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1. INTRODUCTION AND BACKGROUND

The Bay Area Stormwater Management Agencies Association (BASMAA) Clean Watersheds for a Clean Bay (CW4CB) project evaluated a variety of potential control options to reduce mass loadings of polychlorinated biphenyls (PCBs) and mercury in urban stormwater runoff to San Francisco Bay.

The primary objective of CW4CB Task 5 was to select and implement representative urban stormwater treatment retrofit projects. This objective coincided with Municipal Regional Stormwater NPDES Permit (MRP, Order R2-2009-0074) Provision C.12.e, which required the MRP Permittees to identify and conduct on-site pilot treatment projects in ten locations during the MRP term and to document the knowledge and experience gained to provide a basis for determining the scope of implementation of treatment retrofits in subsequent permit terms.

This report presents the results of the City of Oakland Alameda and High Street Hydrodynamic Separator (HDS) Project and includes descriptions of the project location, treatment measure, planning and design process, construction process and schedule, cost summary, monitoring plan, water quality data, and challenges and lessons learned.

The stormwater program representative that oversaw the design and installation of this project was Rebecca Tuden, Watershed Specialist for the City of Oakland Watershed and Stormwater Management Program.

2. PROJECT LOCATION

The City of Oakland Alameda and High Street HDS Project is located on High Street near Tidewater Avenue in Oakland, California (see Figure 1). The Alameda and High Street HDS unit is located within a watershed with a high concentration of old industrial land uses, including historic rail lines. The current watershed is a mix of industrial and commercial land uses.

3. TREATMENT CONTROL MEASURE

The installed HDS unit is a Contech CDS unit (see Appendix A). The HDS unit combines hydrodynamic forces and treatment screens to remove solids from stormwater. The drainage area to the HDS is approximately 37 acres.

4. CONSTRUCTION PROCESS

The HDS unit was installed as part of Oakland’s Trash Load Reduction Plan. The design was completed in December 2011 and the project was put out to bid in March 2012. Two CDS units were put out to bid together, one on High Street near Highwater Avenue (CW4CB Task 5 Project) and one on Alameda Avenue near Fruitvale Avenue. The Oakland City Council approved Beliveau Engineering Contractors, Inc., the construction contractor, on May 10, 2012 (Oakland City Council Resolution No. 83879, May 10, 2012; see Appendix B). Construction
began in October 2012 and was completed in December 2012 (see Appendix C for the construction as-builts).

5. COST SUMMARY

The project construction costs were paid by the City of Oakland with funds from the American Recovery and Reinvestment (ARRA) Fund administered by the California State Water Resources Control Board ($457,350), the San Francisco Estuary Partnership (SFEP) Trash Capture Fund ($242,570), and a Stormwater Treatment Grant from BASMAA ($43,280) (see Oakland City Council Resolution in Appendix B). Table 1 provides a summary of the costs.

<table>
<thead>
<tr>
<th>Table 1. Cost Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Phase</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Design</td>
</tr>
<tr>
<td>Construction</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>O&amp;M</td>
</tr>
<tr>
<td>Total Cost</td>
</tr>
</tbody>
</table>

The total catchment area is 36.9 acres. The total design and construction cost of the project is $371,600. The total cost per unit area is $10,700 per acre.

6. MONITORING DATA

A detailed monitoring plan for each CW4CB retrofit pilot projects was developed by Brian Currier of the Cal State University Sacramento Office of Water Programs and Geosyntec Consultants, with guidance and review from the CW4CB Project Management Team (PMT) and Technical Advisory Committee (TAC) (BASMAA, 2013a, b). All monitoring was conducted in accordance with the methods and procedures set forth in the CW4CB Quality Assurance Project Plan (QAPP) and the CW4CB Task 5 Sampling and Analysis Plans (SAPs) (BASMAA 2012, 2013c). Water quality and flow monitoring reports and laboratory quality assurance (QA) summary reports prepared by the CW4CB monitoring contractor are available as appendices to the CW4CB Final Project Report (BASMAA, in preparation).

One sump cleanout event was sampled on August 21, 2013, as part of a screening-level monitoring effort across different CW4CB stormwater treatment pilot projects. The objective of the screening monitoring was to collect information on pollutant concentrations in sump water and sediment to help inform the general design and prioritization of BMP effectiveness monitoring. The intent during screening was to collect a sediment sample from the Alameda and High Street HDS unit, but due to the relative lack of sediment collected from the Vactor truck during cleanout, the sample was instead collected as aqueous phase and analyzed for suspended
sediment concentration and PCBs. Results are summarized in Table 2 and PCB homolog profiles are shown in Figure 2.

