



# RECYCLING CERTIFICATION INSTITUTE



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**ZANKER MATERIAL PROCESSING FACILITY (ZMPF)  
ADVANCED C&D PROCESSING SYSTEM**

**CORR PROTOCOL EVALUATION REPORT**

**June 8, 2020  
Evaluation Body: RCI**



## **Executive Summary**

This report corresponds to the evaluation of the application for CORR Certification by Zanker Road Resource Management, Ltd. (ZRRML), owner and operator of the Zanker Materials Processing Facility (ZMPF) Advanced C&D Recycling System located at 675 Los Esteros Road, San Jose, California, submitted to the Recycling Certification Institute (RCI or Institute).

This Evaluation represents an independent review of data and information provided to the Institute. Due diligence was followed to ensure Duty of Care and Duty of Loyalty to the Institute and to manage any Conflict of Interest. RCI Evaluators Manual 2.0 (EM) and RCI CORR Protocol 1.91 were used to guide the evaluation process as is standard practice for all Evaluations.

The evaluation found neither material or immaterial misstatements nor deviations from the described process train for the Advanced C&D Recycling System operation at the ZMPF site. The Institute uses a 95% confidence level as its Minimum Quality standard when calculating recovery or recycling rates using the weights of materials recovered and recycled. The twelve months of recovery and recycling data submitted by ZMPF was within the quantitative materiality threshold of 95% (less than 5% error) per EM Section 2.5.

## **Overview of ZMPF Operations**

Zanker Road Resource Management, Ltd. currently owns and operates the Zanker Material Processing Facility (ZMPF or Facility), located at 675 Los Esteros Road, San Jose, California. The Facility has operated as a fully permitted resource recovery facility and disposal site since 1997 under various Planned Development Permits issued by the City of San Jose Planning Department, a Solid Waste Facilities Permit (SWFP) issued by the City of San Jose Local Enforcement Agency (LEA) and the California Integrated Waste Management Board (CIWMB, now CalRecycle), Waste Discharge Requirements (WDRs) issued by the San Francisco Regional Water Quality Control Board (RWQCB), and various Permits to Operate (PTO) issued by the Bay Area Air Quality Management Board (BAAQMD).

As currently permitted under the SWFP, ZMPF may accept up to 2,600 tons per day (tpd) of materials and a maximum of 350 tpd to landfill on-site. Although permitted as a Class III landfill, the Facility is not currently allowed to accept putrescible garbage and solid waste (i.e., wet household garbage), green/yard waste, liquid waste sludge, designated wastes, and hazardous wastes. The primary wastes received at the ZMPF, therefore, include construction and demolition debris, wood waste, mixed debris and soil generated from throughout the San Francisco Bay area. Residuals from the recycling operations are either transported to the Marina Landfill in Monterey California or landfilled onsite.

The Facility is open to the public from 6:00 a.m. to 4:45 p.m. Monday through Friday and 8:00 a.m. to 3:45 p.m. on Saturdays. The site is closed on Sundays and on major

holidays. The Facility has received materials from most jurisdictions within the Bay Area since 1997. Resource recovery operations at ZMPF are divided into two mixed C&D plants and one source separated operation. The DM Processing System focuses primarily on bulky items and marginally recyclable loads while the C&D Sort Line is primarily handling mixed C&D loads from contractors. Sheetrock loads coming from contractors are also processed on site.

All materials entering ZMPF are weighed and recorded, including material type, date, time, weight, yardage, fees, hauler, and jurisdictions of origin. With the proper tracking of incoming materials and all outbound and disposed tons, a monthly recycling percentage is established for each "plant."

On January 2, of 2019, the Advanced C&D Processing System was officially started to help reduce the flow of Construction Wastes and Mixed Debris to the Construction Waste Sorting Operation.

