

**APPENDIX B-2**  
*Orcem Application*



CITY OF VALLEJO, CALIFORNIA

MAJOR USE PERMIT  
& SITE DEVELOPMENT PLAN  
APPROVAL APPLICATIONS

SEPTEMBER 4, 2013

UPDATE – MARCH 12, 2014

ORCEM CALIFORNIA, INC.

APPLICATION FOR  
MAJOR USE  
PERMIT & SITE  
DEVELOPMENT  
PLAN APPROVAL

**ORCEM CALIFORNIA, INC. PROPOSED "GREEN" CEMENT  
(GROUND GRANULATED BLAST FURNACE SLAG) PRODUCTION  
FACILITY, 800 DERR AVENUE, VALLEJO, CALIF.**

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	A-5 5387-PP-104	Drainage and Utility Site Plan
	A-6 5387-PP-105	Fire Water Plan and Hydrant Locations
Plans Phase 1	A-7 5387-M1P1-201	Overall Site Layout Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-8 5387-M1P1-202	Main Site Layout Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-9 5387-M2P1-203	Overall Site Layout Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-10 5387-M2P1-204	Main Site Layout Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-11 5387-M3P1-205	Overall Site Layout Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
Plans Phase 2	A-12 5387-M3P1-206	Main Site Layout Mode 3 GBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-13 5387-M1P2-211	Overall Site Layout Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-14 5387-M1P2-212	Main Site Layout Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-15 5387-M2P2-213	Overall Site Layout Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
	A-16 5387-M2P2-214	Main Site Layout Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
Sections Phase 1	A-17 5387-M3P2-215	Overall Site Layout Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-18 5387-M3P2-216	Main Site Layout Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-19 5387-M1P1-301	Site Sections A & D Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-20 5387-M1P1-302	Site Sections B & C Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-21 5387-M1P1-303	Site Sections E to G Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-22 5387-M2P1-311	Site Sections A & D Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-23 5387-M2P1-312	Site Sections B & C Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
Sections Phase 2	A-24 5387-M2P1-313	Site Sections E to G Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-25 5387-M3P1-321	Site Sections A & D Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-26 5387-M3P1-322	Site Sections B & C Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-27 5387-M3P1-323	Site Sections E to G Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-28 5387-M1P2-331	Site Sections A & D Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-29 5387-M1P2-332	Site Sections B & C Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-30 5387-M1P2-333	Site Sections E to G Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-31 5387-M2P2-341	Site Sections A & D Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
	A-32 5387-M2P2-342	Site Sections B & C Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
	A-33 5387-M2P2-343	Site Sections E to G Mode 2 Cement Only, Phase 2 Output <500,000 Tons/Yr.
	A-34 5387-M3P2-351	Site Sections A & D Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-35 5387-M3P2-352	Site Sections B & C Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
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	A-41 5387-MFB-422	Mill & Filter Building: Plans Sheet 2 of 2
	A-42 5387-MFB-423	Mill & Filter Building: Elevations Sheet 1 of 2
	A-43 5387-MFB-424	Mill & Filter Building: Elevations Sheet 2 of 2
	A-44 5387-CSB-431	Closed Raw Material Storage Building
	A-45 5387-FIN-451	Finished Product Storage and Outload Facility

**APPENDIX B: FEMA FIRM Map for Orcem California and VMT Sites****APPENDIX C: ENVIRONMENTAL ADVANTAGES OF GGBFS**

**APPENDIX D: Technical Environmental Studies**

<b>Topical Area</b>	<b>Document</b>	<b>Date</b>	<b>Author</b>
<b>1. Aesthetics Simulations</b>	<u>Photo Simulations</u> : Accurate computer simulations of the completed Orcem and VMT Projects developed for six viewpoint locations using high-resolution digital photographs.	02/24/14	WDF
<b>2. Air Quality Report</b>	<u>Air Quality Analysis</u> : Complete report on existing conditions and projected increases in BAAQMD-listed criteria pollutants associated with construction and operation of the Orcem California and VMT Projects (individual and cumulative), including existing (background) criteria pollutant levels, and projected increases surrounding the Project Sites and along the major transportation corridors to be utilized for import and export of goods and materials. The analysis addresses all issues identified under the Vallejo General Plan and follows the specific methodology as determined by the BAAQMD in 2014. The analysis includes a detailed Health Risk Assessment which focuses on the potential for exposure of residents and other sensitive receptors to concentrated pollutants both in the vicinity of the Projects and along the transportation corridors.	Est. 03/14/14	AWN, Illingworth & Rodkin
<b>3. Biology</b>	<u>a. Biological Assessment Report</u> : A complete biological assessment was prepared by WRA in 2008 in connection with the former Brooks Street residential project, addressing biological communities present as well as both special status plants and animals.	02/2008	WRA
	<u>b. Arborist Report</u> : A complete arborist report was prepared by WRA in 2008 for the entire site in connection with the former Brooks Street residential project, including a full tree survey, mapping of trees using GPS technology, and assessment of the health of all existing trees.	04/2008	WRA
<b>4. Cultural Resources</b>	<u>Historic Resources Evaluation Report</u> : This report was prepared on 04/15/08 by Carey & Co. to address existing conditions and the potential for reuse of structures specific to the former "Brooks Street" residential project proposal.	04/15/08	Carey & Company
<b>5. Geology &amp; Soils</b>	<u>Geotechnical Investigation Reports</u> : Series of reports prepared for the entire combined Project Site, including (1) Geotechnical Investigation Reports prepared on 08/31/06 and 06/27/08 by ENGEO Inc. for the former Brooks Street project; (2) Geotechnical and Environmental Consultation report prepared on 02/20/13 by Treadwell & Rollo, specific to the Orcem site and development of the proposed "green cement" plant; (3) Phase I & II ESA Reports conducted in 2006-2007 for the previous Brooks Street project by Northgate Environmental Management, Inc.; (4) A Notice of Closure Request pertaining to earlier fuel release on the General Mills site circulated in September 2013, which once finalized, will lead to implementation of a Site Management Plan (SMP) to eliminate the need for further monitoring, investigation, or cleanup, based on maintenance of a cap placed over a portion of the site (Note that discussions are continuing between the City, the Solano County Department of Resource Management and the former and current property owners (General Mills and VMT) regarding details of the SMP and its restrictions on use of a small portion of the Project site); and (4) Site Investigation and Groundwater monitoring Reports prepared in 2006-2007 (for Brooks Street) by Malcolm Pirine Consultants describing fuel releases, detailing UST investigations, groundwater sampling documentation, laboratory testing results, clean-up efforts, and groundwater monitoring and sampling.	2006- 2013	ENGEO, Treadwell & Rollo, Northgate Environmental Management, Malcolm Pirine
<b>6. Greenhouse Gasses</b>	<u>GHG Emissions Report</u> : Comprehensive analysis of GHG emissions associated with construction and operation of the Orcem California and VMT Projects (individual and cumulative), including measurement of Project-specific CO <sub>2</sub> e emissions, as well as a summary of net CO <sub>2</sub> e elimination associated with use of GGBFS produced at the Orcem California Plant in comparison to conventional Portland cement. The report follows methodology as specifically established by the BAAQMD.	Est. 03/14/14	AWN, Illingworth & Rodkin

<b>7. Hazards &amp; Hazardous Materials</b>	<u>Materials Testing Report</u> : Laboratory testing results presenting analysis of all materials to be processed through the Orcem California plant.	03/10/14	AWN
<b>8. Hydrology &amp; Water Quality</b>	<u>Storm Water Control Plan and Hydrology Analysis</u> : Engineered preliminary Storm Water Control Plan for Orcem Site identifying methodology for collection, treatment and discharge of stormwater, and also identifying the location and sizing of retention basins and proposed discharge points. Also included is the project civil engineer's description of hydrology setting for the project, including a description of the watershed, runoff and drainage, along with a summary of anticipated potential impacts and recommended mitigation measures.	03/11/14	KPFF Engineering
<b>9. Fiscal Analysis</b>	<u>Fiscal &amp; Economic Analysis</u> : Analysis of economic and fiscal benefits of the Orcem and VMT Projects on the City of Vallejo, Solano County, special districts, and State, including quantified estimates of direct revenues (property, sales and utility taxes, fees and licenses, and lease revenues), indirect revenues (local capture of employment wages), employment generation, economic development benefits (infrastructure and market opportunities, and local business expenditures) through the year 2020.	03/04/14	Field Guide Consulting
<b>10. Noise</b>	<u>Acoustical Analysis</u> : Complete report on existing conditions and projected noise increases associated with construction and operation of the Orcem California Project, including short and long-term measurement of existing (ambient) noise conditions, and projected noise increases surrounding the Project Sites and along the major transportation corridors to be utilized for import and export of goods and materials. Projected noise increases are tabulated and presented using methodology as prescribed in the City of Vallejo General Plan and Noise Ordinance.	03/10/14	AWN, Illingworth & Rodkin
<b>11. Traffic &amp; Transportation</b>	<u>Transportation System Demands Analysis</u> : Detailed analysis and tabulation by mode and project phase of projected Orcem Project transportation system demands from import of raw materials and export of finished products, including maximum movement of materials by truck, rail and ship over time.	01/28/14	Orcem California
<b>12. Utility System Demands</b>	<u>a. Estimate of Utility System Demands</u> : Tabulated summary of projected peak usage demands from the Orcem Project for electrical and natural gas system capacity.	02/27/14	Orcem California
	<u>b. Estimate of Water &amp; Wastewater System Demands</u> : Tabulated summary of projected peak usage demands from the Orcem Project for water and wastewater system capacity.	02/27/14	Orcem California



# CITY OF VALLEJO

## Central Permit Center

Business License  
(707) 648-4310

Building  
(707) 648-4374

Fire Prevention  
(707) 648-4565

Planning  
(707) 648-4326

Public Works  
(707) 651-7151

### Planning Application

Appointments may be required for certain planning application submittals.  
Appointments must be made at least 24 hours in advance. Please call  
(707) 648-4326 to set up the appointment.

Application No: \_\_\_\_\_  
Planner: \_\_\_\_\_  
Date Accepted: \_\_\_\_\_

Property Address: 800 PIER AVE. APN: \*006-116-0220

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Administrative Permit       | <input type="checkbox"/> Parcel Map          | <input checked="" type="checkbox"/> Site Development <u>*SEE PLANS</u> |
| <input checked="" type="checkbox"/> Major Use Permit | <input type="checkbox"/> Planned Development | <input type="checkbox"/> Tentative Map                                 |
| <input type="checkbox"/> Minor Use Permit            | <input type="checkbox"/> Preliminary Review  | <input type="checkbox"/> Zoning Amendment                              |
| <input type="checkbox"/> Minor Exception             | <input type="checkbox"/> Sign Permit         | <input checked="" type="checkbox"/> Other <u>CEQA COMPLIANCE</u>       |

Applicant Name ORCEM CALIFORNIA, INC. Applicant Phone ( ) \_\_\_\_\_

Applicant Address 21 WATERWAY AVE. #300 City THE WOODLANDS Zip 77380

Applicant E-Mail Address STEVE.BRYAN@ORCEM.IE TEXAS

Name of Legal Property Owner VALLEJO MARINE TERMINAL Owner Phone ( ) \_\_\_\_\_

Owner Address LIVINGSTON STREET PIER City CARLAND, CA Zip 94606-5215

Planner Architect Name LOEWKE PLANNING ASSOC. Architect Phone (925) 804-6225

Planner Architect Address 547 WYCOMBE CT. City SAN RAFAEL, CA Zip 94583

I hereby certify the truth of this application and acknowledge that any inaccuracies in it shall, at the City's option, result in automatic invalidation of the action based thereon and that final approval is dependent on compliance with the City's requirements.

Signature of Owner: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Applicant: \_\_\_\_\_ Date: \_\_\_\_\_

#### Detailed Description of Proposal (attach additional pages as necessary):

General Plan: EMPLOYMENT Zoning: INTENSIVE USE

#### For Residential Projects:

Lot Area: 1.83 AC Exiting Units: 0 Proposed Units: 0 No. of Units Demolished: 0

Existing Square Footage: \_\_\_\_\_ Proposed Square Footage: \_\_\_\_\_

#### For Commercial/Industrial Projects:

Existing Building Sq. Ft.: ±156,000 Total Sq. Ft. Demo: ±156,000 Total Bldg. Sq. Ft. Proposed: \*±71,000

#### Parking (for all development projects):

Existing Parking Spaces: \_\_\_\_\_ Proposed Parking Spaces: \_\_\_\_\_ SEE PLANS APPENDIX A

Sign (Sign Permits only): SKN DETAILS TO BE SUBMITTED SEPARATELY

Total Existing Signs: \_\_\_\_\_ Total Proposed Signs: \_\_\_\_\_ Bldg./Tenant Space Frontage: \_\_\_\_\_

Maximum Sign Area: \_\_\_\_\_ Area of Existing Signs: \_\_\_\_\_ Area of Proposed Signs: \_\_\_\_\_

Circle Single/Double Face Electrical Freestanding/Monument Projecting Roof Wall Other

Total Area: \_\_\_\_\_ Sign Area Remaining: \_\_\_\_\_ Action: \_\_\_\_\_ Date: \_\_\_\_\_





# CITY OF VALLEJO

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(707) 651-7151

### Planning Application

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Application No: \_\_\_\_\_

Planner: \_\_\_\_\_

Date Accepted: \_\_\_\_\_

Property Address: 800 DEER AVE

APN: \*006-116-0220

Administrative Permit

Parcel Map

Site Development \*SEE PLANS

Major Use Permit

Planned Development

Tentative Map

Minor Use Permit

Preliminary Review

Zoning Amendment

Minor Exception

Sign Permit

Other C.E.G.A. COMPLIANCE

Applicant Name COCEM CALIFORNIA, INC.

Applicant Phone ( ) \_\_\_\_\_

Applicant Address 21 WATERWAY AVE #300 City THE WOODLANDS Zip 77380

Applicant E-Mail Address STEVE.BRYAN@COCEM.IE TEXAS

Name of Legal Property Owner VALLEJO MARINE TERMINAL Owner Phone ( ) \_\_\_\_\_

Owner Address LIVINGSTON STREET PIER City CARLETON, CA Zip 94606-5215

Architect Name LOEWKE PLANNING ASSOC. Architect Phone (925) 834-6225

Architect Address 547 WILSON CT. City SAN RAFAEL, CA Zip 94583

I hereby certify the truth of this application and acknowledge that any inaccuracies in it shall, at the City's option, result in automatic invalidation of the action based thereon and that final approval is dependent on compliance with the City's requirements.