No additional monitoring was conducted at the Alameda and High Street HDS unit due tidal influences of Bay water at the HDS unit. Upstream flow could not be separated from Bay water for sample collection (Paul Salop, CW4CB Monitoring Contractor, Personal Communication, 2016).

### Table 2. Water Quality Monitoring Results

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Size Fraction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended Sediment Concentration (mg/L)</td>
<td>Total</td>
<td>600</td>
</tr>
<tr>
<td>Total Dichlorobiphenyls (pg/L)</td>
<td>Total</td>
<td>203 J</td>
</tr>
<tr>
<td>Total Trichlorobiphenyls (pg/L)</td>
<td>Total</td>
<td>1,420 J</td>
</tr>
<tr>
<td>Total Tetrachlorobiphenyls (pg/L)</td>
<td>Total</td>
<td>5,270</td>
</tr>
<tr>
<td>Total Pentachlorobiphenyls (pg/L)</td>
<td>Total</td>
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<tr>
<td>Total Hexachlorobiphenyls (pg/L)</td>
<td>Total</td>
<td>56,200</td>
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<tr>
<td>Total Heptachlorobiphenyls (pg/L)</td>
<td>Total</td>
<td>58,100</td>
</tr>
<tr>
<td>Total Octachlorobiphenyls (pg/L)</td>
<td>Total</td>
<td>10,900</td>
</tr>
<tr>
<td>Total PCBs (pg/L)</td>
<td>Total</td>
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<tr>
<td>PCB 008 (pg/L)</td>
<td>Total</td>
<td>203 J</td>
</tr>
<tr>
<td>PCB 018/30 (pg/L)</td>
<td>Total</td>
<td>249 J</td>
</tr>
<tr>
<td>PCB 020/28 (pg/L)</td>
<td>Total</td>
<td>511 J</td>
</tr>
<tr>
<td>PCB 021/33 (pg/L)</td>
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</tr>
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<td>PCB 031 (pg/L)</td>
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<td>432 J</td>
</tr>
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</tr>
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<td>180 J</td>
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<tr>
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<td>672 J</td>
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<tr>
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<td>Total</td>
<td>1,750 J</td>
</tr>
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<td>PCB 086/87/97/109/119/125 (pg/L)</td>
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<td>1,910 J</td>
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</tr>
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</tr>
<tr>
<td>PCB 129/138/163 (pg/L)</td>
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<tr>
<td>PCB 132 (pg/L)</td>
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</tr>
<tr>
<td>PCB 135/151 (pg/L)</td>
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<td>6,170</td>
</tr>
<tr>
<td>Analyte</td>
<td>Size Fraction</td>
<td>Result</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>PCB 141 (pg/L)</td>
<td>Total</td>
<td>3,750</td>
</tr>
<tr>
<td>PCB 147/149 (pg/L)</td>
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<td>13,300</td>
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<td>PCB 153/168 (pg/L)</td>
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<td>14,500</td>
</tr>
<tr>
<td>PCB 156/157 (pg/L)</td>
<td>Total</td>
<td>904 J</td>
</tr>
<tr>
<td>PCB 158 (pg/L)</td>
<td>Total</td>
<td>1,080</td>
</tr>
<tr>
<td>PCB 170 (pg/L)</td>
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<td>PCB 174 (pg/L)</td>
<td>Total</td>
<td>9,480</td>
</tr>
<tr>
<td>PCB 177 (pg/L)</td>
<td>Total</td>
<td>5,000</td>
</tr>
<tr>
<td>PCB 180/193 (pg/L)</td>
<td>Total</td>
<td>18,600</td>
</tr>
<tr>
<td>PCB 183 (pg/L)</td>
<td>Total</td>
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<td>PCB 187 (pg/L)</td>
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<td>10,600</td>
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<tr>
<td>PCB 194 (pg/L)</td>
<td>Total</td>
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</tr>
<tr>
<td>PCB 195 (pg/L)</td>
<td>Total</td>
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</tr>
<tr>
<td>PCB 201 (pg/L)</td>
<td>Total</td>
<td>696 J</td>
</tr>
<tr>
<td>PCB 203 (pg/L)</td>
<td>Total</td>
<td>3,130 J</td>
</tr>
</tbody>
</table>

7. PROJECT OUTCOMES AND LESSONS LEARNED

The main lesson learned for the project was that when monitoring at a HDS unit near a water body, there may be inflow and infiltration and/or tidal influences that can complicate monitoring and/or make it infeasible to monitor at that location.
8. REFERENCES


City of Oakland, 2013. Plans for the Installation of Trash Control Units on High Street Near Tidewater Avenue and Alameda Avenue Near Fruitvale Avenue, City Project No. C424410. 17 May.

