordable Housing and Sustainable Communities (AHSC) Program
  - Round 1 (2016): Cornerstone Place (El Cajon): Awarded
  - Round 3 (2018): Keeler Court in Southcrest (San Diego): Awarded
  - Round 5 (2020): Southwest, Grantville, Mt Etna (San Diego): No Award
  - Round 6 (2022): Mt Etna (San Diego): No Award
  - Round 7 (2023): Riverwalk/Wakeland Development (San Diego): Awarded
  - Round 8 (2024): Alvarado Creek, Beyer – Casa Familiar (San Diego): Awarded
  - Round 9 (2025): Beyer, 73rd , Saint Vincent de Paul (San Diego): Pending

- Public Benefit Organizations:
  - Casa Familiar - Beyer Pathway Beautification Project : Clean CA Local Grant Program
  - San Diego Foundation & Environmental Health Coalition - Rooted in Comunidad, Cultivating Equity (RICCE) Project: Transformative Climate Communities Grant Program

Compliance Audits

Transit held to high standards for safety, performance and cost efficiency. MTS is audited by Federal and State agencies to ensure proper use of funds via yearly or triennial audits:

- **CARES Funding Audit-** Completed September 2025
  - Focus of audit: Allowable Costs and Invoices
  - No findings in previous years
- **Transportation Development Act Triennial Audit** – Completed August 2025
  - Focus of audit: 2022 – 2025 compliance
  - Auditors reviewed 27 different compliance categories for the entire agency
- **Federal Transit Administration Triennial Audit** – Completed June 2025 – Zero Findings
  - Focus of audit: 2022 – 2025 compliance
  - Auditors reviewed 23 different compliance categories for the entire agency
    - E.g., Legal, DBE, Title VI, EEO, Drug and Alcohol programs, Technical Capacities and Award Management, Procurement, Maintenance, Safety
- **Transit and Intercity Rail Capital Program** – Completed May 2025
  - Focus of audit: 2015 and 2018 cycle awards

Questions/Comments