Signature of Owner: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Applicant: [Signature] Date: 3 SEP 2013

Detailed Description of Proposal (attach additional pages as necessary):

General Plan: EMPLOYMENT Zoning: INTENSIVE USE

For Residential Projects:

Lot Area: 4.83 AC Exiting Units: 0 Proposed Units: 0 No. of Units Demolished: 0

Existing Square Footage: \_\_\_\_\_ Proposed Square Footage: \_\_\_\_\_

For Commercial/Industrial Projects:

Existing Building Sq. Ft.: \_\_\_\_\_ Total Sq. Ft. Demo: \_\_\_\_\_ Total Bldg. Sq. Ft. Proposed: 50

Parking (for all development projects):

Existing Parking Spaces: \_\_\_\_\_ Proposed Parking Spaces: \_\_\_\_\_

Sign (Sign Permits only):

Total Existing Signs: \_\_\_\_\_ Total Proposed Signs: \_\_\_\_\_ Bldg./Tenant Space Frontage: \_\_\_\_\_

Maximum Sign Area: \_\_\_\_\_ Area of Existing Signs: \_\_\_\_\_ Area of Proposed Signs: \_\_\_\_\_

Circle Single/Double Face Electrical Freestanding/Monument Projecting Roof Wall Other

Total Area: \_\_\_\_\_ Sign Area Remaining: \_\_\_\_\_ Action: \_\_\_\_\_ Date: \_\_\_\_\_

## Planning Application

<b>Planning Application Fees</b>	<b>Finance Stamp</b>
----------------------------------	----------------------

<b>For Official Use Only</b>	<b>Application No.:</b> _____	<b>Property Address:</b> _____ <b>Project Planner:</b> _____
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Application Type	Receipt Code	Application Fee
Index Codes: Planning: 001-1502- Public Works: 001-2502-		
<input type="checkbox"/> Administrative Permit	310-36-24 (SN) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Certificate of Compliance <small>(Pub. Works Eng. Review)</small>	310-30-09 (PM) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Certificate of Conformity	310-30-27 (P7) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Deposit Account #	601-0000-207-09-90 (P9)	\$
<input type="checkbox"/> Development Agreement Amendment Annual Review	310-30-28 (DA) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> General Plan Amendment	310-36-25 (ZL) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Lot Line Adjustment <small>(Pub. Works Eng. Review)</small>	310-36-11 (TM) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input checked="" type="checkbox"/> Major Use Permit <small>(Pub. Works Eng. Review)</small>	310-36-18 (AM) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Minor Exception <small>(Pub. Works Eng. Review)</small>	310-36-20 (ME) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Minor Use Permit <small>(Pub. Works Eng. Review)</small>	310-36-19 (P8) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Parcel Map – less than 5 lots <small>(Pub. Works Eng. Review)</small>	310-36-11 (TM) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$

Application Type	Receipt Code	Application Fee
Index Code: Planning: 001-1502- Public Works: 001-2502-		
<input type="checkbox"/> Planned Development Master Plan Unit Plan <small>(Pub. Works Eng. Review)</small>	310-30-21 (P5) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Public Notice ___ 200' ___ 500'	310-30-09 (PM) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Sign Permit	310-36-24 (SN) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input checked="" type="checkbox"/> Site Development <small>(Pub. Works Eng. Review)</small>	310-30-08 (SD) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Small Lot Subdivision	310-36-11 (TM) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Specific Plan Specific Plan Amendment	310-36-25 (ZL) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Tentative Map - 5 or more lots <small>(Pub. Works Eng. Review)</small>	310-36-11 (TM) 310-30-10 (EI) 310-30-25 (P6) 310-30-26 (P3)	\$ EI \$ P2 \$ P3 \$
<input type="checkbox"/> Variance	310-36-26 (VA) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Zoning & Code Text Amendment	310-36-25 (ZL) 310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
<input type="checkbox"/> Other _____	310-30-25 (P6) 310-30-26 (P3)	\$ P2 \$ P3 \$
	TOTAL	\$

Planning Application

Indemnification Agreement

800 DERR AVE., VALLEJO, CA
Project Address

As part of the application, the applicant and/or property owner agree to defend, indemnify, and hold harmless the City of Vallejo, its agents, officers, council members, employees, boards, commissions, and Council from any and all claims, actions or proceedings brought against any of the foregoing individuals or entities, seeking to attack, set aside, void or annul any approval of the application or related decision, or the processing or adoption of any environmental documents or negative declarations which relate to the approval. This indemnification shall include, but is not limited to, all damages, costs, expenses, attorney fees or expert witness fees that may be awarded to the prevailing party arising out of or in connection with the approval of the application or related decision, whether or not there is concurrent, passive or active negligence on the part of the City, its agents, officers, council members, employees, boards, commissions, and Council. If for any reason any portion of this indemnification agreement is held to be void or unenforceable by a court of competent jurisdiction, the remainder of the agreement shall remain in full force and effect.

The City of Vallejo shall have the right to appear and defend its interest in any litigation arising from the approval of the application or any related decision through its City Attorney or outside counsel selected by the City Attorney. The applicant shall be required to reimburse the City for attorney's fees incurred by the City in connection with the litigation.

I have read and agree with all of the above.

STEVE BRYAN ORCEM CALIFORNIA, INC.
Applicant (please print name)

Applicant signature

Date

VALLEJO MARINE TERMINAL, LLC
Property owner name (if different from the applicant)

Property owner signature (if different from the applicant)

Date

Planning Application

Indemnification Agreement

800 DEER AVE., VALLEJO, CA
Project Address

As part of the application, the applicant and/or property owner agree to defend, indemnify, and hold harmless the City of Vallejo, its agents, officers, council members, employees, boards, commissions, and Council from any and all claims, actions or proceedings brought against any of the foregoing individuals or entities, seeking to attack, set aside, void or annul any approval of the application or related decision, or the processing or adoption of any environmental documents or negative declarations which relate to the approval. This indemnification shall include, but is not limited to, all damages, costs, expenses, attorney fees or expert witness fees that may be awarded to the prevailing party arising out of or in connection with the approval of the application or related decision, whether or not there is concurrent, passive or active negligence on the part of the City, its agents, officers, council members, employees, boards, commissions, and Council. If for any reason any portion of this indemnification agreement is held to be void or unenforceable by a court of competent jurisdiction, the remainder of the agreement shall remain in full force and effect.

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I have read and agree with all of the above.

STEVE BRYAN ORCEM CALIFORNIA, INC.
Applicant (please print name)

[Signature]
Applicant signature

3 SEP 2013
Date

VALLEJO MARINE TERMINAL, LLC
Property owner name (if different from the applicant)

Property owner signature (if different from the applicant)

Date

Planning Application

Indemnification Agreement

800 DEER AVE., VALLEJO, CA
Project Address

As part of the application, the applicant and/or property owner agree to defend, indemnify, and hold harmless the City of Vallejo, its agents, officers, council members, employees, boards, commissions, and Council from any and all claims, actions or proceedings brought against any of the foregoing individuals or entities, seeking to attack, set aside, void or annul any approval of the application or related decision, or the processing or adoption of any environmental documents or negative declarations which relate to the approval. This indemnification shall include, but is not limited to, all damages, costs, expenses, attorney fees or expert witness fees that may be awarded to the prevailing party arising out of or in connection with the approval of the application or related decision, whether or not there is concurrent, passive or active negligence on the part of the City, its agents, officers, council members, employees, boards, commissions, and Council. If for any reason any portion of this indemnification agreement is held to be void or unenforceable by a court of competent jurisdiction, the remainder of the agreement shall remain in full force and effect.

The City of Vallejo shall have the right to appear and defend its interest in any litigation arising from the approval of the application or any related decision through its City Attorney or outside counsel selected by the City Attorney. The applicant shall be required to reimburse the City for attorney's fees incurred by the City in connection with the litigation.

I have read and agree with all of the above.

STEVE BRYAN ORCEM CALIFORNIA, INC.
Applicant (please print name)

Applicant signature

Date

VALLEJO MARINE TERMINAL, LLC
Property owner name (if different from the applicant)

[Handwritten signature]
Property owner signature (if different from the applicant)

9/3/13
Date



# CITY OF VALLEJO

## Central Permit Center

*Business License*  
(707) 648-4310

*Building*  
(707) 648-4374

*Fire Prevention*  
(707) 648-4565

*Planning*  
(707) 648-4326

*Public Works*  
(707) 651-7151

## Major Use Permit

Appointments may be required for some Planning project submittals. Appointments must be made at least 24 hours in advance. Please call the main desk (707) 648-4326 to set up the appointment.

### What is a Major Use Permit?

The City of Vallejo is divided into zoning districts which govern the uses that owners may have on their property. A conditional use permit is a Planning Commission approval allowing a use or activity not granted as a matter of right within a zoning district. It allows the City to evaluate uses which may be suitable only in certain locations or only if designed or operated in a particular manner.

### What are some of the uses requiring a use permit?

Conditional uses subject to a use permit are identified in the Zoning Ordinance for each zoning district. For residential districts, projects requiring a use permit include: multi-family developments containing nine or more dwelling units, churches, recreational and educational facilities, and community services. For commercial areas, conditional uses vary according to the particular zoning district, but usually include service stations, fast food or take out restaurants, medical services, sale of alcoholic beverages, operation of a business between the hours of twelve (12 midnight) and six (6) a.m., and vehicle sales, leasing and repair.

### Why do I need a Business License and a Use Permit?

The Business License is granted to the individual and is essentially a tax. The Use Permit is granted to the land/location after review of the use relative to certain criteria. A use permit may be transferred to a new business in the same location if there are no changes in the use.

### What are the steps in the process?

You may request preliminary review of your project by the Planning Division and/or Technical Project Review Committee. This process takes approximately 3 weeks but can save time later by resolving issues early in the review. Please refer to the "Preliminary Review" handout.

A planner will review the application for completeness. State law requires that staff determine whether the application is complete within 30 days. Planning staff usually does this within 3 weeks, depending on workload.

Some use permit applications are subject to the Environmental Review process. If staff advises you that your project is subject to Environmental Review, please refer to the "Environmental Review" handout.

## Major Use Permit

### What is required for application submittal?

#### MAJOR USE PERMIT CHECKLIST

(ITEMS INCLUDED IN APPLICATION)

The following items must be submitted for a complete application. To ensure that all items are provided, please check off the box for each item that is shown. If an item is not applicable, write N/A next to the box. Incomplete applications will not be accepted.

- Application:** Completed planning application signed by the property owner and applicant.
- Fees:** A filing fee of \$ \_\_\_\_\_.  
A notice fee of \$ \_\_\_\_\_.
- Description:** Detailed written description of your project/use which may include square footage of proposed and existing, Construction Type, Occupant Load, Occupancy Classification, Fire Sprinkler System: existing and/or non-existing, Days/hours of operation, Number of employees, Number of persons (if public assembly area), Restroom facilities, Trash/litter control methods, Storage, including any hazardous materials, On-site parking available to use, Proposed signs (sign application may be needed), Security and public safety measures, if applicable, Interior modifications to the building relative to the proposed use, Site Improvements and Utility Plan. (See VSFCDD handout) and Site Development Plan including site improvement and utility plans (for vacant lots).
- Supplemental questionnaire** refer to "Major Use Permit Supplemental Information".
- Plans:** Eight (8) set of plans: Site plan, building elevations, utility site plan and floor plans. Please refer to the "How to Draw a Site Plan" handout. Also, please provide one 8 ½ x 11 reduction of all plans. Plans must show all structures, street rights of way, driveways and vegetation within 100 feet of subject parcel. The plans must indicate the proposed occupancy classification, occupancy load and show buildings less than 20 feet from property line. Landscaping both existing and proposed.
- Site Photos:** Color photos showing the existing property and the adjacent properties.

### How long does the approval process take?

A planner will review the application for completeness. State law requires that staff determine whether the application is complete within 30 days.

Upon submittal of a complete application, planning staff will route the plans to the appropriate departments and agencies for comments. These may include Public Works, Fire Prevention, Vallejo Sanitary and Flood Control District (VSFCDD) and others. A project will then be scheduled for a public hearing before the Planning Commission once the application is accepted as complete.

### What is involved in a public hearing?

At least 10 days (21 days if an Initial Study has been prepared) prior to the Planning Commission hearing, property owners within 500 feet of the boundaries of the subject property will be notified of the public hearing.

## Major Use Permit

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At the hearing, the Commission will consider the information provided by the Planning Division staff and hear comments from the public. After the public hearing portion of the meeting is concluded, the Commissioners will use the information presented to make a decision on your request. Their decision may be to approve, conditionally approved or denied the project.

### **Can a decision be appealed?**

Yes, the Planning Commission decision can be appealed to the City Council. To appeal, the appellant shall submit a letter stating the reasons of the appeal and how it affects them. The appeal must be filed with the City Clerk within 10 calendar days after the Planning Commission action. A public hearing will then be set for the City Council to consider the appeal. The hearing would occur within 30 days of the appeal.

If no appeal is filed within 10 days of the Planning Commission action date, the project determination is final.

### **When are hearings held?**

The Planning Commission usually holds public hearings on the first and third Mondays of each month at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street.

The City Council usually holds public hearings the second and fourth Tuesdays of each month at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street.

### **When does my use permit expire?**

Use permit approval is valid for 24 months unless authorized construction has begun prior to the expiration date. If a use permit is approved in conjunction with an approved tentative map of 5 or more lots, it may be extended an additional 36 months.

### **What do I need after my Use Permit approval?**

The Planning Commission Staff Report will typically contain several Conditions of Approval from several departments and agencies that will need to be satisfied in addition to conditions from the Planning Division. For example, you may have to comply with certain conditions from the City's Water Division to receive water service and conditions from VSFCDD to receive a sewer connection and/or conditions from the City Engineer. Additionally, you may be required to secure a grading permit and an encroachment permit, and Construction Plans for Site Improvements from the Public Works Department and a building permit, from the Building Division.

The following additional handouts or approvals may be useful or necessary to you:

1. Processing your project through VSFCDD – Contact VSFCDD at 644-8949
2. Approval of site improvement plan by VSFCDD – Contact Water 648-4307, Fire 648-4474,  
Public Works 648-4315
3. Guidelines for obtaining a grading permit – Contact Public Works at 648-4315
4. Building permit application & fees – Contact Building at 648-4374
5. Landscaping/Irrigation Standards – Refer to the Landscape/Irrigation Standards handout
6. On-Site/Off-Site Improvement Plans – Contact Public Works at 648-4315

### **What if I need more information?**

For further information please contact the City of Vallejo Planning Division at (707) 648-4326.



# Major Use Permit Supplemental Information

If you are applying for the sale of alcoholic beverages, you must also complete "Off-Site Sale of Alcohol Supplemental Questionnaire".

### PROJECT INFORMATION

PROPERTY ADDRESS 800 DERR AVE., VALLEJO, CA  
ASSESSOR'S PARCEL NO. 006-116-0220 (SEE PLANS-APPENDIX A)

### PURPOSED USE

DESCRIPTION OF PROPOSED USE (include products/services provided, alcohol sales, etc.)  
PROPOSED GROUND GRANULATED BLAST FURNACE SLAG (GGBS) MANUFACTURING PLANT (SEE PROJECT DESCRIPTION)  
Additional Licenses/Approvals Required: State: \_\_\_\_\_ Regional RCDC

### BUILDINGS

Existing Gross Floor Area ±105,000 Portions Thereof to be Used 0 New Construction ±55,000  
(SEE PROJECT DESCRIPTION & PLANS)

PARKING Current Spaces 0 Proposed Spaces 13 + OVERFLOW (SHEET M1P1-201)

### TYPICAL OPERATION – Complete for all uses, as applicable.

Days of Operation 365 Hours of Operation 24

Number of Full-time Employees 20-30 Number of Part-Time Employees \_\_\_\_\_

Outdoor Activities (storage, work areas, etc.) BUK STORAGE RAW MATERIALS, EQUIPMENT (SEE PROJECT DESCRIPTION)

Hazardous or Volatile Materials NONE

### SUPPLEMENTAL INFORMATION FOR SELECTED USES

Medical Services: Number of Full-time Practitioners \_\_\_\_\_ Number of Additional Full-time Employees \_\_\_\_\_  
N/A

Religious Assembly: Number of Fixed Seats (20" of pew = 1 seat) \_\_\_\_\_ or Gross Floor Area w/o seats \_\_\_\_\_  
N/A

Day Care: Name & Address of Agency of Licenses Operator & Facility \_\_\_\_\_  
N/A

Maximum Number of Persons to be cared for Under the License \_\_\_\_\_

Number of Persons Residing Full-time in the Facility \_\_\_\_\_

# Off-Site Sale of Alcohol Supplemental Questionnaire

N/A - NONE

*Prior to the Planning Commission hearing to consider your application, you are encouraged to meet and discuss your proposal with the Vallejo Police Department, Crime Prevention Division, the local neighborhood associations, surrounding property owners and local businesses in the area.*

Applicant Name: \_\_\_\_\_ Phone No.: (\_\_\_\_) \_\_\_\_\_

Business Name: \_\_\_\_\_

Business Address: \_\_\_\_\_ Phone No.: (\_\_\_\_) \_\_\_\_\_

### What type of Business?

- |  |   |
|--|---|
| <input type="checkbox"/> Specialty Shop  | <input type="checkbox"/> Convenience Market |
| <input type="checkbox"/> Gas Station     | <input type="checkbox"/> Market             |
| <input type="checkbox"/> Liquor Store    | <input type="checkbox"/> Supermarket        |
| <input type="checkbox"/> Other (explain) |   |

### What type of ABC license will you be applying for?

- Type 20 – Off –sale beer & wine
- Type 21 – Off-sale general
- Other (specify)

What hours will your business be open?

What hours will your business be selling alcohol?

What is the square footage of the store (gross floor area)? \_\_\_\_\_

What will be the square footage dedicated to the sale of alcohol items? \_\_\_\_\_

Major Use Permit

Indicate which of the following ways of eliminating graffiti you are planning on using:

- Planting vines next to fences
- Inspecting fences and the outside of building regularly for graffiti
- Paint wall and other surfaces with "anti-graffiti" coating
- Paying a staff member to paint over the graffiti or painting it myself
- Paying a paint contractor to paint over the graffiti
- Other (specify)

SITE TO BE FENCED (CHAIN LINK + MASONRY WALLS) AND MONITORED / MAINTAINED FOR SECURITY 24/7/365.