Oakland City Council Resolution No. 83879, C.M.S. 2012. City of Oakland, California. 10 May.

FIGURES
Figure 1
WW2053
July 2016

CW4CB Task 5
Alameda and High Street HDS Unit Project Map
Alameda County, CA

Legend
- CDS Unit
- CDS Unit Catchment Area
- Existing Storm Drain Pipe
- Roads

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX,
GDE Mapping, GeoEye, IGN, IGP, and the GIS User Community
APPENDIX A:
Contech CDS Design
CDS MODEL PSWC56_53
STORMWATER TREATMENT UNIT
(LEFT HANDED UNIT SHOWN)

1. CDS UNIT SHOWN IN LEFT—HAND CONFIGURATION.
2. DIVERSION CHAMBER MAY BE PRECAST OR CAST IN FIELD BY CONTRACTOR.

Storm drain pipe from manhole. Refer to Sheet 3 & 4 of the Plans
SECTION A-A
ELEVATION VIEW

Pipe flow line elevation = -1.01

NOTES:
1. ENSURE SUFFICIENT EXCAVATION DEPTH PRIOR TO SETTING CDS UNIT BASE SLAB & BEFORE PLACE-
   MENT OF ADDITIONAL MH RISER SECTIONS – CDS INLET & OUTLET SECTIONS TO MATCH F-L INVERT.
2. FOR PROPER INSTALLATION, INNER SCREEN TABS PLACED AT BOTTOM OF CYLINDER & FASTEN TO TOP OF CONCRETE SEPARATION SLAB.
3. DIVERSION CHAMBER MAY BE PRECAST OR CAST-IN-PLACE BY CONTRACTOR; REINFORCEMENT DETAILS PROVIDED BY CDS TECHNOLOGIES.
The CDS is a swirl concentrator hybrid technology that provides continuous deflective separation – a combination of swirl concentration and patented indirect screening – into a uniquely capable product. It effectively screens, separates and traps debris, sediment and oil from stormwater runoff and is an ideal system to meet trash Total Maximum Daily Load (TMDL) requirements.

Features & Benefits

One-of-a-Kind Screening Technology

- Captures and retains 100% of floatables and neutrally buoyant debris 2.4mm or larger
- Effectively removes solids down to 100µm
- Self-cleaning screen – the only non-blocking screening technology available
- Water velocities within the swirl chamber continually shear debris off the screen to keep it clean
- Various screening apertures available

Proven Performance

- Performance verified by NJ CAT and WA Ecology

Excellent Pollutant Retention

- Isolated Storage Sump eliminates scour potential
- Oil Baffle improves hydrocarbon removal

Multiple Options to Meet Site-Specific Needs

- Inline, offline, grate inlet and drop inlet configuration
- Accepts multiple pipe inlets and 90-180° angles – eliminate the need for junction manholes
- Internal and external peak bypass options available
- High treatment flow capacity – up to 300 cfs

Continuous deflective separation — water velocities within the swirl chamber continually shear debris off the screen to keep it clean

Learn more at www.contech-cpi.com/hds
APPENDIX B:
Alameda and High Street HDS Project – Approved Construction Bid
RESOLUTION AWARDING A CONSTRUCTION CONTRACT TO BELIVEAU ENGINEERING CONTRACTORS, INC., THE LOWEST RESPONSIVE, RESPONSIBLE BIDDER FOR THE INSTALLATION OF STORMWATER TRASH CONTROL UNITS ON HIGH STREET NEAR TIDEWATER AVENUE AND ON ALAMEDA AVENUE NEAR FRUITVALE AVENUE (PROJECT NO. C424420) IN THE AMOUNT OF SEVEN HUNDRED FORTY THREE THOUSAND AND TWO HUNDRED DOLLARS ($743,200.00) AND IN ACCORD WITH CONTRACTOR’S BID