While there are several C&D plants operating on the ZMPF site, this Evaluation report pertains to the Advanced C&D Recycling System applying for Certification. Particular attention was given to determining the activities and accuracy of maintaining appropriate segregation of operations and requisite accuracy in reporting.

### **Advanced C&D Recycling System Process Flow**

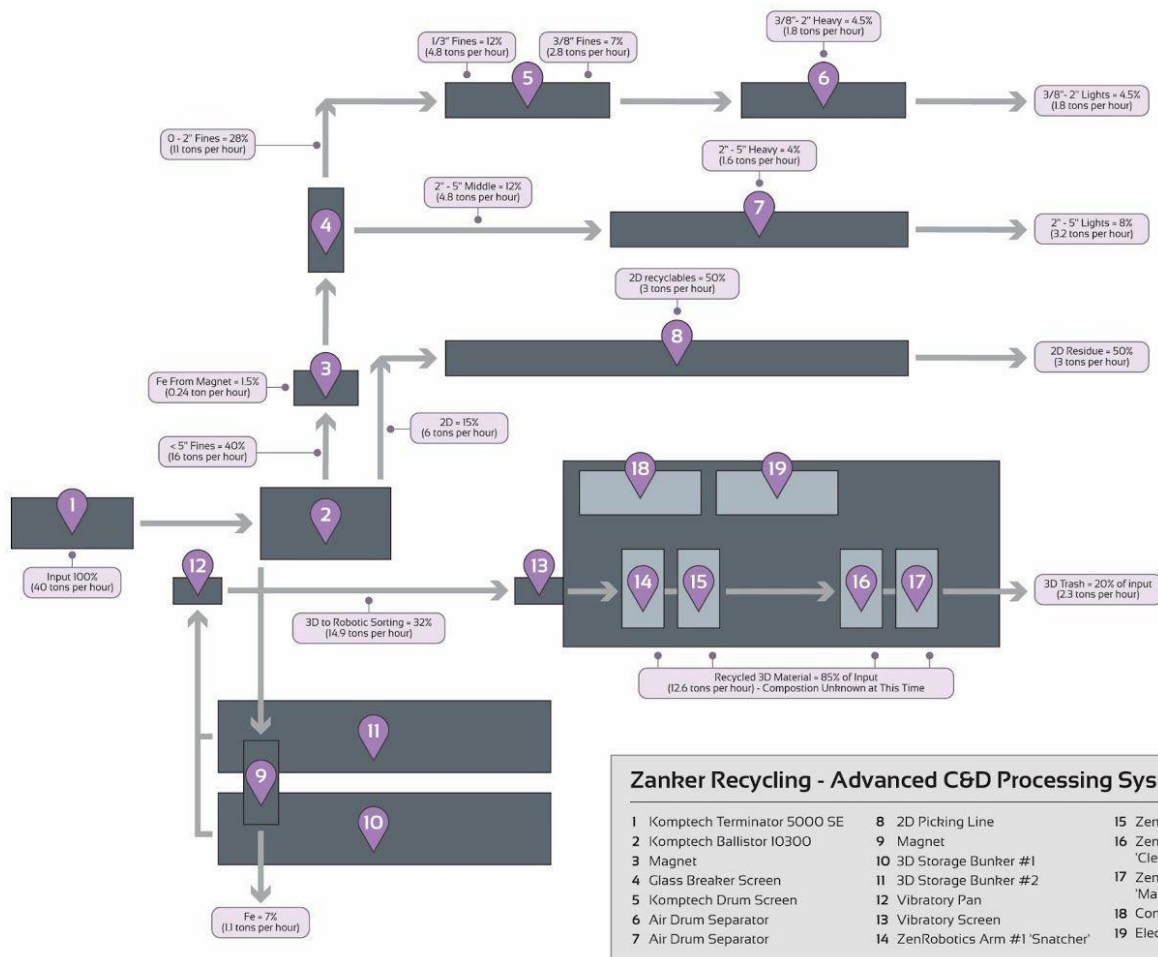
Zanker has been researching modern waste recycling processes that utilize artificial intelligence and robotics (AI). This equipment is designed to be extremely efficient and reliable. Zanker's newest operation is known as the Advanced C&D Processing System and is the result of Zanker's process modernizing research. The new Advanced C&D Processing System utilizes ZenRobotics automated/robotic sorting system to achieve higher diversion rates through more effective processing and sorting the existing incoming waste materials.