The Zoning Ordinance regulates the size, location and type of signage that may be used by a business. Please indicate which of the following methods of advertising you intend to use for your facility (separate sign permits will be required. Refer to PH-40):

- Sign painted on building wall (SILO + BUILDING)
- Non-illuminated sign attached to building (DETAILS ON PLANS)
- Illuminated sign attached to building
- Free-standing sign

Temporary window signs may not occupy more than 15% of the ground floor window area. Which, if any, of the following sign(s) do you intend to use: N/A

- Hand-letter window signs
- Neon window signs
- Posters provided by the alcohol beverage distributors
- Other (specify)

Security: Please indicate below which of the public safety measures you intend to use at your facility:

- Locate cash register so it is visible from street
- Video camera monitoring
- Bullet resistant glass surrounding cash register
- Post "No Loitering" sign
- Discourage patrons from loitering
- Security guard
- Post police telephone numbers
- Telephone police, if necessary
- Pay phone for outgoing calls only
- Iron window bars
- Other (specify)

FULL ON-SITE SECURITY 24/7/365

Major Use Permit

Indicate how you intend to illuminate your parking areas and adjacent walkways: \_\_\_\_\_

FULL CUT-OFF SHIELDED POLE / BLDG. LIGHTS

Do you intend to place video arcade games in your facility? If so, how many? N/A

What will be the number of employees? 20-30 (SEE PROJECT DESCRIPTION)

Which company or individual are you planning on using for your "Responsible Beverage Service Training Program"? TRAINING TO BE IMPLEMENTED BY ORCEM CALIFORNIA

**The following optional questions pertain to issues which the City of Vallejo has no regulatory authority over. The questions are included as a matter of public information.**

Which of the following types of alcoholic beverages do you intend to sell? Check all that apply

NONE N/A

- Individual containers of beer, less than 40 oz
- 40 oz beers
- 6-12 packs of beer, ale or wine coolers
- Cases of beer or wine
- Malt liquor, 12 oz or greater
- Kegs of beer
- Individual containers of wine cooler
- Low-price wines, 750 ml or larger
- Wines, 750 ml or larger
- Premium wines, 750 ml or larger
- 6-12 packs of wine coolers
- Individual containers of fortified wines, less than 500 ml
- Fortified wines, any size
- Distilled spirits, smaller than pint-size
- Distilled spirits, pint-size or larger
- Other (specify)

Will any of the beverages you plan to sell be sole chilled?  Yes  No

Will the majority of your beverages be sold at discount prices?  Yes  No

What number/types of in-store promotional advertising supplied by alcohol distributors will you be using?

### Major Use Permit

List any similar businesses that you have owned or managed.

Business Name	Street Address	City	State	Dates of Ownership/Management

Do you have any Alcohol Beverage Control violations at any of the businesses you listed above? If so, please list the business name, the dates of any violations, the type of violation and the circumstances under which it occurred:

NONE / NA



# CITY OF VALLEJO

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*Planning*  
(707) 648-4326

*Public Works*  
(707) 651-7151

## Site Development Permit

Appointments may be required for this planning application. Appointments must be made at least 24 hours in advance. Please call the main desk (707) 648-4326 to set up the appointment.

### What is a Site Development Permit?

A site development permit is a staff level review of the site design, architecture, interior vehicular and pedestrian access, and circulation components of a proposed project.

### When is a site development permit required?

A site development permit is required for the following:

- ❖ New construction, including single family homes.
- ❖ Significant exterior alterations and additions to residential and nonresidential uses for which a building permit is required.
- ❖ Relocation or movement of any building or structure to a new location.
- ❖ Parking lots containing 10 or more spaces.

### What are the steps in the process?

- You may request preliminary review of your project by the Planning Division and/or Technical Project Review Committee. This process takes approximately 3 weeks but can save time later by resolving issues early in the review. Please refer to the "Preliminary Review" handout for more information.
- A planner will review the application for completeness. State law requires that staff determine whether the application is complete within 30 days. Planning staff usually does this within 3 weeks, depending on workload.
- Some site development permit applications are subject to the Environmental Review process. If staff advises you that your project is subject to Environmental Review, please refer to the "Environmental Review" handout.
- For commercial buildings less than 20 feet from the property line, provide sections or elevations that show any parapets or roof extensions.

## Site Development Permit

What is required for plan submittal?

### SITE DEVELOPMENT PERMIT CHECKLIST (ITEMS INCLUDED IN APPLICATION)

The following items must be submitted for a complete application. To ensure that all items are provided, please check off the box for each item that is shown. If an item is not applicable, write N/A next to the box. Incomplete applications will not be accepted.

- Application:** A completed planning application signed by the property owner and applicant.
- Fees:** An application fee of \$ \_\_\_\_\_.  
A public notice fee of \$ \_\_\_\_\_.
- Plans:** Eight (8) sets of plans: Site plan, building elevations and floor plans. Please refer to the "Site Plan and Elevation Checklist" handout. Site plan must show project relationship to structures, driveways and vegetation on adjacent properties, and proposed and existing utility improvements.
- Samples of building materials and colors.**
- Site Photos:** Color photos showing the existing property and the adjacent properties.
- Flood Zone Information.** Check the FEMA maps to determine if the project is within a flood zone. If the project site or a portion of the project site is within the flood zone, please indicate the location of the flood zone on the site plan.
- Miscellaneous:** Other requirements determined by the Planning Division to be necessary to evaluate the project. (APPENDIX B  
DETAILED PROJECT DESCRIPTION  
+ PLANS)

What is the approval process?

Upon submittal of a complete application, the Planning staff will route the plans to the appropriate departments and agencies for comments. Notice of the site development application will be mailed to all property owners within a 200-foot radius of the subject property. This notice gives the property owners 14 to 21 days, depending on whether environmental review is required, to comment on the application. Staff will then take action and the project determination will be in the form of a written report from the Planning Division.

What is the decision based on?

After receiving comments from the public and relevant City divisions and appropriate outside agencies (e.g., Vallejo Sanitation and Flood Control District), the Planning Division will review the proposed application for compliance with relevant standards in the Zoning Ordinance related to height, setback, lot coverage, landscaping, parking, open space, etc. Staff will also determine whether the project is consistent with the General Plan or other relevant plans adopted by the City for the project area.

## **Site Development Permit**

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Finally, Planning Staff will determine whether the project is well-composed urban design and whether the quality and character of the project is consistent with the surrounding area.

### **Can a decision be appealed?**

Yes, any Planning Division determination may be appealed to the Planning Commission through the Planning Commission Secretary. To appeal, the appellant shall submit a letter stating the reasons of the appeal and how it affects them. The appeal must be filed with the Planning Division within 10 calendar days after the decision is made. A public hearing will then be set for the Planning Commission to consider the appeal. If a Commission decision is appealed to the City Clerk, a public hearing before the City Council will be scheduled.

If no appeal is filed within 10 days of the determination date, the project determination is final.

### **When are appeals hearings held?**

The Planning Commission usually holds public hearings on the first and third Mondays of each month at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street.

The City Council usually holds public hearings on the second and fourth Tuesdays of each month at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street.

### **When does my site development permit expire?**

Approval of a site development permit shall expire automatically 18 months after the date of issuance unless authorized construction has commenced prior to the expiration date, whereupon the permit is vested and will not expire. The Planning Manager, at his/her discretion, may extend the approval for 12 months upon written request if the application is consistent with current plans and policies.

### **What if I need more information?**

For further information please contact the City of Vallejo Planning Division at (707) 648-4326.



## 2.0 PROJECT DESCRIPTION

### 2.1 INTRODUCTION

Orcem California Inc. ("Orcem") has filed an application with the City of Vallejo to approve a Major Use Permit and Site Development Plan to construct and operate a processing facility for the production of a high performance "green" cement, a recycled and beneficiated material produced with an order of magnitude less CO<sub>2</sub>e and other polluting air emissions than the traditional portland cement consumed in California annually (see Appendix C). This green cement is technically known as ground granulated blast furnace slag ("GGBFS"), as per ASTM C-989. The Orcem facility will include approximately 75,000 square feet of buildings and equipment, together with outdoor storage areas (the "Orcem Project" or "Project"). The Orcem Project will be located on approximately 4.83 acres of the former General Mills plant site at 800 Derr Avenue, as shown in Figure 1, and in greater detail on Drawing 5837-PP-101 (the "Orcem Site").

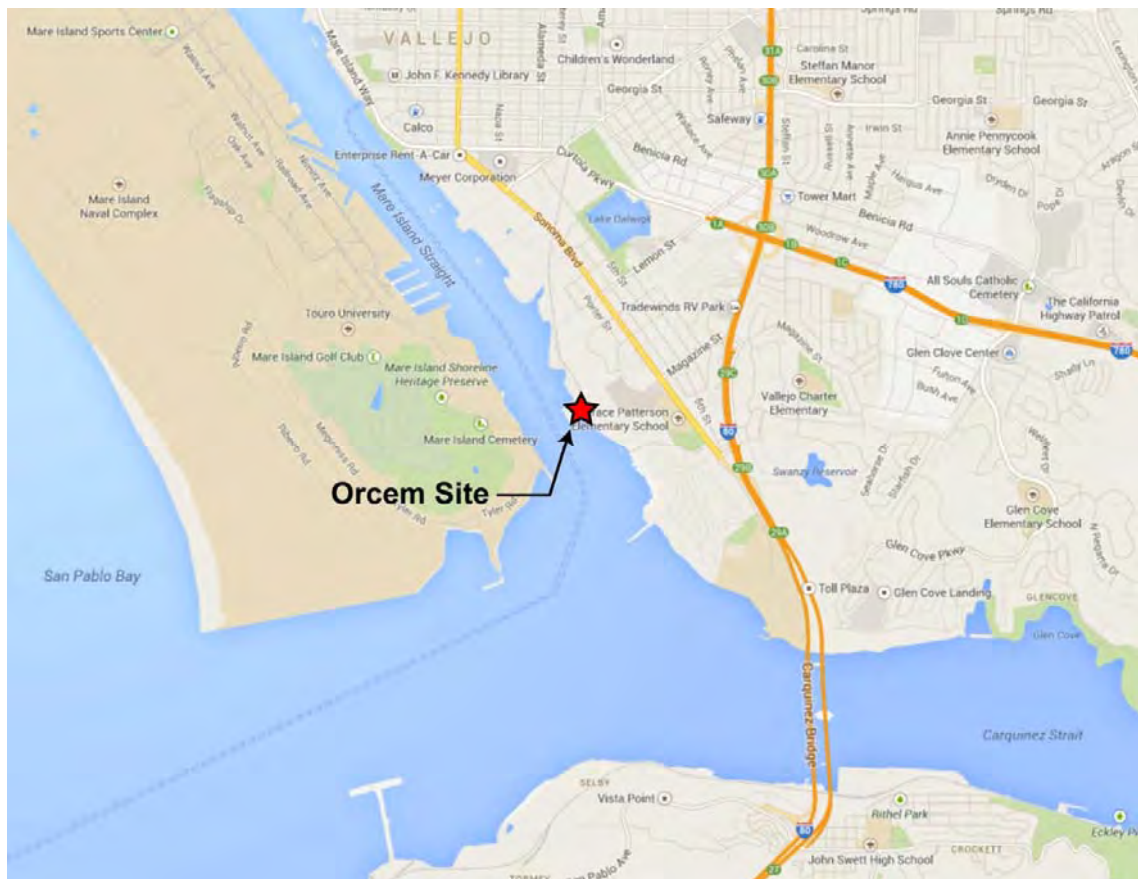


Figure 1: Regional Setting

The 4.83-acre Orcem Site was previously used by General Mills Inc. as part of a flour milling, blending and distribution center, which has remained vacant since it was closed in 2004. Several of the buildings and the equipment previously utilized by General Mills within the Orcem Site will be demolished, as further described in Section 2.4.1 below in order to accommodate construction and operation of the proposed cement products production facility.

Sometimes referred to as "environmentally friendly cement", due to its significantly reduced greenhouse gas impact, Orcem's primary finished product, GGBFS, will be produced on the Orcem Site, along with other cement and binder products, via the following major steps:

1. Receive via several alternative transport modes (ship, rail and truck as described in Sections 2.7), various raw materials, including, Granulated Blast Furnace Slag (GBFS), portland cement clinker (or "clinker", the unground intermediate product in the production of portland cement), portland cement, pozzolan, gypsum and limestone.
2. Store the above raw materials within appropriate enclosed and open facilities on the Orcem Site as described in Section 2.7.4 below.
3. Process the above raw materials by milling within a closed system, including: (a) Recycled GBFS granulate and gypsum processed into GGBFS powder, the Orcem Project's primary finished product; and (b) All the above raw materials, in different specific quantities, processed into a variety of cementing products (see Table 3 in Section 2.5.1, and Section 2.7.6 for details).
4. Store the finished GGBFS powder and cementing products within enclosed storage facilities on the Orcem Site (see Section 2.7.7 for details).
5. Distribute the GGBFS powder and cementing products from the enclosed storage facilities on the Orcem Site for use in construction projects throughout California and neighboring states (see Section 2.7.8 for details).

The Orcem Project will occupy a portion of the property formerly used by General Mills for the milling of grains for flour, thus continuing a long heritage of milling on this site. Specifically, Orcem has entered into a long term lease for a period of up to 65 years to utilize 4.83 acres of the 39.61 acres currently owned or controlled by Vallejo Marine Terminal, LLC (VMT), where it will build and operate the Project. Please refer to Section 2.4 for a complete description of all proposed site preparation, construction of buildings, storage facilities and equipment, and improvement of infrastructure and related facilities. Construction of the Project is expected to take place over a period of approximately 15 months (as further described in Section 2.3), with operation continuing indefinitely thereafter. VMT has filed a separate application with the City of Vallejo (the "VMT Project") to

develop and operate a marine terminal and related uses on approximately 34.78 acres (the "VMT Site") situated west of and contiguous to the Orcem Site. The relationship of the Orcem Site to the adjoining VMT Site is shown in Figure 2 below.

Orcem will import its raw materials (GBFS, clinker, portland cement, gypsum, limestone and pozzolan) via several methods of transport, including ocean going vessels which will berth at the VMT Project Phase 1 terminal, railcars with access from the adjoining VMT Site, and trucks (see section 2.7 for details of various transport modes). The primary mode of raw material transport will be via ocean going vessels, handling up to 100% of the GBFS and clinker, representing between approximately 84% and 97% of total raw materials (see Table 5 in Section 2.7.2 for details). The Port of Richmond or other area wharf may be used at times when the VMT Project terminal is unavailable.

Materials from the VMT Project Phase 1 wharf will be unloaded and transported by covered conveyors (Orcem Phases 1 and 2) to open (GBFS, gypsum, limestone and pozzolan) or covered (clinker) stockpiles and other storage facilities (cement) on the Orcem Site (see Section 2.7.3 for details). The raw materials will then be reclaimed from these stockpiles by front end loaders and transported by covered conveyors (as described in Section 2.7.4 and 2.7.5) into the fully enclosed processing equipment for milling into fine powders (see Section 2.7.6). The finished products, including cement, will be transported in fully enclosed conveying systems into Storage Silos (see Section 2.7.7), for subsequent loading into truck or rail tankers for distribution to customers throughout California and neighboring states (see Section 2.7.8).

The Orcem Project's principal product, GGBFS, is manufactured by recycling a by-product, GBFS, from the steel industry. It is used as a partial replacement for traditional cement, also known as portland cement. Portland cement production is one of the world's largest industrial emitters of greenhouse gases – the production of a ton of portland cement emits approximately 0.8 tons of CO<sub>2</sub>e<sup>1</sup> into the atmosphere. The production of a ton of portland cement also results in emissions of NO<sub>x</sub>, SO<sub>2</sub>, and mercury, which lead to the acidification and contamination of soils and surface waters, and consumes 1.6 tons of natural resources in the form of limestone, clay and shale.

In contrast GGBFS is an environmentally friendly product, the production of which has virtually no SO<sub>2</sub> or mercury emissions, and more than an order of magnitude less CO<sub>2</sub> and NO<sub>x</sub> emissions, while it provides a number of technical

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<sup>1</sup> Source: Figure for California is 805kg/CO<sub>2</sub>e per tonne of OPC in 2011. EPA Greenhouse Gas Reporting Program: 2011 Data Sets <http://www.epa.gov/ghgreporting/ghgdata/2011data.html> plus USGS Cement Yearbook 2011 <http://minerals.usgs.gov/minerals/pubs/commodity/cement/>

performance advantages over portland cement in the production of concrete (see Appendix C for details).

Orcem was recently established to develop this Project with a primary focus on the manufacture of GGBFS, and is a wholly owned subsidiary of Ecocem Materials Ltd (“Ecocem”), a leading European manufacturer and distributor of GGBFS. Ecocem is a privately owned Irish company that owns and operates GGBFS manufacturing plants, similar to the proposed Orcem Project, in the Netherlands, Ireland and France, and currently produces more than one million tons of GGBFS per annum.

The Global Warming Solutions Act of 2006 (AB 32) requires California to reduce its greenhouse emissions to 1990 levels by 2020. The cement industry is one of California’s largest industrial emitter of greenhouse gases<sup>2</sup>. Following its success in Europe and seeing the growing demand for low CO<sub>2</sub> and environmentally friendly products in California, Ecocem now wishes to manufacture and sell its products throughout California and neighboring states.