WHEREAS, on March 23, 2012, four bids were received by the Office of the City Clerk of the City of Oakland for the Installation of Stormwater Trash Control Units on High Street Near Tidewater Avenue and on Alameda Avenue Near Fruitvale Avenue (Project No. C424420); and

WHEREAS, The installation of the storm water trash separators will help the City meet the new Municipal Regional Stormwater Discharge Permit (MRP) trash pollution reduction regulations citywide; and

WHEREAS, approval of this resolution will authorize the City Administrator to award a construction contract to Beliveau Engineering Contractors, Inc., in the amount of $743,200.00 for the construction of two underground storm water trash separators that will reduce trash pollutants flowing in Damon Slough and the Oakland Estuary; and

WHEREAS, Beliveau Engineering Contractors, Inc., a certified SLBE bidding as a prime is deemed the lowest responsive and responsible bidder for the project; and

WHEREAS, there will be sufficient funds in the project budget for the work. Funding for this project will be available in the following project accounts:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Recovery and Reinvestment, California State Water Resources Control Board (Project C424420, Fund 2159, Organization 92242, Account 57411)</td>
<td>$457,350.00</td>
</tr>
<tr>
<td>The San Francisco Estuary Partnership Trash Capture (Project C390720, Fund 2159, Organization 92242, Account 57411)</td>
<td>$242,570.00</td>
</tr>
<tr>
<td>Anticipating approval of a Resolution on May 8, 2012 for Stormwater Treatment Grant from the Bay Area Stormwater Management Agencies Association. (Project G444210, Fund 2159, Organization 92242, Account 57411)</td>
<td>$43,280.00</td>
</tr>
</tbody>
</table>

Total grant funds available for award of construction contract $743,200.00

; and
WHEREAS, the City Council finds and determines based on the representations set forth in the City Administrator's report accompanying this Resolution that the construction contract approved hereunder is temporary in nature; and

WHEREAS, the City lacks the equipment and qualified personnel to perform the necessary work, that the performance of this contract is in the public interest because of economy or better performance and that this contract is of a professional, scientific or technical nature; and

WHEREAS, Beliveau Engineering Contractors, Inc. complies with all LBE/SLBE and trucking requirements; and

WHEREAS, the City Council finds and determines that the performance of this contract shall not result in the loss of employment or salary by any person having permanent status in the competitive service; now, therefore, be it

FURTHER RESOLVED: That the City Administrator is authorized to award a construction contract To Beliveau Engineering Contractors, Inc., for the Installation of Stormwater Trash Control Units on High Street near Tidewater Avenue and on Alameda Avenue near Fruitvale Avenue (Project No. C424420) in the Amount of seven hundred forty three thousand and two hundred dollars ($743,200.00) and in accordance with the plans and specifications for the Project and the contractor's bid dated March 23, 2012; and be it

FURTHER RESOLVED: That the City Council hereby approves the plans and specifications prepared at the direction of the Assistant Director of Public Works for this project; and be it

FURTHER RESOLVED: That the City Administrator is authorized to execute any amendments or modifications of the contract with Beliveau Engineering Contractors, Inc. within the limitations of the project specifications; and be it

FURTHER RESOLVED: That the City Administrator, or her designee, is hereby authorized to reject all other bids; and be it

FURTHER RESOLVED: That the faithful performance bond and a bond to guarantee payment of all claims for labor and materials furnished and for the amount of 100% of the contract price and due under the Unemployment Insurance Act submitted with respect to such work are hereby approved; and be it
FURTHER RESOLVED: That the contract shall be reviewed and approved by the City Attorney for form and legality prior to execution and placed on file in the Office of the City Clerk.

JUN 5 2012

IN COUNCIL, OAKLAND, CALIFORNIA, ___________________.