The ZenRobotics system operates up to 24 hours per day with throughput of 155,000 tons per year. The anticipated increase in Zanker's diversion of recyclables is 20% compared to the C&D Sorting Operation. The operation requires limited amounts of human interaction to the sorting process thanks to the two ZenRobotic Recyclers installed on the 3D material sort line managing the majority of hard to handle materials.

Zanker's advanced C&D processing system is automatically controlled from the beginning of the process to the end. The ZenRobotics robots can control the throughput of the materials to optimize the recovery of recyclable materials. This is done with the use of large storage bunkers called dosing bunkers. The units can speed up or slow down the dosing bunkers for optimal throughputs.

Zanker's current operations, the Construction Waste Sorting Operation and the DM Reduction System will continue operating at ZMPF. The Construction Waste Sorting operation will be able to decrease its throughput to increase its diversion rates. In 2018

this operation processed 185,000 tons of material with a 70% diversion rate, approximately 41,000 tons more than its design capacity and a far lower diversion rate than in previous years. The new Automated C&D Processing System will use this 41,000 tons plus an additional 21,000 tons of Miscellaneous Debris from the DM Reduction System and new C&D waste streams from transfer stations in San Francisco, San Mateo, Berkeley, and Monterey.



### Process Description:

The waste streams described above are directed to a tipping area adjacent to the Komtech Terminator 5000 SE Shredder. After customers have disposed of their load, the materials will be pushed with a wheeled loader to an excavator. Prior to loading the shredder, the excavator manicures the pile by removing large pieces of metal, concrete,

and non-recyclable products, such as carpeting and fabric. The excavator then loads the shredder with the remaining manicured materials at a rate of 40 tons per hour. These shredded materials will be conveyed to a Komptech 10300 Ballistic Separator where the materials will be separated into three fractions.

The smaller fraction (5-inch minus) from the ballistic separator will travel up a conveyor and past a belt magnet to remove the ferrous metals. It will then fall onto a debris roll screen, removing the 2-inch minus fraction. These 2-inch minus materials are then conveyed to a trommel screen where the ¼" minus is removed. These materials will fall into a bunker below where the fines will then be marketed to farmers within California as a soil amendment. The larger fraction from the Komptech Drum Screen is then conveyed to a CP Air Drum Separator which separates the light material from the heavy material. The lighter material will fall off the end of the conveyor belt into a bunker and will be used as ADC. The heavier materials from the air separator consisting of concrete, brick, tile, asphalt, glass, rock, and ceramics will fall into a bunker below the air separator and then are directed to the Zanker Concrete Crushing Operation to be reprocessed and made into a base rock product.

The 2"x5" fraction from the debris roll screen (mainly wood waste and concrete) are then conveyed into a larger CP Air Drum Separator that divides the material by density. The lighter fraction, wood, insulation, roofing felt, etc. drops on a conveyor and is directed to a bunker and will be used as ADC. The heavier fraction, concrete, rocks, tile, ceramics, bricks etc., will fall into the bunker below the air separator and be sent to Zanker's Concrete Crushing Operation to be processed into base rock.

The Komptech Ballistic Separator separates the 5-inch minus as described above. Materials larger than 5-inches remain on the top of the ballistic separator and are separated into 2D (two dimensional) and 3D (three dimensional) streams of materials. The 2D material will drop to a transfer conveyor where recoverable materials such as wood, papers, cardboard, etc. can be recovered by sorters. The 3D material will drop onto another conveyor where it will pass a magnet to remove the ferrous metals before being dropped into the dosing bunkers below. Once the materials have been dropped to the dosing bunkers, the ZenRobotics Recycler (ZRR) system can meter the flow of material up to the sorting line where the materials will be sorted by type for optimal recovery.