## 2.2 PROJECT LOCATION AND EXISTING CONDITIONS

### 2.2.1 Regional Setting

The Project site is located in the City of Vallejo, in Solano County, as indicated in Figure 1, and shown in greater detail on Sheet 5387-PP-101 (Appendix A). The Project Site is regionally accessible to vehicular traffic from Interstate Highways 80 and 780 via State Highway 29, Curtola Parkway and Lemon Street, to Derr Avenue. It is also accessible for rail transportation via the California Northern rail line network which extends along the Vallejo waterfront, as well as for shipping transportation via the adjoining proposed Vallejo Marine Terminal deep water terminal.

### 2.2.2 Local Setting, General Plan & Zoning

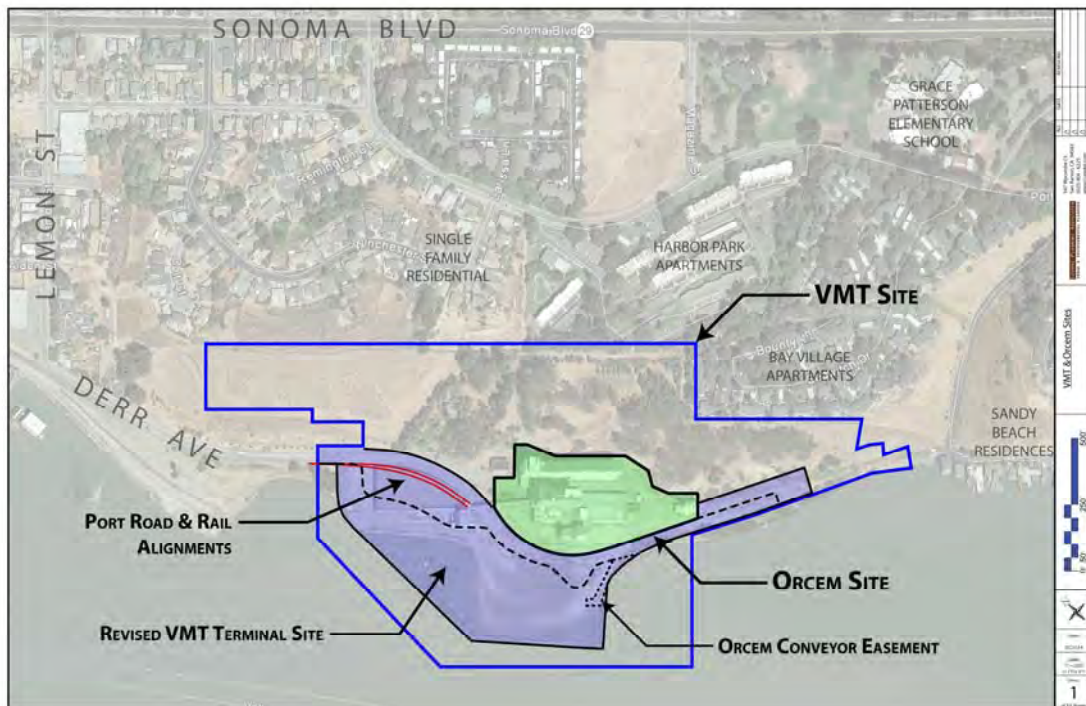
The Orcem Site is situated at a base elevation of approximately 15 feet (see Site Layout Plans in Appendix A for details), and is bounded by a steep hillside to the east, Mare Island Strait and the existing dock to the west, and open areas to the north and south. The nearest residential uses are situated 300 feet to the southeast of the Orcem Site at a base elevation of approximately 150 feet (Bay Village Apartments). Other nearby residential uses are located 400 feet to the east at a base elevation of approximately 100 feet (Harbor Park Apartments), 500 feet to the northeast at approximate elevations of between 100 and 150 feet

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<sup>2</sup> Source: EPA Greenhouse Gas Reporting Program: 2011 Data Sets  
<http://www.epa.gov/ghgreporting/ghgdata/2011data.html>

(residences along Browning Way and Winchester Street), and directly adjoining the water approximately 1,000 feet to the south (Sandy Beach residences). The nearest school is Grace Patterson Elementary, located approximately 1,500 feet to the east.

The existing Flour Mill Building and Grain Silos/Elevator, as identified in Table 1a below, were built by the Sperry Company in 1917. These structures have been extensively modified throughout their years of operation, and have remained vacant since General Mills closed the plant in 2004 (see Photographs on Sheet 5387-PP-101). The proposed Orcem Project will involve removal of all seven of the remaining General Mills operational structures situated within the Orcem Site. The Site is currently secured by a fence which extends around the entire VMT Site.



**Figure 2: Aerial View of Orcem Site**

The Orcem Site is surrounded by the adjoining VMT Site and adjoins the VMT Terminal as shown in Figure 2 above. These 4.83 acres of upland property are identified by the Federal Emergency Management Agency (FEMA), as part of the National Flood Insurance Program, on the Flood Insurance Rate Map (FIRM) as being within Zone "X". Zone X contains areas of 2% annual chance of flood with average depths of less than one foot. The FEMA FIRM Map identifying the Orcem and VMT Sites is included in attached Appendix B.

Contained within the adjoining VMT Site is the existing General Mills deep water dock. VMT has filed applications with the City of Vallejo for approval of a separate project (the VMT Project) which includes upgrading and refurbishing this dock to provide a local resource for shipping and receiving of bulk goods for use by both local and regional customers, including Orcem. It is assumed that the completed VMT Project would be available for use by the Orcem Project as the primary means for receipt of raw materials via ocean going vessels (see Section 2.7 for further details). As shown in Figure 2, and further described in Section 2.7.3, the Orcem Project includes use of a defined portion of the VMT Site, providing connectivity to the VMT Project Phase 1 wharf for transport of raw materials via enclosed conveyor to the Orcem Site storage facilities (see Figure 2 above, and Plans 5387-PP-101, 5387-M1P1-211, 5387-M2P2-201 in Appendix A).

The City of Vallejo General Plan designates the Project Site "Employment", and the Site is currently zoned "Intensive Use". The Intensive Use Zoning District is Vallejo's heaviest industrial district. The regulations for this district distinguish between "Permitted Uses" and "Permitted Uses Subject to A Major Use Permit". As detailed in Chapter 16.34 of the City Code, "General Industrial Uses" are "Permitted Uses" (Section 16.34.020.C.2), whereas "Heavy Industrial Uses" are permitted upon the issuance of a major use permit (Section 16.34.040.B.1).

Code Section 16.06.530 (Article V) distinguishes between "General" and "Heavy" industrial uses. It classifies "General Industrial Uses" as consisting of "*industrial plants engaged in manufacturing, compounding, processing, assembling, packaging, treatment or fabrication of materials and products*". It classifies "Heavy Industrial Uses" as "*all other plants*" or any such plant which "*involves the compounding of radioactive materials, petroleum refining or manufacturing of explosives*". The Orcem Project would operate like other General Industrial Uses, because it does not involve use of radioactive materials, petroleum refining or the manufacture of explosives, and would not result in high levels of sewage discharge. In addition, the Orcem Project's processing of GGBFS and cement products as described in Sections 2.7 - 2.8 would take place under carefully controlled conditions, in order to limit noise, air quality and other emissions. Like other General Industrial Uses, operation of the Orcem Project will involve use of truck, rail and shipping transport for both raw materials and finished products.

## 2.3 PROJECT OBJECTIVES

The basic purposes of the Proposed Project are as follows:

- To establish an around the clock multi-modal receiving, storage, processing and distribution facility focused on the manufacture of GGBFS, a product that has historically been in short supply in California, helps California meet its AB 32 greenhouse gas regulations, and helps to meet the long term needs of the construction industry for high performance environmentally favorable concrete and sustainable building materials.
- To reliably provide competitively priced and environmentally friendly cementitious products that are crucial in reducing the environmental impact of concrete production, as sought by the California Department of Transportation (Caltrans) in support of AB 32, and is also called for by designers of both public and private sector construction projects seeking Leadership in Energy and Environmental Design ("LEED") certification.
- To have the flexibility to also offer GGBFS, blended GGBFS cements and non-GGBFS cementing products, in order to provide a complete line of competitive products that meet long-term client and project needs, and to have the ability to respond to potential worldwide shortages of GBFS supplies, thereby assuring sustainability of the Orcem Project's operation over time.
- To be capable of an annual throughput of up to approximately 900,000 tons of cementitious products at full capacity, depending on the product portfolio. This is the projected level of production which represents the maximized sustainable volume of GGBFS products needed to satisfy demand in California and neighboring states into the foreseeable future, based on the goal of reducing atmospheric GHG's (see also attached Appendix C).
- To optimize and make efficient reuse of approximately 5 acres of the former General Mills Plant site, thereby taking advantage of existing truck, rail and deep water birth for import of raw materials, and truck and rail access for distribution of finished GGBFS product to growing markets in California and neighboring states.
- Expedite the permitting and construction of the plant within a period of not more than 27 months to facilitate commencement of the plant operations.

## 2.4 PROJECT CONSTRUCTION COMPONENTS

The Proposed Project will consist of the following primary construction components: (1) Preparation of the Site, including demolition of the 7 remaining structures formerly utilized by General Mills situated within the Orcem Site; (2) Development of the enclosed milling plant, including major buildings, storage facilities, conveyance systems and processing equipment; (3) Construction of ancillary buildings such as the "Outload" and "Storage Silo" Buildings (see Table 2 for complete list); and (4) Improvement of site infrastructure and supporting facilities, including fire hydrants, storm water management improvements, and equipment for

loading and unloading of rail cars (see Plans in Appendix A and Section 2.4.3 below for details).

### 2.4.1 Site Preparation

The proposed Project involves demolition of the seven remaining former General Mills structures listed in Table 1a and identified by number in Figure 3. The principle Flour Mill (Map Reference #2) and Silo/Elevator (Map Reference #1) buildings identified in Table 1a and Figure 3, were designed and built in 1917 by the Sperry Flour Company to accommodate processing and storage of grain products, and are of advanced age, have severe physical deterioration, and are structurally unsuitable for accommodation of the extremely large and heavy equipment and materials used in the milling of Orcem products. The remaining five smaller structures within the Orcem Site were more recently constructed to serve specific support functions for the General Mills plant, and have no remaining economic usefulness or operational relevance.

Table 1a below identifies the former General Mills buildings and equipment located on the Orcem Site, together with their approximate sizes and year of construction. The seven remaining structures listed in Table 1a vary in height from one to eight stories, and in footprint size from approximately 300 to 35,000 square feet, comprising a total of approximately 156,000 square feet of floor area. The aggregate portion of the 4.83-acre Orcem Site covered by these structures is 27%, and the floor area ratio (FAR) of these old structures within the Orcem Site is 0.74.

Map Ref.	Element	Element Type	Footprint (s.f.)	Floor Area (s.f.)	Year Built
1	Grain Silos & Elevator	Equipment	17,700	17,700	1917
2	Flour Mill	Building	35,000	134,800	1917
3	Old Bulkhouse	Building	1,200	1,200	1957
4	New Bulkhouse	Building	1,100	1,100	1985
5	Welding Shop	Building	400	400	1985
6	Pipe Storage	Building	600	600	1985
7	Forklift Repair	Building	300	300	1985
8	Mill Run Canopy <sup>3</sup>	Building	0	0	1986
<b>Total on Orcem Site:</b>			<b>56,300</b>	<b>156,100</b>	

**Table 1a: Original General Mills Buildings & Equipment on Orcem Site**

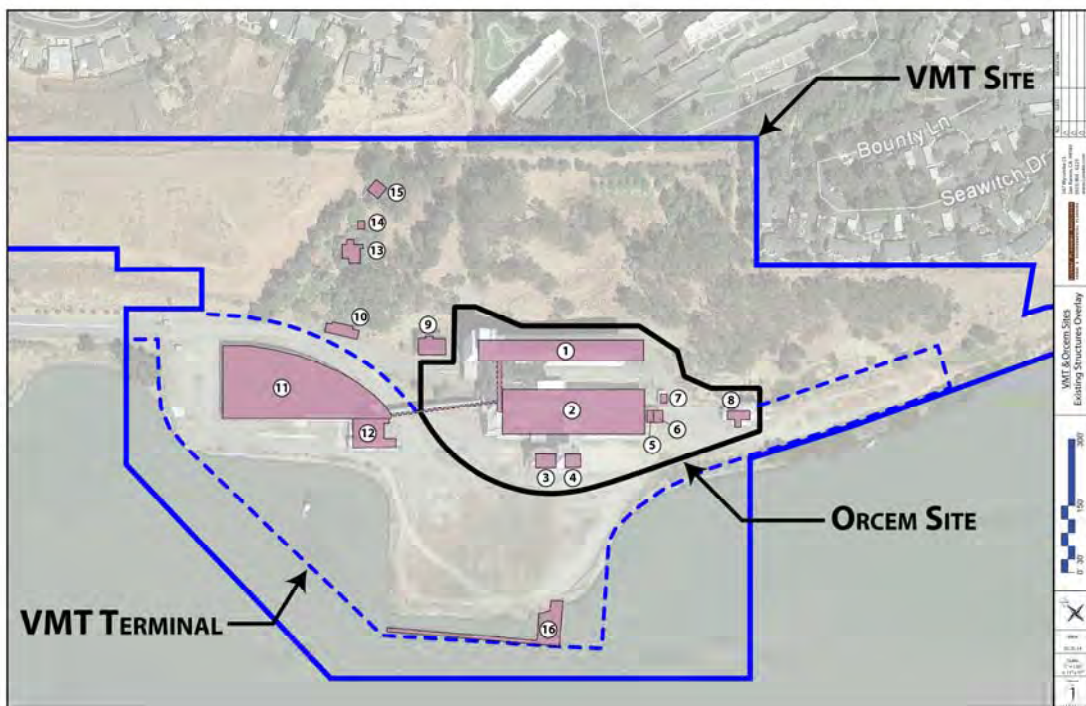
<sup>3</sup> Mill Run Canopy structure was dismantled for scrap metal in 2012; its original location is shown in Figure 3 for reference purposes only.



Table 1b shows the other remaining structures identified in Figure 3 on the adjoining VMT Site for historical reference. None of these structures are directly affected by the Orcem Project.

Map Ref.	Element	Element Type	Footprint (s.f.)	Floor Area (s.f.)	Year Built
9	Administrative Bldg.	Building	2,100	4,200	1917
10	Garage	Building	1,910	1,910	1918
11	Warehouse	Building	42,500	42,500	1947
12	Bakery Bulkhouse	Building	4,700	4,700	1992
13	Manager's House	Building	985	1,970	1901-1919
14	Manager's Garage	Building	380	380	1950's
15	Barn	Building	500	500	1901-1919
16	Dock	Structure	0	0	1901-1919
<b>Total on VMT Site:</b>			<b>53,075</b>	<b>56,160</b>	

**Table 1b: Original General Mills Buildings on VMT Site**



**Figure 3: Former General Mills Structures Located on Orcem & VMT Sites**

Demolition of the existing buildings and equipment within the Orcem Site is scheduled to take place as part of the initial construction phase.

## 2.4.2 Construction of Buildings, Storage Facilities & Equipment

The project will be constructed in two major phases to coincide with the growth in demand for Orcem's products. The total throughput of raw materials of the Plant in Phase 1 will be less than 500,000 tons per year, and in Phase 2 at full capacity will be between approximately 780,000 and 900,000 tons per year, depending on the product portfolio required by the market. Construction of the new project facilities will include 11 separate buildings and major pieces of equipment, as listed in Table 2 below, and shown in detail in the drawings in Appendix A. These improvements provide for a total building area of approximately 72,500 square feet, with a total footprint area of approximately 61,070 square feet. In final Phase 2 configuration, the proposed Orcem Project buildings and equipment would have a site coverage of 29% and a floor area ratio (FAR) of approximately 0.34.

Ref	Element	Element Type	Footprint (s.f.)	Floor Area (s.f.)	Height (feet) <sup>4</sup>
1	Processing Mill Building	Building	5,700	10,200	97'-5" <sup>5</sup>
2	Filter Building	Building	3,350	12,000	97'-5"
3	Main Fan & Base	Equipment	960	N/A	Varies
4	Workshop + Control Building	Building	1,950	3,900	38'-0"
5	Two-Story Office Building	Building	1,450	2,600	23'-5"
6	Outload Silos & Weighbridges	Building	4,400	5,800	62'-8"
7	Storage Silos (3) & Elevator	Building	5,260	N/A	131'-6"
8	Raw Material Storage Bldg.	Building	38,000	38,000	82'-7"
9	Raw Material Storage Areas	Open Area	N/A	N/A	N/A
10	Mill Hopper, Silo & Conveyor	Equipment	N/A	N/A	Varies
11	Conveyor to VMT Terminal	Equipment	N/A	N/A	Varies
<b>Total:</b>			<b>61,070</b>	<b>72,500</b>	

**Table 2: Orcem Project Buildings, Equipment & Major Facilities**

By way of comparison, the existing vacated General Mills buildings and equipment located on the Orcem Site as listed in Table 1a have a collective building area of just over 156,000 square feet, with a total footprint area of approximately 56,000 square feet. The proposed Orcem Project structures are only slightly larger in terms of footprint (61,070 square feet) than the old General Mills facilities they would replace. The new structures would have a site coverage which is substantially the same as the remaining former General Mills structures (29% versus 27%). The FAR of the new structures, at 0.34, would be substantially smaller than the 0.74 FAR of the remaining General Mills structures (less than one-half as large).