PASSED BY THE FOLLOWING VOTE:

AYES - BROOKS, [Signature], DE LA FUENTE, KAPLAN, KERNIGHAN, NADEL, SCHAAF, and [Signature] - 6

NOES - 0

ABSENT - 0

ABSTENTION - 0

Exused - Reid, Brunner - 2

ATTEST: ______________________
LaTonda Simmons
City Clerk and Clerk of the Council
of the City of Oakland, California
APPENDIX C:
Alameda and High Street HDS Project –
As-Builts
FIRE DEPARTMENT GENERAL REQUIREMENTS

1. Existing or new roads, including any turnouts and turnarounds, are fire lanes and shall not be obstructed in any manner, including parking. Parking is only permitted outside of fire access areas and when clearly designated and approved on the plans.
2. A minimum 18-inch vertical clearance shall be maintained from the hydrant stem to the top of sidewalk, top of curb and drain.
3. A minimum 3-foot clearance shall be provided around the side and rear of fire hydrants. No parking or other obstructions shall be permitted along the access road facing the hydrants, for a distance of 15 feet in each direction.
4. Contractor shall comply with the following fire requirements prior to and during construction:
   A. Article 8.7 of the California Fire Code concerning fire safety during construction shall be adhered to. A copy of such, along with any required safety plans, shall be maintained at the job site.
   B. Fire hydrants shall be installed and in-service prior to combustible construction commencing.
   C. An approved means for reporting emergencies shall be provided at the job site.

CIVIL ABBREVIATIONS AND SYMBOLS NOTES

1. Listing of abbreviations and symbols does not imply all abbreviations are used in the contract drawings.
2. Screening or shading of work is used to indicate existing components or to indicate proposed improvements to highlight selected trade work. Refer to context of each drawing for usage.
3. Heavy lines and symbols indicate work to be done by the contractor. Light lines and symbols indicate existing features or work to be done by another entity.

REFERENCE STANDARDS

2. City of Oakland standard details for public works construction.

EXISTING UTILITIES NOTES

1. Existing underground utilities and improvements are shown in their approximate locations based upon record information available to City at the time of preparation of these plans. Locations may not have been verified in the field and no guarantee is made as to the accuracy or completeness of the information shown. Call underground service alert (USA) at 1-800-227-2600. It shall be the responsibility of the contractor to determine the existence and location of those utilities shown on these plans or indicated in the field by locating services.
2. Additional costs incurred as a result of contractor's failure to verify locations of existing utilities prior to beginning construction in their vicinity shall be borne by the contractor and assumed included and merged in the contract unit price. Utilities near the work area shall be verified by potholing at the contractor's expense.
3. All existing utilities and improvements that become damaged during construction shall be completely restored to the satisfaction of the City at the contractor's expense.
4. The contractor shall project in place overhead interference. The contractor shall use extreme caution when working near overhead or underground power, gas, and/or other utilities so as to shaly protect all personnel and equipment, and shall be responsible for all costs and liability in connection therewith.
5. All contractor work around existing utilities shall be in conformance with California Government Code 4256.
6. No tools, machinery, equipment, apparatus or supplies, or any part thereof, shall be erected, handled or operated within 25 feet of any high voltage lines.
7. Utility relocation contacts:
   A.8: Karen Dolls at 925-807-8520
   Home: Carda Franklin at 510-437-2020
   Email: mariko.schneider at 510-207-1050

RECORD DRAWINGS - 5/17/2013
NOTES

1. Project existing utility structure to remain.

LEGEND

- APPROX. LIMIT OF WORK
- SAWCUT LINE
- APPROXIMATE RIGHT OF WAY
- CUT AND CAP EX. STORM DRAIN LINE
- DEMO AND REMOVE EX. STORM DRAIN LINE
- DEMO AND REMOVE EXISTING CURB OR CURB AND GUTTER
- DEMO AND REMOVE EXISTING UTILITY MAIN
- DEMO AND REMOVE EX. ASPHALT PAVING AND BASE MATERIAL
  (9.5" A.C. ON 1.5" FABRIC ON 5" P.C.C.)
- APPROXIMATE AREA FOR CLEAR AND DUG
- GRIND TOP 2-INCHES OF EX. AC FOR AC Overlay Section

TIDAL CANAL

PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS
ON HIGH STREET NEAR TIDEWATER AVENUE
AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE
PLAN SETS:

1. MATCH EXISTING PAVEMENT GRADES ALONG SIDEWALK LINE.
   PROVIDE A SMOOTH TRANSITION (19%).

2. PROVIDE AND INSTALL GROUNDS VAULT WITH COLLAPSIBLE
   HIGH-FLOW Bypass MERV FILTER TO PREVENT RE-PLOWING
   FOR ADDITIONAL INFORMATION (ATTACHMENT 12). MINIMUM
   4- INCH THICK SECTION OF OPEN-GRADED CRUSHED ROCK
   UNDER STRUCTURE. GEOTECHNICAL ENGINEER TO PROVIDE
   ACTUAL THICKNESS BASED ON FIELD CONDITIONS.