ZRR relies on the unique combination of smart software and standard industrial robots. Various sensors continuously monitor the waste stream. Smart and self-learning software, which is called the ZenRobotics Brain, analyzes the sensor data in real-time. High-grade, durable industrial robots quickly pick waste fractions of various shapes and sizes and accurately throws them in the correct chute leaving the wood waste to fall off the end of the conveyor and be directed to the Zanker Wood Waste Processing Operation.

Each robot consists of the sensor unit and two arms. For identification reasons, Zanker held a contest with the local Boys and Girls Club and came up with the names of the robotic arms.

1. ZenRobotics #1 Snatcher
2. ZenRobotics #2 Thrasher
3. ZenRobotics #3 Clean-up Carl
4. ZenRobotics #4 Magneto

The ZRR combines sensory data from multiple sensors to create an accurate real-time analysis of the waste stream. Based on this analysis, the system makes autonomous decisions on what objects to pick and how. ZRR sensors include a near infrared spectrum sensor, 3D sensor systems, a hi-res RGB camera, imaging metal detector, and visual light spectrum sensor.

ZRR typically sorts metals, different grades of wood, rigid plastics, and cardboard. ZRR can also be trained to sort specific objects or new waste fractions.

Recovered materials are weighed and sent to other recyclers for processing. Residuals from the sort line are directed to the on-site landfill or transported to the Marina Landfill in Monterey County. All materials processed from the Operation are weighed and recorded per RCI requirements.

Scales are located at the facility entrance. Each hauling incoming vehicle drives onto the scales, weighed, and the driver then proceeds to the appropriate location in the facility to empty the vehicle. Photos are taken of the incoming load, driver, and vehicle. These photos are used to verify load types and proper accounting measures.

A load checker confirms the materials as they are deposited in the tipping area. In the event the materials do not match the materials identified on the driver's tag, the load checker notifies the driver and radios the scale house to make the correction. A site loader moves the load to the appropriate tipping area and the driver returns to the scales and re-weighs before exiting. The data is automatically entered into the SMS Turbo electronic data management system (EMS) connected to the main office, which is located onsite. The scales are calibrated at least twice per year by Santa Clara County Weights and Measures including each instance of maintenance or other work associated with the scales. ZMPF is open to the public from 6:00 AM to 4:45 PM Monday through Friday and 8:00 AM to 3:45 PM on Saturday and closed on Sundays and major holidays.

#### **Daily Operation Flow:**

The Advanced C&D Processing System is planned to operate 6 days per week and process an average of 500 tons per day, or 155,000 tons per year. Based on a preliminary acceptance test conducted with Zanker and Plexus, the operation achieved an 84.95% diversion rate with ADC and a 64.68% diversion rate without ADC.

ADC may represent 20% of the materials recovered in the operation. ADC is sent to the Newby Island Landfill, ZMPF Landfill, or the Vasco Road Landfill for reuse. Concrete and wood waste removed from the operation is loaded into a trailer, weighed, and directed to the specific recycling operations at Zanker. Some of the cleanest wood waste may be

used for mulch production. Trash that is hauled from the operation is weighed and transferred to the Marina Landfill in Monterey. Metals are shipped to local recyclers for processing. Beverage containers, plastics, and OCC are loaded into debris boxes and shipped off site for reprocessing.