<sup>4</sup> Heights listed are measured to principal component of building or equipment and are approximate; see plans for details.

<sup>5</sup> The vent stack extending above the Mill & Filter Building, is depicted in the Plan Set in Appendix A as approximately 163'-3" in total height (above the ground); final height will be determined based on air quality analysis and final BAAQMD requirements.

The approximate height of the new Orcem Project structures and equipment are listed in Table 2, and range from approximately 24 feet for the Office Building (#5), to approximately 164' for the vent stack extending above the Processing Mill and Filter Buildings (#1 and #2). The largest Orcem Project structure, the Raw Material Storage Building (#8), has a footprint area of 38,000 square feet, and measures approximately 82'-7" to the ridgeline of its principal roof. By way of comparison, the existing 8-story Flour Mill and adjoining Grain Silo Buildings (#1 and #2 in Table 1a above) have a footprint area of 52,700 square feet and an overall height of approximately 131'-6".

The buildings and equipment listed in Table 2 include the following all of which are further described in Section 2.7 below and detailed in the plan set included in attached Appendix A:

**#1 - #3:** The processing plant which consists of the enclosed Processing Mill Building (#1), the connected Filter Building (#2) which contains the Mill Intake, Hot Air Gas Generator, and miscellaneous ancillary equipment), the Vent Stack, and the Main Fan and Base (#3).

**#4 Workshop and Control Room Building:** This building will include: (1) The central plant control office, locker room, breakroom, toilets, showers and related facilities on the second floor; and (2) The light maintenance workshop area and a bathroom on the ground floor. The total building floor area will be 3,900 sq. ft., and the footprint area will be 1,950 sq. ft.

**#5 Office Building:** This is a two story administrative and laboratory building with a planned footprint area of 1,450 sq. ft. and total floor area of 2,900 sq. ft.

**#6 and #7:** The finished product facilities include two Elevators, up to three (3) fully sealed Storage Silos for finished products, the Outload Building with its three (3) Outload Silos and Weighbridges, and the Airslide which conveys the finished product from the Processing Mill & Filter Building to the Storage Silos. The Outload Building is designed to accommodate enclosed truck loading and weighing for the dispatch of the finished products to market.

**#8 Raw Material Storage Building:** A covered storage area, primarily for portland cement clinker material ("clinker").

**#9 Raw Material Storage Areas:** The open areas immediately south and east of the Raw Material Storage Building designated for storage of: (a) GBFS granulate material along the easterly side of the Orcem Site; and (b) Gypsum, pozzolan and limestone materials within the southern end of the Orcem Site, all as shown in the Plans in Appendix A.

**#10 Mill Hopper, Silo & Conveyor:** A covered belt conveyor system to transport the raw materials from the raw material storage areas to the processing plant. This system includes the Mill Feed Hopper, the Raw Material Silo and Elevator, an Additional material Silo, and the Conveyor leading to the Processing Mill & Filter Building.

**#11 Conveyor from VMT Terminal:** The conveyor systems and intake hopper/extractor to be installed within an easement created over a portion of the VTM Site to facilitate the movement of raw materials between the terminal and Orcem Site as part of the Phase 1 and 2 operations, as shown in the plans in Appendix A.

### 2.4.3 Improvement of Site Infrastructure & Facilities

The Project Site will be improved with the following infrastructure and improvements to support the Orcem Project production process:

- A concrete retaining wall with an approximate height of 10 ft. along the eastern boundary and at the foot of the existing rock cliff. This wall will effectively create a structural boundary at the foot of the cliff to safeguard against falling rock and debris, as well as to retain the stockpiled GBFS granulate described in Item #9 above.
- This concrete retaining wall will be continued around the southern end of the site to create the additional storage area for gypsum, pozzolan and limestone materials identified in Item #9 above.
- The western boundary of the Orcem Site will be secured through the installation of fencing which will include three gated entrances opening onto the VTM Site and internal access road. The entrance/exit at the southern end of the Orcem Site boundary will be used by traffic dedicated to hauling small amounts of raw materials by truck into the on-site raw material storage areas. It will not be used by customer traffic.
- A dedicated entrance located south of the Office Building will accommodate a separated flow of customers and staff, from trucks headed to the Outload Facility. These vehicles will move in a northerly direction and exit the site through the gate located at the northern Site boundary.
- Parking for customers and employees is provided both adjoining the Office Building and at the north end of the Processing Mill & Filter Buildings. A total of 20 parking spaces are provided.
- A free-draining, permeable stone finish will be provided in the storage areas. All other areas, including vehicle roadway and parking areas, and those areas

surrounding the plant, will be finished with an impermeable asphalt or concrete surface.

- Landscaping will be provided along the western and northerly boundaries of the Orcem site, as shown on the drawings in Appendix A, to partially screen equipment and materials.
- Site lighting will be provided in all areas for safety. All lighting will be shielded to prevent off-site glare.
- An above-ground diesel storage tank with appropriate safety equipment and associated spillage protection systems for fuelling of Orcem Site mobile equipment will be provided adjoining the concrete boundary wall between the GBFS and gypsum storage areas (see plans in Appendix A).
- A storm water control system will be provided to meet applicable requirements of the City of Vallejo, the Regional Water Quality Control Board and BCDC (see Appendix D-6).
- An existing 8-10" diameter looped water main currently serves the Orcem Site, delivering raw water for fire protection purposes. This fire protection system will be upgraded with placement of approved fire hydrants, and permanently maintained in accordance with Fire Department standards to provide sustained water volumes for fire suppression purposes.
- An existing California Northern rail spur line currently extends into the adjoining VMT Site, running parallel to Orcem's westerly boundary. VMT has proposed that this line be upgraded with capacity for storage of rail cars and loading/unloading of materials. Rail tanker cars will be loaded as shown in the plans in Appendix A at a location immediately north of the Orcem Site, along the westerly side of the main access road. Trucks will transfer materials to the rail cars from the Loading Silos and Outload Building; materials arriving via rail will be transferred by pipeline to the material storage areas.
- Potential installation of solar energy facilities on-site to partially offset dependence on external electric power for plant operations and administrative uses.

As shown in Figure 2, the Orcem Site is accessible to vehicular traffic and rail transportation via a security gate which separates Derr Avenue (and the adjoining rail tracks) from the internal roadway and rail spur. Because of ship movements to and from the VMT Site, both the VMT and Orcem Sites will be Department of Homeland Security controlled sites. All workers, including rail engineers and truck drivers, will be required to have a Transportation Worker Identification Credential to access secured portions of the site at all times.

## 2.4.4 Anticipated Project Permits

The following known and discretionary permits are listed by agency as both anticipated and possible for full implementation of the Orcem Project:

1. **City of Vallejo:** Major Use Permit per Code Section 16.34.040.B.1 (see discussion in Section 2.5.2 below).
2. **City of Vallejo:** Site Development Permit per Chapter 19.60 of the City Code.
3. **City of Vallejo (Lead Agency):** Supporting Environmental Documentation in form of a certified EIR to address all phases of Orcem Project, with possible overriding finds to support the Project in the event that any unavoidable post-mitigation impact cannot be reduced to a less than significant level. This environmental document will also describe the Federal permitting requirements as provided for pursuant to NEPA and coordinated through the U.S. Army Corps of Engineers.
4. **City of Vallejo:** Encroachment Permits to make improvements for utility lines, intersection improvements and related safety improvements along Derr Avenue, Lemon Street and possibly Sonoma Blvd. and Curtola Parkway.
5. **City of Vallejo and Solano County:** Finalize and approve the Site Management Plan (SMP) currently in draft form identifying remaining use and maintenance responsibilities affecting a portion of the site, based on closure of the former General Mills operations.
6. **San Francisco Bay Conservation and Development Commission (BCDC):** An Administrative Permit is anticipated from BCDC based on a Consistency Determination with the Bay Plan (applicable to improvements within 100 feet of S.F. Bay).
7. **San Francisco Regional Water Quality Control Board (RWQCB):** Water Quality Certification under Section 401 of the Clean Water Act for construction or operation of facilities that would result in a discharge into navigable waters of the U.S. (and possible National Pollutant Discharge Elimination System Stormwater Discharge Permit approval, depending on status of City Master Permit).
8. **Bay Area Air Quality Management District (BAAQMD):** Review and determination of adequacy for Air Quality Mitigation Plan, and related permits, including possible issuance of a Title 5 Clean Air Act Permit under authority of the U.S. EPA (includes all air pollution requirements that apply to the source, including emissions limits and monitoring, record keeping, and reporting requirements).
9. **City of Vallejo:** Lot Line Adjustment or Parcel Map pertaining to parcel boundaries (if not resolved by VMT Project).
10. **California State Historic Preservation Office:** Consultation under Section 106 of the National Historic Preservation Act with respect to historic structures within the Orcem Site.
11. **U.S. Environmental Protection Agency (EPA):** National Pollutant

Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities as required by the Clean Water Act (depending on status of City Master Permit), .

12. **California Department of Transportation (Caltrans):** Review of plans and possible permits and related actions associated with potential improvements within State right-of-way.
13. **U.S. Army Corps of Engineers, San Francisco District:** Permits under Section 404 of the Clean Water Act for the filling of jurisdictional wetlands /waters (Direct Discharge into Bay), together with applicable NEPA documentation.
14. **U.S. Fish & Wildlife Service:** Section 7 Consultation with the Corps of Engineers under the Federal ESA if endangered species may be affected by the project.
15. **California State Lands Commission:** Possible consultation with respect to lease of lands in trust to the City of Vallejo and VMT for use by Orcem.
16. **California Department of Fish and Wildlife:** Consultation and permitting as may be needed based on potential impacts to California Listed and Special Status Species (no jurisdictional streambeds or waters of the State would be affected).

## 2.5 RAW MATERIALS & FINISHED PRODUCTS

### 2.5.1 Overview of Raw Materials & Finished Products

The Proposed Project will be designed to have a flexible production profile to accommodate changes in market demands. The principal product to be produced is GGBFS, ground granulated blast furnace slag as per ASTM<sup>6</sup> C-989. Additionally, the Orcem Project may produce complementary, supplementary and alternative hydraulic cement products as determined by market demand (see Project Objectives). The principal raw materials to be processed at the Plant will be as follows:

Primary Raw Material	Primary Product Produced
GBFS, Gypsum	GGBFS: ASTM C-989
Other Raw Materials	Other Products Produced
Clinker, Gypsum, Limestone, Portland Cement	Cement: ASTM C-150, C-1157
Natural or Calcined Pozzolan	Pozzolans: ASTM C-618, C-593
Portland Cement and/or Combinations of the Above	Blended Products: ASTM C-1157, C-595, C-1697

**Table 3: Raw Materials & Finished Products**

<sup>6</sup> ASTM International, formerly known as the American Society for Testing and Materials (ASTM), is a globally recognized leader in the development and delivery of international voluntary consensus standards.

See Table 5 in Section 2.7.2 for a review of the modes of transport for all raw materials. Minor additive materials that may be added to the various products to enhance their performance or production efficiency include:

- Gypsum may be added to all finished products at a rate of 1% to 6% by weight.
- Limestone may be added at a rate of 1% to 30% by weight for hydraulic cement products (as may be adjusted for compliance with ASTM rules).
- Other minor additions to improve grinding efficiency (ASTM C-465) and product performance for all finished products (e.g. water reducers, plasticizers, retarders and activators).

### **2.5.2 Introduction to the Primary Raw Material - GBFS**

The primary raw material utilized at the Orcem Project is granulated blast furnace slag ("GBFS"), a recycled beneficiated byproduct from the first stage in the production of steel. It is a byproduct of converting iron ore to metallic iron in a blast furnace. During this process which takes place at the majority of integrated steel mills throughout the world, a precise blend of iron ore, limestone and solid fuel enter the iron blast furnace and the intense heat of 1600 °F to 2300 °F (900 °C to 1300 °C) destroys organic compounds and volatilizes the remaining pollutants that are then extracted in the gas stream and managed with pollution control equipment. This leaves in the blast furnace only the molten metallic iron (which is extracted for processing into steel) and the lighter non-ferrous metals such as calcium, silicon, aluminum, and magnesium (together called "slag") that float on top of the molten iron and are extracted and then quenched with high pressure water jets. The resultant vitrified material (granulate), is called Granulated Blast Furnace Slag (GBFS). GBFS has the appearance and handling characteristics of a coarse beach sand. This GBFS is the primary raw material to be delivered to the Orcem Site in Vallejo.

At the Orcem Site this GBFS will then be further processed by drying and grinding to produce a very fine powder, to which a small quantity of gypsum is added, yielding the principal finished product called, Ground Granulated Blast Furnace Slag (GGBFS). GGBFS is widely respected for the enhanced properties it can provide in concrete. It is used in the ready mix and precast concrete industries and in mortars and grouts to improve concrete performance and impart unique characteristics (see Appendix C for a summary of the additional environmental and performance advantages of GGBFS). GGBFS can be either blended with ordinary portland cement, to produce slag blended cements for sale to concrete producers, or it can be sold alone and then blended with other cementitious materials by the concrete manufacturer on site in their own concrete mix designs.



### 2.5.3 Characteristics of GBFS

GBFS is an inorganic, vitreous material, with a glass content around 95 - 100%, the minor impurities being mineral compounds formed by the calcium, silicon, aluminium etc., because they were not cooled fast enough in the granulation process. GBFS has a low solubility in water, and in fact has an inherent free moisture content, from 6% to 12%. The glassy nature of the granules and the moisture of the GBFS minimize the dust created in either handling or storage. It is non-inflammable, non-toxic and non-explosive. The bulk density is 70-80 pounds per cubic foot, depending on moisture content.

GBFS has the following chemical composition:

Calcium, expressed as	CaO	41 ± 3%
Silicon, expressed as	SiO <sub>2</sub>	35.5 ± 2.5%
Aluminium, expressed as	Al <sub>2</sub> O <sub>3</sub>	10.5 ± 2%
Magnesium, expressed as	MgO	7.5 ± 1.5%
Titanium, expressed as	TiO <sub>2</sub>	< 1%
Sulphur, expressed as	SO <sub>3</sub>	<<1%

GBFS granulate is similar to the particle size of a coarse sand, with 95% of the material between approximately 125 micron and 5,000 micron in size. Effectively no PM<sub>10</sub> or PM<sub>2.5</sub> is present in GBFS. It does not contribute to air pollution through emission of airborne respirable particulates.

### 2.5.4 Introduction to the Finished Product - GGBFS

The finished product GGBFS is finely ground GBFS, sometimes with minor additions to enhance performance. It has similar physical characteristics to ordinary portland cement.

GGBFS has the following properties:

Particle Size	5-40 micron
PH (wet)	9-11
Solubility in Water	very low
Color	off white
Humidity	<0.2%

GGBFS, as a finely ground powder, is capable of emitting fugitive dust particles if not properly contained within closed processing, storage and loading facilities (as proposed). The milling process is accordingly carried out in a closed circuit system under negative pressure (no outlet to the exterior, except through high performance filters). Likewise, fully sealed finished product storage is provided in the Orcem Project.

### 2.5.5 Background to Use of GGBFS

GGBFS is a well-established product that has been used in Europe since the 1860's and in the United States since the 1890's. For example, it was used in the construction of the Empire State Building in New York<sup>7</sup>.

Today, GGBFS is widely used around the world, including in the United States, due to its environmental and technical advantages over ordinary portland cement. Its use is recognised in various national standards and it is often a required specification in large projects due to product qualities it imparts in concrete; for example GGBFS is included in Caltrans specifications for sulphate resistance and mitigation of degradation through alkali-silica reaction (ASR), and was recently specified in the new Bay Bridge segment<sup>8</sup>.

Production of GBFS, the raw material used to manufacture GGBFS within the United States in 2011 was 2.6 million metric tons<sup>9</sup>. Production and sales of GGBFS are mainly in the eastern states close to where the raw material is produced by the steel industry. Historically, sufficient quantities of GGBFS have not been available to meet the full demand of the California market, with only small quantities currently imported at the Port of Stockton. The Orcem Project will be able to fully supply northern and central California markets and construction projects in neighboring markets.