3. HYDROPRISM TRASH CONTROLS UNIT WITH COLLAPSIBLE
   WRENCH MODEL 9578. SEE PLANS BY CONTRACT FOR
   DETAILS (ATTACHMENT 12). MINIMUM 6- INCH THICK SECTION
   OF OPEN-GRADED CRUSHED ROCK UNDER STRUCTURE.
   GEOTECHNICAL ENGINEER TO PROVIDE ACTUAL THICKNESS
   BASED ON FIELD CONDITIONS.

4. REPAIR EXISTING CONCRETE VALLEY GUTTER IN-KIND, AS
   REQUIRED.

5. PROJECT EXISTING VERTICAL CURB AND ISLAND TO REMAIN.

6. CONTRACTOR SHALL SHOVEL AND SEWER EXCAVATION AS
   NECESSARY TO PREVENT THE IMPROVEMENTS SHOULDER
   BE SEPARATED BY A LICENSED ENGINEER.

7. CONTRACTOR SHALL OPEN ALAMEDA AVENUE TO TRAFFIC AT
   THE CLOSE OF EACH DAY. EXCAVATION SHOULDN'T BE PLANTED
   SPRALY AS NECESSARY TO SUPPORT TRAFFIC LOADS.
   INSTALL CUT-BACK ASPHALT PAPER AROUND TRENCH
   PLANTS AS DIRECTED BY ENGINEER.

8. CONTRACTOR TO PAVING AND VERIFY LOCATION OF
   EXISTING POLE GAS MAIN PRIOR TO START OF
   CONSTRUCTION.

9. BENDMARK FOR ALAMEDA AVE. ROUND MONUMENT MARKED
   "CALIFORNIA DEPARTMENT OF TRANSPORTATION."

10. HORIZONTAL CONTROL COORDINATES PROVIDED REFLECT
    LOCATION OF OUTER EDGE OF CURB OF GROUNDS VAULT.

11. NEW SMOKE DRAIN PIPE MATERIAL SHALL BE CLASS IN ROP
    OR SMD 11 HEAT.

12. NEW "TYRE" CITY STANDARD INLET.

13. CONTRACTOR TO REPLACE ALL EXISTING IMPROVEMENTS
    DISTURBED DURING CONSTRUCTION. RESTORATION OF
    HARDSCAPE/LANDSCAPE SHALL BE VERIFIED BY ENGINEER TO
    MATCH EXISTING. ALL DISTURBED PLANTING SHALL BE
    TRANSPLANTED TO A DIFFERENT LOCATION AND
    STORED/MAINTAINED UNTIL REPLANTING.

---

CITY OF OAKLAND
DEPARTMENT OF ENGINEERING AND CONSTRUCTION
250 FRANK H. OGAWA PLAZA, SUITE 4314
OAKLAND, CA 94612
(510) 238-3437
FAX (510) 238-7227

DEPARTMENT OF ENGINEERING AND CONSTRUCTION
CHECKED BY
DESIGNED BY
DRAWN BY

PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS
ON HIGH STREET NEAR TIDEWATER AVENUE
AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE

SITE PLAN - ALAMEDA AVENUE

PROJECT NO.
C424410

RECORD DRAWINGS - 5/17/2013
PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS
ON HIGH STREET NEAR TIDEWATER AVENUE
AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE

SECTION A-A

SECTION B-B

SCALE SHOWN APPLICABLE
AT 34"X28" SHEET SIZE ONLY

CONTENTS:
- STORM DRAIN PROFILES AND DETAILS - ALAMEDA AVE.
- RECORD DRAWINGS - 5/17/2013

NOTES:
- Minimum 6-inch thick section of open-graded crushed rock under structure, geotechnical engineer to provide actual thickness based on field conditions.
TRAFFIC CONTROL NOTES

1. All temporary lane closures are required for construction operations. The contractor shall maintain traffic control, plan and obtain approval from the City before commencing work. The contractor shall provide flag men, cones or barricades as necessary to control traffic and prevent hazardous conditions.

2. Traffic control plans shall be completed to comply with the California Standards for Traffic Control Devices in the City of Oakland. The City of Oakland requires the use of uniform traffic control devices. Each traffic control plan shall be submitted with the original plans for review and approval.