### **Outbound Material and Markets:**

**ADC** is sent to landfill for use as ADC

**Concrete** is made into Base Rock

**Metal** (Tin, Steel, Aluminum, Copper) is delivered to a recycler for metal products.

**Plastic (Beverage Containers, PET, HDPE)** is delivered to other facilities for recycling.

**Wood** is processed into Biomass Fuel, Mulch, and Soil Amendments.

**Trash** is delivered to other landfills for disposal or disposed at the onsite landfill.

### **Development of Evaluation Plan**

ZMPF initiated the Certification process by first Registering the Advanced C&D Recycling System on [RCI's Registration webpage](#). The Registration process requires facilities to submit facility and contact information which provides RCI with a general understanding of the on-site operation(s) and what additional information may be needed in preparation for an Evaluation. A sample of information provided through the Registration process includes:

- Name of the facility
- Street address of the facility (P.O. Box not acceptable)
- Name of the city/state where the facility is located
- Facility type
- Scale(s) certified or not
- Permits – state/local Registration Number or state/local permit number
- Hours of facility operation
- Current tons of Inbound and Outbound materials
- Name of company contact person, their position/title, and contact information
- Website address

Upon ZMPF's completion of the Registration process and in preparation for the Evaluation, RCI requested further documentation as expressed in the CORR guidance documents. Key elements of this information can be found in the CORR Protocols Edition 1.9, Appendices A and B, viewable on the RCI website on the Resources page. RCI also provided an overview of the Evaluation process to aid in the streamlining and completion of activities on the day of the site visit. The Evaluation would include:

- Review of recyclables sales records
- Sales contacts to verify facility sales and other off-site movement of materials
- Confirmation of permits

- Verification of use and accuracy of scales including calibration frequency
- Observation and verification of load/material sorting and accuracy
- Interviews with key personnel
- Review of employee training/safety manuals
- Calculation of variance in recovery and recycling rates
- Other materials/documentation that may aid in preparation of a Facility Evaluation Report and Evaluation Opinion.

RCI reviewed twelve prior months' data for the Advanced C&D Recycling System to determine accuracy of the mass-balance calculations for each plant. ZMPF provided files that allowed random sampling and review of all aspects of data including customers, weight tags, days, dates, materials, tons, etc. RCI noted areas of potential risk to follow up on during the site visit.

## **SITE VISIT**

The Governor's Covid-19 Shelter Order presented a challenge to conducting an onsite visit. Because of RCI's familiarity with ZMPF's operations resulting from conducting previous onsite evaluations, RCI proposed conducting a remote Evaluation if certain conditions could be met, to which ZMPF agreed. RCI and ZMPF discussed and developed a set of protocols to guide the Evaluation. The major consideration driving this decision was to ensure the safety of both RCI and ZMPF personnel during the pandemic, while still meeting the requirements of the CORR Protocol.

Key requirements included ZMPF staff walking the site with a handheld device that had video and recording capability and mobile wi-fi connectivity, RCI would be able to control the view of the video, RCI would be provided a copy of the video recording, and ZMPF would provide all necessary and requested documentation to RCI in electronic format.

RCI performed the evaluation of ZMPF's Advanced C&D Recycling System on April 17, 2020. ZMPF's Marketing Manager, Jerame Renteria, and Communications Manager, Francine Areas, conducted the tour of the facility. Mr. Renteria served as ZMPF's lead contact throughout the Evaluation process. Mr. Renteria was responsible for submitting the initial applications and responding to subsequent inquiries as well. RCI did a full virtual walk-through of the facility with Ms. Areas holding the camera and receiving direction from RCI, examining where materials enter, are measured, deposited, processed/sorted, and eventually leave the facility. Environmental Compliance Officer, William Lineberry, provided permit and other facility documentation.

Mr. Renteria and Ms. Areas handled all questions during the virtual site visit as well as follow-up questions from the initial review of data, including weight tag sampling. They are responsible for key areas of the operations and have access authority and responsibility for maintaining, reviewing, and overall integrity of ZMPF's data. RCI also reviewed the training materials to determine if adequate QC existed for those staff with the potential to directly affect the recycling and recovery rates reported by the facility and

determined adequate and ongoing training exists in these key positions to maintain QC of processes and data.