### 2.5.6 Environmental Advantages of GGBFS

There is a growing worldwide awareness of the need to limit global warming by reducing greenhouse gas emissions. California is a world leader in this initiative. In 2006 the Global Warming Solutions Act (AB 32) established by law the goal to reduce GHG emissions by 2020 to the level they were at in 1990 and tasked the California Air Resources Board (ARB) to produce a scoping plan as to how this should be achieved.

ARB identified the cement industry as a significant source of greenhouse gas emissions and placed the industry on its list of areas for development of early action measures to reduce such emissions. The major opportunities for GHG emission reductions involved replacing some of the ordinary portland cement with other materials including GGBFS<sup>10</sup>.

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<sup>7</sup> Source: The Slag Cement Association <http://verio2.slagcement.org/Sustainability/Sustainability.html>

<sup>8</sup> Source Concrete Bridge View Sept/Oct 2009 "Green Mass Concrete for the San Francisco-Oakland Bay Bridge" Maggenti, R., Caltrans. Published by Federal Highway Administration and the National Concrete Bridge Council <http://www.concretebridgeviews.com/i57/Article2.php>

<sup>9</sup> Source: USGS Iron and Steel Slag Yearbook 2011

<sup>10</sup> Source: Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California, ARB Report Oct 2007. [http://www.arb.ca.gov/cc/ccea/meetings/ea\\_final\\_report.pdf](http://www.arb.ca.gov/cc/ccea/meetings/ea_final_report.pdf)

Overall the production of GGBFS has only a small fraction of the impact on the environment compared with the production of ordinary portland cement. GGBFS can make a substantial contribution to the reduction in GHG emissions and benefit the environment by reducing the production of other pollutants as well. Every ton of GGBFS used to replace 1 ton of ordinary portland cement:

- Reduces CO<sub>2</sub> emissions by approximately 98% (i.e. 0.8 tons)<sup>11</sup>;
- Virtually eliminates SO<sub>2</sub> and mercury compounds emissions associated with the manufacture of ordinary portland cement<sup>12</sup>;
- Eliminates the quarrying of typically 1.6 tons of natural resources such as limestone, clay and shale used in the manufacture of ordinary portland cement<sup>13</sup>.

Government agencies with responsibility for the environment are increasingly demanding usage of low-carbon, low-pollution sustainable building materials in public works projects, and are actively seeking greater use of GGBFS in state and federal projects.

For these reasons, the cement industry globally is making increasingly greater use of GGBFS, and less use of reactive materials such as fly ash, pozzolan and limestone to replace ordinary portland cement clinker.

The environmental benefits of GGBFS are well recognized by many organizations and standards including Caltrans, LEED (Leadership in Energy and Environmental Design) a leading rating system used to rate a building's environmental performance, the Californian Energy Commission and the Californian Air Resources Board<sup>14</sup>. Additional detailed information on the GGBFS to be produced at the Orcem Plant and its environmental credentials are provided in Appendix C.

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<sup>11</sup> Source: The Slag Cement Association: general data for ordinary portland cement and GGBFS, 2003, 2005, <http://verio2.slagcement.org/Sustainability/Materials.html>; and portland Cement Association (Nisbet, Marceau and VanGeem), 2002.

<sup>12</sup> Source: Environmental Product Declaration for GGBS manufactured by Ecocem Ireland.

<sup>13</sup> Source: The Slag Cement

Association [http://www.slagcement.org/Sustainability/pdf/No22\\_Environmental\\_Benefits.pdf](http://www.slagcement.org/Sustainability/pdf/No22_Environmental_Benefits.pdf)

<sup>14</sup> Source: Guidelines for the Design & Inspection of Concrete, Caltrans April 2010

<http://www.dot.ca.gov/hq/esc/soe/section90/Guide-for-the-Design-and-Inspection-of-Concrete.pdf>.

LEED credentials quoted by the Slag Cement Association

<http://verio2.slagcement.org/Sustainability/Sustainability.html>

Climate Action Team of the Air Resource Board Sub Group Report Scoping Plan Measure

Development and Cost Analysis, July 2008

[http://www.climatechange.ca.gov/climate\\_action\\_team/reports/CAT\\_subgroup\\_reports/Cement\\_Sector\\_Summary\\_and\\_Analyses.pdf](http://www.climatechange.ca.gov/climate_action_team/reports/CAT_subgroup_reports/Cement_Sector_Summary_and_Analyses.pdf)

Cement Sector Greenhouse Gas Emissions Reduction Case Studies Report for the California Energy Commission, March 2009

<http://www.energy.ca.gov/2009publications/CEC-600-2009-005/CEC-600-2009-005.PDF>

## 2.5.7 Technical Advantages of GGBFS

GGBFS is routinely used as a partial replacement for ordinary portland cement in making concrete, mortars and grouts. Numerous studies by well-established independent institutions have clearly demonstrated that concrete containing GGBFS has several technical advantages over those using only ordinary portland cement including:

- Greater chemical resistance to attack from acids, chlorides, sulphates and alkalis<sup>15</sup>;
- Lower permeability of concrete, providing less vulnerability to freeze thaw damage and water erosion<sup>16</sup>;
- Greater long-term strength<sup>17</sup>;
- Lower heat of hydration minimizing micro-cracking in large mass pours of concrete<sup>18</sup>;
- Suppression of secondary efflorescence (white staining on concrete/mortar)<sup>19</sup>

**It is against this background that Orcem is proud to propose this environmentally advantageous Project to be located in Vallejo, and for the Project to supply the proposed range of products, focusing on recycled concrete enhancing material to the markets in California and neighboring states.**

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<sup>15</sup> Source Guide to Durable Concrete, ACI Committee 201 Report, ACI 201.2R-01, 2000. Guidelines for the Design & Inspection of Concrete, Caltrans April 2010

<http://www.dot.ca.gov/hq/esc/soe/section90/Guide-for-the-Design-and-Inspection-of-Concrete.pdf>

<sup>16</sup> Source Guide to Durable Concrete, ACI Committee 201 Report, ACI 201.2R-01, 2000. Guidelines for the Design & Inspection of Concrete, Caltrans April 2010

<http://www.dot.ca.gov/hq/esc/soe/section90/Guide-for-the-Design-and-Inspection-of-Concrete.pdf>

<sup>17</sup> Source Guide for selecting Proportions for High Strength Concrete Using portland Cement and other Cementitious Materials. Report by ACI Committee 211, ACI 211.4R-08, 2008.

Guidelines for the Design & Inspection of Concrete, Caltrans April 2010

<http://www.dot.ca.gov/hq/esc/soe/section90/Guide-for-the-Design-and-Inspection-of-Concrete.pdf>

<sup>18</sup> Source Guide for selecting Proportions for High Strength Concrete Using portland Cement and other Cementitious Materials. Report by ACI Committee 211, ACI 211.4R-08, 2008.

Guidelines for the Design & Inspection of Concrete, Caltrans April 2010

<http://www.dot.ca.gov/hq/esc/soe/section90/Guide-for-the-Design-and-Inspection-of-Concrete.pdf>

<sup>19</sup> Source Cement, Concrete and Aggregates Australia, Data Sheet: 'Efflorescence' June, 2006.

## 2.6 PROPOSED PROJECT PHASING AND OPERATIONAL MODES

### 2.6.1 Project Phasing

The project will be constructed in phases to coincide with the growth in demand for the products in Orcem's product portfolio. The maximum total throughput of raw materials of the Plant at full capacity will be between approximately 780,000 and 900,000 tons per year. It is not expected that the Plant will achieve full production in the first few years of operation. For this reason it is proposed that minor changes to the basic site infrastructure (but not the main processing plant) will be made in accordance with the growth pattern of production. The trigger for the proposed infrastructure changes will be the following production milestones:

**Phase 1:** Up to a production of 500,000 tons per year.

**Phase 2:** Above 500,000 tons per year.

### 2.6.2 Operational Modes

While the Orcem Project primarily will produce GGBFS, this manufacturing plant will operate in, independent of the aforementioned phasing, a number of finished product operational modes within any given timeframe based upon market demand for GGBFS and various cement products. These modes include:

- Mode 1 - GGBFS production only.
- Mode 2 - Cementing products production only.
- Mode 3 - GGBFS production & cement.

The material production associated with these modes and the associated phases are described on the attached drawings and are summarized in the following Table:

	OPERATIONAL MODE	PHASE	PRODUCTION	DRAWING NOS <sup>20</sup>
M1-P1	GGBFS Only	1	<500ktpa	5387-M1P1-201/202 5387-M1P1-301 to 303
M2-P1	Cement Only	1	<500ktpa	5387-M2P1-203/204 5387-M2P1-311 to 313
M3-P1	GGBFS & Cement	1	<500ktpa	5387-M3P1-205/206 5387-M3P1-321 to 323
M1-P2	GGBFS Only	2	>500ktpa	5387-M1P2-211/212 5387-M1P2-331 to 333
M2-P2	Cement Only	2	>500ktpa	5387-M2P2-213/214 5387-M2P2-341 to 343
M3-P2	GGBFS & Cement	2	>500ktpa	5387-M3P2-215/216 5387-M3P2-351 to 353

**Table 4: Orcem Project Plant Production Modes**

### 2.6.3 Employment

The Orcem Project will create approximately 100 jobs for the duration of the estimated 15-month construction phase. Also, once the Orcem Project is operating at close to full capacity it will create an estimated 95 permanent full time direct and indirect union jobs, and induced jobs, as shown in the calculation below. The Estimated number of full time jobs expected to be created by the Orcem Project is as follows (see Fiscal Analysis in Appendix D-9 for details):

Plant Staff:	20
<u>Sales, Marketing &amp; Administration:</u>	<u>20</u>
Total Direct Jobs:	40
Indirect Permanent Jobs:	31
<u>Induced Jobs:</u>	<u>24</u>
Total Jobs Created by Project:	95

As discussed in the preceding section, the Orcem Project in Vallejo is designed to operate under several different production modes, producing the GGBFS, as well range of other finished products. Construction of the plant and site improvements is expected to occur during a 15-month period, providing as many as 100 skilled union construction jobs within a range of specialties. The Orcem Project plant's annual production volume is initially targeted to reach 500,000 tons in Phase 1, expanding to between 780,000 and 900,000 tons per year at full

<sup>20</sup> The Plan Set included in Appendix A is organized according to "Mode" and "Phase", with M1 through M3 corresponding to the Modes as defined in Table 3, and with P1 - P2 corresponding to the phasing described in Section 2.6.1 above.

capacity in Phase 2. The highly automated and environmentally controlled plant systems are ultimately designed to be operated by well-trained staff of up to 20 full-time employees, operating in shifts during a 24-hour period, together with up to 20 administrative and sales staff. This will represent a total of up to 40 full time jobs at the facility.

In addition to the initial construction jobs and permanent operations staff, the Orcem Plant will support local employment growth in ancillary and related industries in Vallejo and throughout the region, including truck, rail and marine transportation and construction. It is estimated that between 60 and 90 additional full-time logistical jobs will be created through the transport of incoming raw materials, primarily by sea, and the distribution of products, primarily by rail and truck. Further, the combined local Orcem and logistical employee purchases for housing, goods and services will have a positive and sustainable secondary effect on stimulating the local economy. Finally, by providing a local source for an environmentally responsible building product, the Orcem Plant will also support successful public and private building projects locally and throughout California and neighboring states.

## **2.7 KEY ELEMENTS OF PRODUCTION PROCESS**

### **2.7.1 Overview of Production Process**

The Orcem Project production process involves seven key elements: (1) Transport of raw materials to the Site, including GBFS, cement and other additives as described above; (2) Storage of raw materials in sufficient quantities to support continuous production; (3) Transport of raw material from storage to the Process Plant; (4) Drying and grinding GBFS granulate and other raw materials and additives; (5) Storage of finished GGBFS and cement products in sealed storage units; (6) Loading of the finished products into tanker trucks or rail tanker cars; and (7) Transport of finished GGBFS and cements to markets. These seven steps in the production process are described in detail below.

### **2.7.2 Overview of Raw Materials Transport**

As described in the Section 2.6.2, the Orcem Project will focus on production of GGBFS as the principal finished product (Mode 1), but will also include production of other hydraulic cement products (Mode 2), as well as both GGBFS and cement (Mode 3). The principal raw materials to be processed in the Orcem Project under these production modes will be GBFS and clinker, with secondary additive materials to include portland cement, gypsum, limestone and pozzolan.

These raw materials will arrive at the Orcem Site via a combination of the following four sources:

- **VMT Project Terminal:** Various sizes of ships, as detailed in Section 2.7.3 below, would dock at the reconstructed VMT Project Phase 1 terminal on the adjoining property, carrying GBFS and clinker. The ships would then be unloaded via an enclosed conveyor system directly to the adjoining Orcem Plant storage facilities, also as described in Section 2.7.3 below. Because of its proximity and based on anticipated capacity and availability, the VMT Project terminal is the proposed and economically feasible method of material transport to the Orcem Site on a long-term basis.
- **Port of Richmond:** An alternative short-term emergency source for delivery of GBFS and clinker, via ships from sources in Asia and around the world is the existing nearby Port of Richmond, located approximately 17 miles to the south. The raw materials would be loaded from ships onto trucks at the Port, and driven to the Plant where it would be off loaded for storage. This method involves somewhat greater ground transport costs, and would therefore only be utilized during periods when the VMT Project terminal is inoperable.
- **Rail Transport:** A third source for delivery of smaller consignments of gypsum, limestone, pozzolan and portland cement is via train. This mode provides access to raw material sources in Arizona, Nevada and California. The existing California Northern rail line network along the Vallejo waterfront extends south along the westerly edge of the Orcem Site as shown in Plan Set Appendix A. The rail line servicing the Orcem Site will be upgraded under the VMT Project, and under the Orcem Project will be accessed via truck transport and pipeline to and from the adjoining Orcem material storage areas.
- **Truck from Suppliers Outside the Local Area:** A fourth alternative source for delivery of all materials other than GBFS to the Plant is surface transportation via truck. Most materials delivered via truck would come from sources in California and Nevada, and would be limited to the quantities reflected in Table 5 below.

It is estimated that the total maximum of 760,000 tons of GBFS used at the Orcem Project annually under Modes 1 and 3 will be delivered via the VMT Project terminal. The Port of Richmond is a resource for short-term emergency receipt of raw materials as noted in Table 5 under circumstances when the VMT Project terminal is inoperable. The maximum annual volumes of raw materials delivered to the Orcem Site under the foregoing alternative transportation modes, and based on the range of finished product combinations are reflected in the following table:



Mode Sources	Source of Materials			Raw Material Quantities					
	VMT <sup>21</sup>	Rail	Road	GBFS	Clinker	Cement	Gypsum	Limestone	Total
1. GBFS - via VMT Only	GBFS	-	Gypsum	760,000	-	-	22,306	-	782,306
2. Clinker - via VMT Only	Clinker	-	Gypsum+Limestone	-	760,000	-	43,084	43,084	846,168
3. GBFS + Cement	GBFS	Cement	Gypsum	760,000	-	120,000	22,306	-	902,306

**Table 5: Source and Quantity of Materials under Alternative Modes<sup>22</sup>**

Clinker is transported to the Orcem Site from the VMT Project terminal (in Mode 2) via the conveyor system to be developed as part of the Orcem Phase 1 improvements. Cement is transported via rail from Arizona in Mode 3, and unloaded at the Orcem Site via truck tanker transfer and closed pipe into one of the fully sealed Storage Silos. Gypsum is transported in all Operational Modes via truck or rail from Nevada, by sea from Mexico. Limestone is transported in Operational Mode 2 via truck or rail from nearby sources in California, or sea from Canada.

### 2.7.3 Modes of Raw Materials Transport from VMT Terminal

#### **VMT Project Terminal Transport**

VMT has applied to the City of Vallejo and other responsible agencies for approvals to upgrade the old General Mills wharf. The VMT Project terminal improvement project is separate from the Orcem Project's GGBFS Project, and would be owned and operated by VMT. Ship sizes docking at the VMT Project Phase 1 terminal will vary from 30,000mt handy size to 70,000mt Panamax vessels. Orcem's raw materials would be delivered to the Orcem Site from the VMT Project terminal as follows:

#### **Geared Ships**

Nominally a 40,000mt bulk carrier with on board cranes (geared ship). This ship will berth at the dock and the raw material on board will be discharged from the ship using clamshell grabs fitted to the on board cranes. The clamshell grabs will lift the raw material from the ship holds and deposit it into mobile hoppers located on the dock.

<sup>21</sup> Port of Richmond will serve only as a temporary emergency source for shipment of GBFS and Clinker under circumstances where the VMT wharf cannot deliver raw materials.

<sup>22</sup> Table 5 does not include pozzolan which is used in very small quantities and is transported to the Project Site via truck.