3. Cones or other devices shall be used to mark the work zone and limit the area to be worked on.

4. All signs and barricades shall be used with caution and only after the roadways have been cleared.

5. The contractor shall maintain traffic control, plan and obtain approval from the City before commencing work. The contractor shall provide flag men, cones or barricades as necessary to control traffic and prevent hazardous conditions.

6. The contractor shall provide access to all adjacent properties at all times except as necessary for construction activities in the immediate vicinity of the work area.

7. Construction Operations shall be conducted in such a manner as to cause as little inconvenience as possible to the public and abutting property owners.

8. The contractor shall have all the signs, delineators, barricades, chain link fence enclosures, etc., properly installed prior to construction.

9. The contractor shall be responsible for maintaining, at all times, all signs, delineators, barricades, etc., to ensure proper flow and safety of traffic.

10. The contractor shall utilize flag men and required nighttime work materials as necessary.

11. Flashing arrow signs shall be utilized for all closures and shall be solar powered.

12. The first sign in a series of advanced warning signs shall be equipped with flags.

13. All signs shall be reflective and of standard size.

14. Flashing yellow signals, type "T", shall be utilized on all barricades that protect the work area from normal working hours set forth herein.

15. The contractor shall be required to replace, trim and reposition all temporary traffic control devices after completion of construction.

16. City "Open Trench" shall be used in conjunction with type 2 barricades during construction and nighttime closures as applicable.

17. When street closure is approved, the contractor shall notify the nearest police department. The local police department shall notify the road users and affected businesses at least one week in advance of the closures.

18. Temporary "No Stopping" zones shall be posted on 100' O.C. as necessary during construction operations. When a temporary "No Stopping" zone is approved by the City, the contractor shall notify the police department and post "Low Traffic" at least three (3) working days in advance. The duration of the temporary parking restriction shall be indicated on the signs.

19. The contractor shall replace all traffic detection devices, signing, stripping, marking, and legend damaged during construction to the satisfaction of the City.

20. The contractor shall provide and maintain signs that clearly mark all crosswalks and sidewalk closures and alternates pedestrian routes during construction.

21. Traffic signal detection loops over closed lanes and push-button pedestrian in the median shall be temporarily removed and restored after completion of construction. Contractor shall notify the engineer for final inspection.

22. The existing pedestrian crossing push button station and the traffic control box in the existing median shall be protected, controlled, and used with temporary asphalt pavement during construction. These facilities are to be restored at the completion of construction.

23. Provide temporary lighting at 20 feet on center for pedestrian access.

24. City reserves the right to change work hours from the normally designed work hours of 8:00 AM to 5:00 PM to accommodate traffic flow at the discretion of the City.
PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS ON HIGH STREET NEAR TIDEWATER AVENUE AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE

NOTES

1. PROTECT EXISTING UTILITY STRUCTURE TO REMAIN.
2. PROTECT EXISTING RUBBER UTILITY TO REMAIN.
3. EXISTING LANDSCAPE STRIP TO BE RESTORED IN-KIND AT END OF WORK. REPAIR ANY DAMAGE TO IRRIGATION SYSTEM (Y PRESSURE) CAUSED BY THE WORK.
4. PROTECT EXISTING CONDUIT TO REMAIN.
5. ABANDON EXISTING STORM DRAIN LINE AND STRUCTURE IN-PLACE. PLUG UPSTREAM PIPE AT MANHOLE WITH CONCRETE.

DEPARTMENT OF ENGINEERING AND CONSTRUCTION

CITY OF OAKLAND

250 FRANK H. OGAWA PLAZA, SUITE 4314
OAKLAND, CA 94612
(510) 238-3437
FAX (510) 238-7227

RECORD DRAWINGS - 5/17/2013

EXISTING SITE AND DEMOLITION PLAN - HIGH STREET

DRAWN BY: GL
CHECKED BY: NQA
DESIGNED BY: NQA
DRAWN BY: NQA

SCALE 1/8" = 1'-0"
SHEET NO. 12 OF 29

NO. 62793
Ex. 6/30/14

C424410

PHOTO CREDIT: SANDIS GROUP

PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS ON HIGH STREET NEAR TIDEWATER AVENUE AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE

NO. DATE BY REFERENCE

RECORD DRAWINGS - 5/17/2013
NOTES:
1. MATCH EXISTING PAVEMENT GRADES ALONG CUTOUT LINE. PROVIDE A SMOOTH TRANSITION (TYP.)
2. PROVIDE AND INSTALL GLOVER VAIL WITH COLLAPSE HIGH FLOW BYPASS WELD. REFER TO PLANS BY CONTRACTOR FOR ADDITIONAL INFORMATION (SEE ATTACHMENT 7). MINIMUM 4-INCH THICK SECTION OF OPEN-GRADED CRUSHED ROCK UNDER STRUCTURE. GEOTECHNICAL ENGINEER TO IMPROVE ACTUAL THICKNESS BASED ON FIELD CONDITIONS.
3. HYDRODYNAMIC TRASH CONTROL UNIT. GST MODE 446A. SEE PLANS BY SEARCH FOR DETAILS (SEE ATTACHMENT 12). MINIMUM 6-INCH THICK SECTION OF OPEN-GRADED GRADES ROCK UNDER STRUCTURE. GEOTECHNICAL ENGINEER TO IMPROVE ACTUAL THICKNESS BASED ON FIELD CONDITIONS.
4. SWEEP CURB AROUND MANHOLE ACCESS TO CUS UNIT. (7'-1001 MIN. RADIUS).
5. RESTORE LANDSCAPE STRIP IN KIND.

LEGEND

GENERAL INLET PROTECTION

PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS ON HIGH STREET NEAR TIDEWATER AVENUE AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE

RECORD DRAWINGS - 5/17/2013
PLANS FOR THE INSTALLATION OF TRASH CONTROL UNITS ON HIGH STREET NEAR TIDEWATER AVENUE AND ALAMEDA AVENUE NEAR FRUITVALE AVENUE

STORM DRAIN PROFILES AND DETAILS - HIGH STREET

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RECORD DRAWINGS - 5/17/2013
TRAFFIC CONTROL NOTES

1. Temporary lane closures are required for construction operations. The contractor shall prepare a traffic control plan and obtain approval from the City before commencing work. The contractor shall provide flag men, cones or barricades as necessary to control traffic and prevent hazardous conditions.


3. Construction or maintenance activity in the roadway shall be limited to the hours between 6:00 AM and 9:00 AM, except when necessary for lane closure taps.

4. Cones and delineators shall generally be placed on existing lane lines, except as necessary for lane closure taps.

5. All existing signs shall be protected in place, and any obstructed view for traffic. In the event that existing signs are contradictory to temporary signs for construction, the contractor shall notify the Engineer (Client) immediately to avoid the existing signs or remove the existing signs if not used in the new site.

6. The contractor shall provide access to all adjacent properties at all times except as necessary for construction activities in the immediate vicinity of the work area.

7. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to the public and adjoining property owners.

8. The contractor shall have all the signs, delineators, barricades, chain link fence enclosures, etc., properly installed prior to construction.

9. The contractor shall be responsible for maintaining, at all times, all signs, delineators, barricades, etc., to ensure proper flow and safety of traffic.

10. The contractor shall utilize flag men during work hours as required by the plans and deemed necessary by the City.

11. Flashing arrow boxes shall be used for all closures and shall be solar powered.

12. The first sign in a series of advanced warning signs shall be equipped with flags.

13. All signs shall be reflectiveized and of standard sizes.

14. Flashing yellow beacons, type B shall be used on all barricades that protect the work area in the normal working hours set forth herein.

15. The contractor shall be required to replace, stripping and legends to their existing layout and conditions after completion of construction.

16. CET "OPEN PREDICT" shall be used in conjunction with type A barricades during construction and nighttime closures as applicable.

17. When street closure is approved, the contractor shall notify the Police Department, the Fire Department, the local transit district, affected residents and affected businesses at least one week in advance of the closure.

18. Temporary "NO STOPPING" zones shall be posted on 100°C.

19. The contractor shall replace all traffic direction devices, signing, stripping, marking, and legends damaged during construction to the satisfaction of the City.

20. The contractor shall provide and maintain signs that clearly mark all crosswalks and sidewalk closures and alternate pedestrian routes during construction.

21. Traffic signal selection loops over closed lanes and push-button pedestrian in the median shall be temporarily removed and restored after completion of construction. Contractor shall notify the Engineer for final inspection.

22. The existing pedestrian crossing push button station and the traffic control box in the existing median shall be temporarily removed, and traffic with temporary asphalt pavement during construction. The facilities and other existing traffic control, traffic shall be restored.

23. Provide temporary lighting at 20 feet on center for pedestrian access.

24. Provide temporary reflective tabs on temporary lane stripping.