## **Regulatory Compliance Test**

*ZMPF possesses the necessary permits to operate.*

ZMPF has operated as a resource recovery facility and disposal site since 1997 under various Planned Development Permits issued by the City of San José Planning Department, Solid Waste Facilities Permit (SWFP) issued by the City of San José Local Enforcement Agency (LEA) and the California Integrated Waste Management Board (CIWMB, now CalRecycle), Waste Discharge Requirements (WDRs) issued by the San Francisco Regional Water Quality Control Board (RWQCB), and various Permits to Operate (PTO) issued by the Bay Area Air Quality Management District (BAAQMD). A review of the State of California Solid Waste Information System indicated the most recent updated facility permit was issued in January 2015 amending ZMPF's Large Volume Transfer/Processing Facility Permit. No Areas of Concern or Violations have been reported in the last twelve months. No irregularities were found involving management or employees who have a significant role in internal controls, or that could have a material effect on the reporting of ZMPF's recycling rates.

## **Use of Scales**

*RCI concludes that ZMPF satisfies the requirements for use of scales.*

ZMPF has forty-five certified Deputy Weighmasters authorized to oversee operation of the three scales. The scales were recently serviced and calibrated, meeting the CORR Protocol requirement of at least once in the past twelve months. Service Certificate indicates scheduled calibrations are occurring at least twice per year.

ZMPF utilizes a detailed Ticketing System Process with Open and Complete Tickets to match operators, vehicles, loads and load types to ensure proper tracking and assignment of rates and weights prior to operators leaving the facility. This is accomplished with load checking and communication with the operators as well as radio contact with the scalehouse. There are specific procedures for vehicles with tare weights stored in the system and vehicles without stored tare weights. The scale data is automatically entered into ZMPF's electronic data management system (SMS Turbo) connected to the main office also onsite. The scales are calibrated at least once per year including each instance of maintenance or other work associated with the scales. County of Santa Clara Weights and Measures seals were affixed to the appropriate measurement equipment.

## **Supporting Data for Rate Estimates**

*RCI concludes ZMPF maintains required supporting data as required by the CORR Protocol for recycling and recovery rate estimates.*

ZMPF uses an EMS system and retains hardcopy receipts for incoming and outgoing materials/ markets. ZMPF provided twelve months of electronic reports with tables (mass balance) for the Advanced C&D Recycling System. The data included information on customers, weight tags, days, dates, materials, tons, etc. RCI analyzed the data and reviewed minor discrepancies and samples with Mr. Renteria. The data accuracy fell within the required 95% accuracy threshold. A review of purchasers confirmed the disposition of materials recorded as having left ZMPF.

## **Data Transcription and Management**

*Sufficient QC exists for creation of reuse and recycling rate tables from EMS data.*

ZMPF maintains the same protocols for all its RCI-Certified lines regarding the storage, access, and management of ZMPF's data and how that information is organized for ZMPF's monthly reports, supporting the mass balance spreadsheets submitted previously. ZMPF demonstrated this on previous visits.

Material data is automatically entered into the system for accounting purposes. These reports are reviewed to verify accuracy as well as hand enter and/or correct any manual adjustments as determined through the normal course of business.

The spreadsheets are reviewed by the Sustainability Director for a final crosscheck before submittal (uploading) to RCI. Based on the critical need for accurate monthly spreadsheets for internal and customer accounting, observed competencies, as well as ongoing training of the individuals involved in the data entry, and final crosscheck by senior management, RCI concludes that sufficient QC exists for data transcription and management per the CORR Protocol.