**Self-Discharge Ships**

Nominally a 70,000mt bulk carrier with on-board reclaim conveyors and a discharge boom with an integral belt conveyor (self-discharge ship). This ship will berth at the dock and the raw material on board will be discharged from the ship via the self-discharge boom. The self-discharge boom will swing into the required position and transport the raw material from the ship, and deposit it into a receiving hopper located on the shore.

The following text describes the systems for transport of raw materials from the ships to the nearby Orcem Site under Phase 1 and Phase 2:

**Phase 1 (<500,000 tons annually)**

- The discharge rate using either geared ships or self-discharge ships will be an average of 660 tons per hour.
- The ship side hoppers will have a capacity of 80 tons. In Phase 1 the mobile hoppers at the dockside will feed onto a common mobile conveyor system. Raw materials (GBFS and clinker) will be loaded onto a continuous, covered belt conveyor system from the shipside all the way to the storage areas (a distance of up to 1,000 feet). This conveyor system will operate at an average rate of 660 tons per hour, and will be located within an easement area across the VMT Site as shown in the Plan Set in Appendix A.
- In the case of GBFS, during Phase 1, the conveyor will discharge the material in the open storage area. This material will then be consolidated into a managed pile as described below.
- In the case of clinker, during Phase 1, the conveyor will discharge the material into the covered Raw Material Storage Building (Building #8 as listed in Table 2).

**Phase 2 (>500,000 tons annually)**

- In Project Phase 2 the mobile hoppers at the dockside will continue to feed onto a common mobile conveyor system. Raw materials (GBFS and clinker) will be loaded onto a continuous, covered belt conveyor system from the shipside all the way to the storage areas (a distance of up to 1,000 feet). This conveyor system will operate at an average rate of 660 tons per hour, and will be located within an easement area across the VMT Site as shown in the Plan Set in Appendix A.
- In the case of GBFS during Phase 2, the conveyor system will discharge the GBFS in the area of the open stockyard floor. This material will then be consolidated into a managed pile as described below.

- In the case of clinker, during Phase 2, the conveyor system will discharge the clinker using an internal conveyor with a belt tripper in the Orcem Project's covered Raw Material Storage Building.

## 2.7.4 Raw Materials Storage

### **Storage Area for GBFS**

GBFS (and other raw materials except for clinker) will be stored in open stockpiles for management in the designated storage areas as shown on the attached drawings. As the material is naturally coarse and moist (with between 6% and 12% moisture content on delivery), there is no need to take any special precautions with respect to fugitive dust emissions.

When stored in a pile over a prolonged period of time the material has a tendency to harden on the surface through agglomeration to form a crust which seals the stockpile. However on reclaim, as described below, this material may be less moist and in these circumstances a stockpile water spray system will be in place to prevent fugitive dust emissions.

The GBFS stockpile will be different during Phase 1 and Phase 2, described as follows:

#### **Phase 1 GBFS Stockpile Management**

During Phase 1 the GBFS will be transported to the stockpile by a series of covered belt conveyors. The conveyor will discharge the GBFS in the designated stockpile area and front end loaders will move and lift this material in conjunction with a hydraulic excavator to form a stockpile with a maximum height of 26 feet. Reclaim from this stockpile will be by excavating from the face of the stockpile using the same front end loader and placing the GBFS into the reclaim hopper for transport to the processing plant.

#### **Phase 2 GBFS Stockpile Management**

During Phase 2 the GBFS will continue to be transported to the stockpile by a series of covered belt conveyors. The final belt conveyor (modified in Phase 2) will be supported on gantries as shown on the drawings in Appendix A at a level of 60 feet above ground level. A belt tripper car will travel along the main convey line and at sequential positions will discharge the GBFS in the designated stockpile area to form a linear chevron stockpile with a maximum height of 48 feet. Reclaim from this stockpile will be by excavating from the face of the stockpile using a front end loader and excavator, and placing the GBFS into the reclaim hopper for transport to the processing plant.

### **Storage Area for Clinker**

Clinker will be stored in the designated enclosed storage building as shown on the drawings in Appendix A. As this material is naturally dry and hygroscopic, there is a need to enclose this stockpile to prevent rainfall and atmospheric moisture damaging the product. The clinker stockpile will be managed as follows:

### **Clinker Stockpile Management**

In Phase 1 and Phase 2 clinker will be transported to the enclosed raw material storage building by covered belt conveyor from the dockside. The horizontal belt conveyor will be fitted with a travelling tripper which will allow the clinker to be discharged at sequential positions along the storage building floor to form a chevron stockpile with a maximum height of approximately 50 feet. The Raw Material Storage Building will be equipped with an air filtration system which will ensure that any particulate emissions created by either the stockpiling or reclaim process will be captured in the filters, and fugitive particulate emissions will be maintained within agreed permit limits, thereby allowing only clean air to leave the building. Reclaim from this stockpile will be by excavating from the face of the stockpile using front end loaders and placing the clinker into the reclaim hopper of the conveyor feed to the processing plant.

### **2.7.5 Transport System for Raw Material Feed to Process Plant**

The raw materials will be reclaimed as described above from the stockpile areas and will be placed into a reclaim hopper of 2,000 cu. ft. capacity at ground level in the storage area. From this point the clinker or GBFS will be conveyed by covered belt conveyor to a bucket elevator which will discharge the material into a mill feed hopper of 5,000 cu ft. Alongside this mill feed hopper will be a smaller mill feed hopper of 1,500 cu. ft., which will contain limestone and/or gypsum and other raw materials.

The clinker or GBFS will discharge from these mill feed hoppers via weigh belts which will regulate the flow of clinker or GBFS and gypsum/limestone (and other raw materials) onto the inclined covered belt conveyor to the processing plant, and ensure that this conveyor feeding the processing plant receives the desired total feed rate of material for processing in the mill, typically between 70 and 100 tons per hour.

### **2.7.6 The Processing Plant**

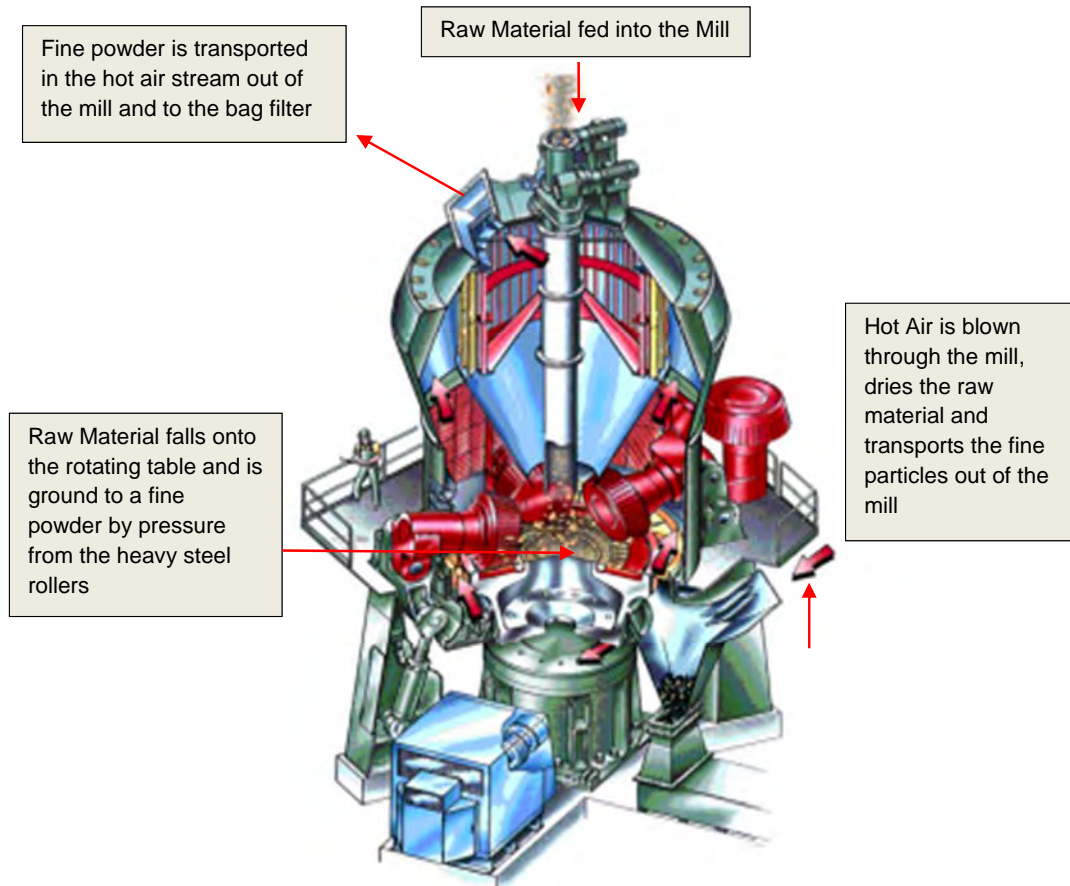
The processing plant will consist primarily of a milling process (using a Vertical Roller Mill, or "VRM", with an internal particle size classifier), a drying process (a

supplemental hot air generator to facilitate drying of moist raw materials as required), and product collection process (a main bag filter unit to capture the finished product). All of this equipment will be contained within the Mill & Filter Buildings.

### **Milling Process**

The proposed Orcem Project will use an electric powered VRM, as depicted in Figure 4 below. Raw material is fed to the VRM via an airlock and onto the center of a rotating grinding table. The raw material is thrown outward and under heavy steel rollers riding over the table by centrifugal force. A dam ring on the periphery of the grinding table contains the material and helps form it into a layer or “bed”. The steel rollers are coupled to high pressure hydraulic arms to forcefully pull the rollers onto the grinding table to grind the bed of raw material to fine powder.

The milling process requires high flow of air (approximately 4,400,000 cubic feet per hour) to pass through the mill. As a result, the material within the mill is subject to a high velocity airflow, which passes up, around and over the grinding table. The airflow’s primary function is lift ground material particles from the table and convey them into an internal particle size classifier, aka a high efficiency separator. This internal high efficiency separator classifies the incoming particles into two streams: (a) one stream of particles sufficiently small to meet the finished product specification passes through the separator with the air flow and leaves the mill; and (b) another stream of oversize particles, which is diverted back down to the grinding table for additional processing.



**Figure 4: Typical Vertical Roller Mill (VRM) for GGBFS**

### **Drying Process**

The GBFS will enter the mill with a moisture content of between 6% and 12%, but to properly store and transport the finished GGBFS product the material must be dried to a moisture content of less than 0.2% H<sub>2</sub>O.

Fortunately, the high volume of air required for the milling process of the VRM is also very effective at simultaneously drying the material being processed; however, when processing materials with especially high moisture content, such as GBFS, additional heat is often required to complete the drying process. In this project the additional heat will be supplied by a natural gas fired hot air generator which will preheat the air coming into the VRM to a temperature sufficient to evaporate the excess GBFS moisture during milling.

### **Product Collection Process**

The process air pulled through the mill and internal separator exits the mill with the particles sufficiently small to meet the finished product specification entrained. This combined air and finished product stream then enters the main bag filter unit

where the finished product is collected on the surfaces of fabric filters and the clean moist air is drawn through the filter unit by an induced draft fan, commonly called the main mill fan.

The outlet of the main mill fan leads to a vertical vent stack where the air leaves the processing plant along with any moisture evaporated from the raw materials. The finished product collected in the main bag filter is transported by an enclosed air-slide conveyor to a bucket elevator which lifts the product and discharges it to the product Storage Silos.

### **2.7.7 Controlled Storage of Finished Product**

The finished product will be stored in three (3) large sealed finished product Storage Silos, each with a capacity of up to 4,000 tons. These Storage Silos will hold the various finished products prior to transport to the Loading Silos. Each silo will be up to 46 feet in diameter and approximately 140 feet in height.

### **2.7.8 Finished Product Out - Loading System**

The bottoms of the large finished product Storage Silos are aerated to fluidize (the process of converting granular material from a static solid-like state to a dynamic fluid-like state) the finished product powder for discharge. When the finished product is withdrawn from the Storage Silos it is transported in enclosed conveyor systems into smaller Loading Silos of approximately 80 ton capacity each for loading of tanker trucks and rail tankers (via tanker truck transfer).

There will be two (2) Loading Silos configured at the Outload Building for loading of tanker trucks (see Appendix A Plan Set Sheet 5387-M1P1-202 for layout design). Each Loading Silo will have its own below-ground weighbridges to monitor truck weight as they are loaded. The road transport vehicles will be tractor trailer configurations, with standard tractors and single or double pneumatic dry bulk tank trailers. The tank trailers are sealed and have loading hatches on top. In order to load the trailers with product, the hatches will be opened, and loading bellows will descend and their nozzle(s) will seal onto the tanks to be loaded. A computer controlled filling system will be activated and the tankers will be loaded to the desired level by the control system monitoring the weighbridge. After the loading process is complete, a bill of lading will be printed for the driver to document that all tanker trucks leave the plant with the prescribed load on board.

Rail tanker cars will be served from the filling facility via tanker truck transfer using the upgraded and realigned California Northern rail spur line which

currently extends into the adjoining VMT Site, running parallel to Orcem's westerly boundary. Rail tanker cars will be loaded at the location shown in Appendix A Sheet M1P1-202 just north of the Orcem Site boundary. The estimated number of monthly shipments from the Orcem Project under Phase 1 and Phase 2 conditions are estimated in Table 6 below. Note that truck volumes are expressed as maximums. As rail transport increases, truck volumes will decrease proportionately.

Mode	Milestone	Rail Tankers		Tanker Trucks	
		Ave. Monthly Volume (mt)	Ave. Daily Shipments (91mt Rail Wagons)	Ave. Monthly Volume (mt)	Ave. Daily Shipments (25USSt Tanker Trucks)
1 (GGBFS production)	1	479	0.24	9,108	19
	2	1,918	0.97	17,258	35
	3	4,314	2.19	24,448	50
	4	7,670	3.89	30,680	62
	5	12,144	6.16	48,577	99
2 (Cement production)	1	0	0.00	11,111	23
	2	0	0.00	22,222	45
	3	0	0.00	33,333	68
	4	0	0.00	44,444	90
	5	0	0.00	70,370	143
3 (GGBFS production & cement import)	1	0	0.00	14,588	30
	2	0	0.00	25,842	53
	3	0	0.00	37,096	75
	4	7,670	3.89	40,680	83
	5	12,144	6.16	58,577	119

**Table 6: Average Monthly Orcem Project Finished Product Transportation Volumes by Mode**



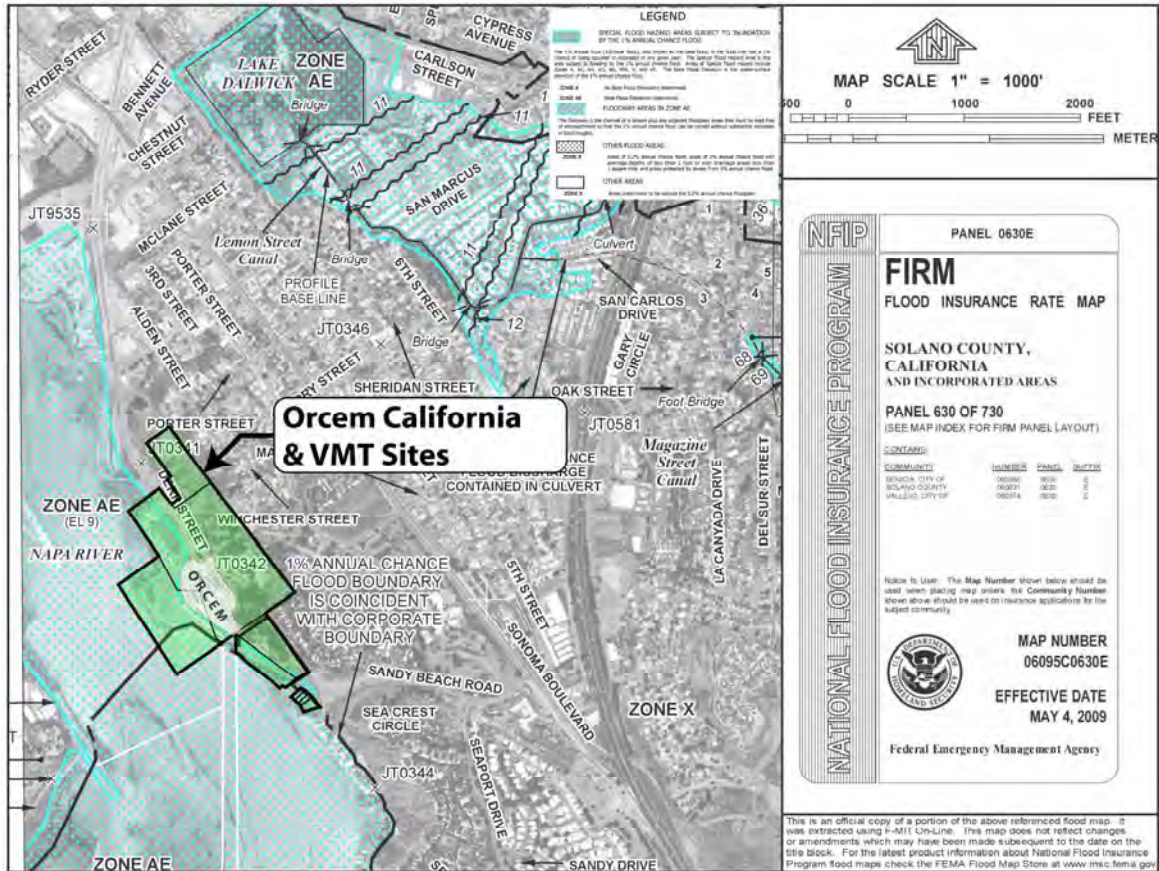
# APPENDIX A: Plans and Production Flow Diagrams

## APPENDIX A: Updated Plans & Production Flow Diagrams

Schedule	A-1	Schedule of Updated Plans
Site Layouts	A-2 5387-PP-101	Site Location & Existing Site Survey Plan with Proposed Orcem Site Boundary
	A-3 5387-PP-102	Proposed Site Boundary with Photographic Views of Existing Site Structures
	A-4 5387-PP-103	Existing Site Plan Indicating Demolition and Site Preparation Works to be Completed by Landlord at Handover
	A-5 5387-PP-104	Drainage and Utility Site Plan
	A-6 5387-PP-105	Fire Water Plan and Hydrant Locations
Plans Phase 1	A-7 5387-M1P1-201	Overall Site Layout Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-8 5387-M1P1-202	Main Site Layout Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-9 5387-M2P1-203	Overall Site Layout Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-10 5387-M2P1-204	Main Site Layout Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-11 5387-M3P1-205	Overall Site Layout Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
Plans Phase 2	A-12 5387-M3P1-206	Main Site Layout Mode 3 GBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-13 5387-M1P2-211	Overall Site Layout Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-14 5387-M1P2-212	Main Site Layout Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-15 5387-M2P2-213	Overall Site Layout Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
	A-16 5387-M2P2-214	Main Site Layout Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
Sections Phase 1	A-17 5387-M3P2-215	Overall Site Layout Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-18 5387-M3P2-216	Main Site Layout Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-19 5387-M1P1-301	Site Sections A & D Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-20 5387-M1P1-302	Site Sections B & C Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-21 5387-M1P1-303	Site Sections E to G Mode 1 GGBFS Only, Phase 1 Output <500,000 Tons/Yr.
	A-22 5387-M2P1-311	Site Sections A & D Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-23 5387-M2P1-312	Site Sections B & C Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-24 5387-M2P1-313	Site Sections E to G Mode 2 Cement Only, Phase 1 Output <500,000 Tons/Yr.
	A-25 5387-M3P1-321	Site Sections A & D Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-26 5387-M3P1-322	Site Sections B & C Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
Sections Phase 2	A-27 5387-M3P1-323	Site Sections E to G Mode 3 GGBFS & Cement, Phase 1 Output <500,000 Tons/Yr.
	A-28 5387-M1P2-331	Site Sections A & D Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-29 5387-M1P2-332	Site Sections B & C Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-30 5387-M1P2-333	Site Sections E to G Mode 1 GGBFS Only, Phase 2 Output >500,000 Tons/Yr.
	A-31 5387-M2P2-341	Site Sections A & D Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
	A-32 5387-M2P2-342	Site Sections B & C Mode 2 Cement Only, Phase 2 Output >500,000 Tons/Yr.
	A-33 5387-M2P2-343	Site Sections E to G Mode 2 Cement Only, Phase 2 Output <500,000 Tons/Yr.
	A-34 5387-M3P2-351	Site Sections A & D Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-35 5387-M3P2-352	Site Sections B & C Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
	A-36 5387-M3P2-353	Site Sections E to G Mode 3 GGBFS & Cement, Phase 2 Output >500,000 Tons/Yr.
Building Plans	A-37 5387-WCB-401	Workshop and Control Building: Plans
	A-38 5387-WCB-402	Workshop and Control Building: Elevations & Section
	A-39 5387-OFF-411	Office Building
	A-40 5387-MFB-421	Mill & Filter Building: Plans Sheet 1 of 2
	A-41 5387-MFB-422	Mill & Filter Building: Plans Sheet 2 of 2
	A-42 5387-MFB-423	Mill & Filter Building: Elevations Sheet 1 of 2
	A-43 5387-MFB-424	Mill & Filter Building: Elevations Sheet 2 of 2
	A-44 5387-CSB-431	Closed Raw Material Storage Building
	A-45 5387-FIN-451	Finished Product Storage and Outload Facility

# APPENDIX B: FEMA FIRM Map For Orcem California AND VMT Sites

## APPENDIX B



## APPENDIX C: ENVIRONMENTAL ADVANTAGES OF GGBFS

### ENVIRONMENTAL CREDENTIALS OF ORCEM'S GGBFS

Orcem's GGBFS requires nearly 90 percent less thermal energy for production than an equivalent amount of ordinary portland cement. This reduced energy consumption consequently reduces emissions of pollutants such as CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub> and mercury, associated with portland cement production. As a low energy, low pollution product, Orcem has a major role to play in the growing demand for green construction. Green construction has grown from \$3 billion in 2005 to \$58 billion in 2011 and is anticipated to reach \$122 billion in 2015, according to researcher McGraw-Hill.

One of the standard bearers for green construction is the LEED ("Leadership in Energy and Environmental Design") system. LEED was developed in 1998 by the United States Green Building Council to rate a building's environmental performance.

Orcem's GGBFS can contribute to several LEED credit categories including:

- Increased Recycled Content, GGBFS is considered a recycled material.
- Reduction of Heat Island Effect via the use of high-albedo materials like GGBFS.
- Life-Cycle Assessment (LCA), the increased durability of GGBFS significantly improves life-cycle performance.

Using GGBS also avoids the need for mining of virgin raw materials such as limestone, shale, clay and fossil fuels that are used for the production of portland cement. A ton of portland cement actually requires about 1.6 tons of raw materials, because of mass lost due to emissions of CO<sub>2</sub> and other volatile compounds. As a result, substituting 50 percent Orcem can save between 250 and 600 pounds of virgin material per cubic yard of concrete.



New Bay Bridge in San Francisco, Caltrans specified 50% of the portland cement to be replaced with 50% GGBFS  
Source: <http://commons.wikimedia.org>

**Figure 5: Bay Bridge**



**Figure 6: New 49ers Stadium in Santa Clara**



Ronald Reagan Building and International Trade Center, Washington, DC  
Source: <http://commons.wikimedia.org>

**Figure 6: Ronald Reagan Building in Washington, DC**

## ENVIRONMENTAL ADVANTAGES OF GGBFS

Because GGBFS is a recycled material, and its use avoids the manufacture of a like amount of ordinary cement, using GGBFS in concrete construction delivers significant environmental benefits, including:

- Reduced usage of fossil fuels
- Reduced electricity usage
- Reduced landfill disposal space
- Reduced CO<sub>2</sub> emissions
- Reduced emissions of pollutants (PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, Hg)

The following table represents the anticipated savings per ton that can typically be obtained from the production of GGBFS based on maximum throughput of the proposed Orcem Project in Phase 2:

Environmental Factor	Environmental Impact per Ton			Annual Savings at 780,000 Tons/Year*
	GGBFS	Portland Cement	Savings w/ GGBFS	
CO <sub>2</sub> emissions	0.02 ton**	0.83 ton***	0.81 ton	630,000 tons
NO <sub>x</sub> emissions	0.4 lb**	2.94 lb***	2.9 lb	1,100 tons
SO <sub>2</sub> emissions	0 lb**	0.45 lb***	0.45 lb	180 tons
Hg emissions	0 lb**	up to 0.0007 lb***	up to 0.0007 lb	up to 40 lbs****
Mineral extraction	0.03 ton**	1.6 ton**	1.6 ton	1,200,000 tons

\* Full capacity of 780,000 ton per year GGBFS

\*\* U.S. Slag Cement Association reports and Ecocem Materials Ltd internal data

\*\*\* Cal/EPA ARB Reports Aug-2013, Apr-2012, Sep-2011 on 2009, USGS 2009 Mineral Yearbook

\*\*\*\* Since 2009 EPA rules now require cement plants to control mercury emissions to a maximum 55 lb per million tons of clinker, this is what is reflected in the annual savings for mercury

**Table 1: Potential Savings from GGBFS**

In addition to the direct environmental benefits noted above, the use of GGBFS in concrete gives it a lighter color and increases its reflectivity (albedo), contributing to reducing the urban heat island effect.

## VALUE OF GGBFS TO SUSTAINABLE CONSTRUCTION IN CALIFORNIA

Given the widely acknowledged environmental benefits of GGBFS, its use is increasingly called for by both public and private clients. GGBFS now plays a key role in delivering sustainable construction:

- Under the LEED™ accreditation system, GGBFS contributes to achieving up to 13 LEED-NC points.<sup>1</sup>
- The EPA's Comprehensive Procurement Guidelines give specific requirements for the use of recovered/recycled materials in construction. GGBFS is a designated product recommended to procuring agencies for resource conservation and reduced environmental impact.<sup>2</sup>
- The U.S. Government's Whole Building Design Guide for specifiers calls for "...Federal agencies to "use products meeting or exceeding EPA's recycled content recommendations" for EPA-designated products and for other products to "use materials with recycled content..."<sup>3</sup>
- The Green Highways Partnership, a public/private initiative that is working to incorporate sustainable concepts into highway design and construction, calls for the use of GGBFS as a recycled material to reduce the environmental impact of concrete.
- The Slag Cement Association (SCA) is actively promoting the environmental benefits of GGBFS. The major U.S. portland cement manufacturers: Lafarge, Lehigh (Heidelberg); Vulcan Materials, St. Marys (Votorantim), Holcim, Essroc (Italcementi) and Ash Grove comprise the Slag Cement Association (SCA), and these members account for >95% of slag cement shipments in the U.S.A. The SCA's mission is to communicate the technical and environmental benefits of GGBFS, and it provides independent corroboration on the technical and environmental benefits of GGBFS.<sup>4</sup>

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<sup>1</sup> <http://www.usgbc.org/leed>

<sup>2</sup> <http://www.epa.gov/epawaste/consERVE/tools/cpg/products/index.htm>

<sup>3</sup> <http://www.wbdg.org//design/greenspec.php>

<sup>4</sup> [www.slagcement.org](http://www.slagcement.org)

## APPENDIX D: TECHNICAL ENVIRONMENTAL STUDIES

Topical Area	Document	Date	Author
1. <b>Aesthetics Simulations</b>	<u>Photo Simulations</u> : Accurate computer simulations of the completed Orcem and VMT Projects developed for six viewpoint locations using high-resolution digital photographs.	02/24/14	WDF
2. <b>Air Quality Report</b>	<u>Air Quality Analysis</u> : Complete report on existing conditions and projected increases in BAAQMD-listed criteria pollutants associated with construction and operation of the Orcem California and VMT Projects (individual and cumulative), including existing (background) criteria pollutant levels, and projected increases surrounding the Project Sites and along the major transportation corridors to be utilized for import and export of goods and materials. The analysis addresses all issues identified under the Vallejo General Plan and follows the specific methodology as determined by the BAAQMD in 2014. The analysis includes a detailed Health Risk Assessment which focuses on the potential for exposure of residents and other sensitive receptors to concentrated pollutants both in the vicinity of the Projects and along the transportation corridors.	Est. 03/14/14	AWN, Illingworth & Rodkin
3. <b>Biology</b>	<u>a. Biological Assessment Report</u> : A complete biological assessment was prepared by WRA in 2008 in connection with the former Brooks Street residential project, addressing biological communities present as well as both special status plants and animals. <u>b. Arborist Report</u> : A complete arborist report was prepared by WRA in 2008 for the entire site in connection with the former Brooks Street residential project, including a full tree survey, mapping of trees using GPS technology, and assessment of the health of all existing trees.	02/2008  04/2008	WRA  WRA
4. <b>Cultural Resources</b>	<u>Historic Resources Evaluation Report</u> : This report was prepared on 04/15/08 by Carey & Co. to address existing conditions and the potential for reuse of structures specific to the former "Brooks Street" residential project proposal.	04/15/08	Carey & Company
5. <b>Geology &amp; Soils</b>	<u>Geotechnical Investigation Reports</u> : Series of reports prepared for the entire combined Project Site, including (1) Geotechnical Investigation Reports prepared on 08/31/06 and 06/27/08 by ENGEO Inc. for the former Brooks Street project; (2) Geotechnical and Environmental Consultation report prepared on 02/20/13 by Treadwell & Rollo, specific to the Orcem site and development of the proposed "green cement" plant; (3) Phase I & II ESA Reports conducted in 2006-2007 for the previous Brooks Street project by Northgate Environmental Management, Inc.; (4) A Notice of Closure Request pertaining to earlier fuel release on the General Mills site circulated in September 2013, which once finalized, will lead to implementation of a Site Management Plan (SMP) to eliminate the need for further monitoring, investigation, or cleanup, based on maintenance of a cap placed over a portion of the site (Note that discussions are continuing between the City, the Solano County Department of Resource Management and the former and current property owners (General Mills and VMT) regarding details of the SMP and its restrictions on use of a small portion of the Project site); and (4) Site Investigation and Groundwater monitoring Reports prepared in 2006-2007 (for Brooks Street) by Malcolm Pirine Consultants describing fuel releases, detailing UST investigations, groundwater sampling documentation, laboratory testing results, clean-up efforts, and groundwater monitoring and sampling.	2006- 2013	ENGEO, Treadwell & Rollo, Northgate Environmental Management, Malcolm Pirine

<b>6. Greenhouse Gasses</b>	<u>GHG Emissions Report</u> : Comprehensive analysis of GHG emissions associated with construction and operation of the Orcem California and VMT Projects (individual and cumulative), including measurement of Project-specific CO <sub>2</sub> e emissions, as well as a summary of net CO <sub>2</sub> e elimination associated with use of GGBFS produced at the Orcem California Plant in comparison to conventional Portland cement. The report follows methodology as specifically established by the BAAQMD.	Est. 03/14/14	AWN, Illingworth & Rodkin
<b>7. Hazards &amp; Hazardous Materials</b>	<u>Materials Testing Report</u> : Laboratory testing results presenting analysis of all materials to be processed through the Orcem California plant.	03/10/14	AWN
<b>8. Hydrology &amp; Water Quality</b>	<u>Storm Water Control Plan and Hydrology Analysis</u> : Engineered preliminary Storm Water Control Plan for Orcem Site identifying methodology for collection, treatment and discharge of stormwater, and also identifying the location and sizing of retention basins and proposed discharge points. Also included is the project civil engineer's description of hydrology setting for the project, including a description of the watershed, runoff and drainage, along with a summary of anticipated potential impacts and recommended mitigation measures.	03/11/14	KPFF Engineering
<b>9. Fiscal Analysis</b>	<u>Fiscal &amp; Economic Analysis</u> : Analysis of economic and fiscal benefits of the Orcem and VMT Projects on the City of Vallejo, Solano County, special districts, and State, including quantified estimates of direct revenues (property, sales and utility taxes, fees and licenses, and lease revenues), indirect revenues (local capture of employment wages), employment generation, economic development benefits (infrastructure and market opportunities, and local business expenditures) through the year 2020.	03/04/14	Field Guide Consulting
<b>10. Noise</b>	<u>Acoustical Analysis</u> : Complete report on existing conditions and projected noise increases associated with construction and operation of the Orcem California Project, including short and long-term measurement of existing (ambient) noise conditions, and projected noise increases surrounding the Project Sites and along the major transportation corridors to be utilized for import and export of goods and materials. Projected noise increases are tabulated and presented using methodology as prescribed in the City of Vallejo General Plan and Noise Ordinance.	03/10/14	AWN, Illingworth & Rodkin
<b>11. Traffic &amp; Transportation</b>	<u>Transportation System Demands Analysis</u> : Detailed analysis and tabulation by mode and project phase of projected Orcem Project transportation system demands from import of raw materials and export of finished products, including maximum movement of materials by truck, rail and ship over time.	01/28/14	Orcem California
<b>12. Utility System Demands</b>	a. <u>Estimate of Utility System Demands</u> : Tabulated summary of projected peak usage demands from the Orcem Project for electrical and natural gas system capacity. b. <u>Estimate of Water &amp; Wastewater System Demands</u> : Tabulated summary of projected peak usage demands from the Orcem Project for water and wastewater system capacity.	02/27/14  02/27/14	Orcem California  Orcem California