## **Individuals Properly Trained for Functions They Perform**

*ZMPF employees receive adequate in-house initial and recurring training, including training from outside sources.*

Operations/Safety Compliance Manager, Juan Rivas, manages ZMPF's employee and customer safety at its facilities. As per OSHA and CalRecycle regulations, training logs and safety records are located in the office and are reviewable upon request. ZMPF provided electronic copies of the training logs and related documents for RCI's review. RCI also observed appropriate signage and employees wearing required PPE during the virtual walk-through.

Initial training and refresher courses occur as required by 27 CCR 20610. Training includes hazardous materials recognition and screening and heavy equipment

operations, with emphasis on safety, health, environmental controls, and emergency procedures. Training modules include:

- First aid, health, and cardiopulmonary resuscitation (CPR)
- Confined Space
- Hazard recognition and communication
- Hazardous, infectious, and prohibited waste identification and handling procedures
- Occupational safety
- Regulatory compliance
- Job-specific cross-training, equipment, etc.
- Right-to-know training
- Environmental controls
- Spill prevention control and countermeasures plan
- Stormwater and groundwater monitoring
- Internal notification and external emergency response organizations notification

Specific training is also required for the ZMPF load-checking program. ZMPF designates and trains inspectors and backup personnel to conduct random load-checking inspections. Employees involved in load-checking activities are trained in the program procedures, and the health and physical hazards associated with hazardous and infectious waste. Load-checking personnel are trained in the identification of and procedures for handling hazardous and prohibited wastes. In general, all site personnel are trained to identify and report any suspicious loads.

At the discretion of the site manager, outside expertise is utilized to provide additional training. Enough personnel are trained in each job category to provide necessary backup and standby capability. Training records identify all key information on employee's training including documentation by the trainer of successful completion.

Per Cal-OSHA's Onsite-Visit Report, ZMPF has been effective in maintaining Total Recordable Cases of Days Away, Restricted, or Transferred (DART) rates below the industry rate compared to all other similar employers.

Based on the observations of staff, the work areas, and the initial and ongoing training of ZMPF employees, RCI concludes that ZMPF provides employees with the requisite training per the CORR Protocol.

### **Performance Standard Test**

*Reported reuse and recycling rates are within 5% allowed threshold.*

ZMPF provided electronic copies of spreadsheets representing twelve months of data for the Advanced C&D Recycling System. RCI analyzed the data and noted areas requiring clarification. Several phone meetings with Mr. Renteria and Ms. Areas were conducted to review RCI's questions related to the twelve-month mass-balance and monthly entries. Formulas were reviewed, their validity tested, and RCI identified select transactions for further review. The recycling and recovery rates information submitted by ZMPF for the


Advanced C&D Recycling System fell within the five-percent tolerance threshold defined per the CORR Protocol. RCI concludes that ZMPF's reported reuse and recycling rates satisfy the Performance Standard Test required per the CORR Protocol.

### Evaluation Statement Overview


Based on extensive review of data from the ZMPF Advanced C&D Recycling System, the findings according to RCI protocols via the evaluation process, and the site visit and interviews with key staff, RCI finds that the ZMPF Advanced C&D Recycling System meets RCI's eligibility requirements, is in compliance with all measurement and record-keeping requirements, and has no existing material or significant immaterial non-conformances or misstatements in their reported data. RCI hereby certifies the Reuse and Recycling rates submitted by ZMPF for its Advanced C&D Recycling System as Real Rates as outlined in the CORR protocol.

The undersigned hereby certify that the information provided herein is true, complete, and accurate; they have read and understand the protocols developed by RCI and are familiar with the requirements of RCI. Furthermore, they also certify that any signatories duly elected, qualified, and acting officers of their respective organizations and that their organizations agree to be bound to the protocols of RCI.

For Recycling Certification Institute:

	Executive Director
_____	_____
By	Title
Stephen M Bantillo	July 17, 2020
_____	_____
Print Name	Date

For Zanker Materials Processing Facility:

	Marketing Manager
_____	_____
By	Title
Jerame Renteria	July 23, 2020
_____	_____
Print Name	Date