HARRIS COUNTY HOUSING AUTHORITY

8933 Interchange Houston, Texas 77054 | 713.669-4514 P

AMENDMENT OF SOLICITATION

ADDENDUM # 2

DATE: 04-25-16

ISSUED BY: **Smith & Company Architects**

AMENDMENT TO SOLICITATION NUMBER: IFB #16-03

Fenix Estates Phase I & II

THE DATE AND TIME SPECIFIED FOR RECEIPT OF PROPOSALS IS **MAY 2, 2016, 2:00 PM CST.**

THE SOLICITATION MENTIONED ABOVE IS AMENDED AS SET FORTH BELOW. PROPOSERS MUST ACKNOWLEDGE RECEIPT OF THIS AMENDMENT PRIOR TO THE HOUR AND DATE SPECIFIED FOR RECEIPT OF PROPOSALS BY SIGNING THIS FORM BELOW.

_____ _____

Proposer/Respondent Date

_____

Signature

SMITH & COMPANY
ARCHITECTS

ADDENDUM NO. 2

4/25/16

DATE: April 25, 2016

PROJECT: Fenix Estates Apartments Phase I and II.

LOCATION: 3815 Gulf Freeway Houston, Texas 77004.
PROJECT NO. 032415N

DISTRIBUTION:
DELIVERED VIA:

NO. PAGES: 7
PREPARED BY: Smith & Company Architects, Inc

This addendum forms a part of the Specifications for the Fenix Estates Apartments Phase I and II Project # 032415N for Harris County Housing Authority documents posted on April 11, 2016, for the subject project and modifies/add to them as noted below.

CHANGES TO PROJECT MANUAL

CLARIFICATION

1. Concrete testing service: Owner will engage and pay for a qualified testing agency to perform material evaluation tests and to design concrete mixtures.

SPECIFICATIONS

1. Add attached pre bid meeting sign in sheet dated April 22, 2016.

2. Section HARRIS COUNTY COMMUNITY SERVICES DEPARTMENT CDBG BID SPECIFICATIONS Add 4.9 Insurance requirements.

    - CGL policy with limits of insurance of not less than $1,000,000 Each Occurrence, $2,000,000 Products/Completed Operations , Aggregate, $1,000,000 Personal & Advertising Injury, $100,000 Auto Damage Limits (any one fire), $5,000 Medical Expense (any one person) and $2,000,000 General Annual Aggregate. If the CGL coverage contains a General Aggregate Limit, such General Aggregate shall apply separately to each project with project name noted on certificate.

- CGL overage shall be written on ISO Occurrence and shall cover liability arising from premises, operations, independent contractors, products-completed operations, and personal and advertising injury. There shall be no exclusions for Residential Construction or Repair Single Dwelling, Duplexes, Multiplexes or Apartments.
- Owner and all other parties required of the General Contractor, shall be included as insured on the. CGL, using ISO Additional Insured Endorsement CG 20 10 11 85 or CG 20 10 10 01 AND CG 20 37 10 01 or CG 20 33 10 01 and CG 20 37 10 01 or an endorsement providing equivalent coverage to the additional insureds. This insurance for the additional insureds shall be as broad as the coverage provided for the named insured General Contractor. It shall apply as primary and non-contributory insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insured.
- General Contractor shall maintain CGL coverage or itself and all additional insureds for the duration of the project and maintain Completed Operations coverage for itself and each additional insured fur at least 3 years after completion of the Work.
- Business Auto Liability with limits of at least $1,000,000 each accident,
- Business Auto coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.
- Owner and all other parties required of the General Contractor shall be included as additional insureds on the auto policy.
- Umbrella limits must be at least $1,000,000.
- Umbrella coverage must include as insureds all entities that are additional insureds on CGL.
- Employers Liability Insurance limits of at least $500,000 each accident for bodily injury by accident and $500,000 each employee for injury by disease
- General Contractor waives, and shall cause its insurance carriers to waive, all rights against Owner and Architect and their agents, officers, directors and employees for recovery of damages to the extent these damages are covered by commercial general liability, commercial umbrella liability, business auto liability or workers compensation and employers liability insurance maintained per requirements stated above.
- Subcontractor's General. Liability, Automobile Liability, Umbrella Liability and Workers' Compensation policies shall be endorsed to state that Contractor will be notified at least 30 days in advance in the event of cancellation, non-renewal or material change in coverage of said policies and the general contractor will replace "will endeavor" with "must notify" in their Certificate of Insurance.
- General Contractor shall provide Owner with valid certification of insurance prior to commencement of work verified said insurance requirements have

been met, attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the General Contractors Commercial General Liability Policy.

3. Section 004393 BID SUBMITTAL CHECKLIST delete 1.2, B, 5. “Attached to the bid form: Proposed Schedule of Values Form”.

4. Add attached section 13204.1 STANDARD SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREAMENT DEVICE dated April 25, 2016.

5. Add attached section 072413-DIRECT APPLIED EXTERIOR FINISH SYSTEM dated April 25, 2016.

6. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS delete 1.2, B, 2. “Division 08 Section "Glazed Aluminum Curtain Walls" for curtain-wall systems that mechanically retain glazing on four sides”.

7. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS delete 1.2, B, 4. “Division 08 Section "Glazing" for glazing requirements to the extent not specified in this Section”.

8. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS add 2.1, A, 11. “Arcadia”.

9. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS delete 2.4, A. “Glazing: As specified in Division 08 Section “Glazing”.

10. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS delete 2.5, A, 1, a. “Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior”.

11. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS 2.5, A, 2 revise to read “Wide stile; 5-inch (127-mm) nominal width”.

12. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS delete 2.6, F, 1 “ Steel hinge tube: Concealed in jamb”.

13. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS 2.9, C revise to read “Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium

matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker)".

14. Section 084113 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS delete 3.2, F "Install glazing as specified in Division 08 section "Glazing"….

15. Section 085113 ALUMINUM WINDOWS 2.1, A, 16 revise to read "Airtite Products".

16. Section 085113 ALUMINUM WINDOWS 2.8, B revise to read

    "B. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker)

        1. Color: Dark Bronze".

17. Section 092116.23 GYPSUM BOARD SHAFT WALL ASSEMBLIES 2.5 Auxiliary materials, delete C. "Gypsum Base Joint-Reinforcing Materials: As specified in Division 09 Section "Gypsum Veneer Plastering".

18. Delete Section 092400 PORTLAND CEMENT PLASTERING dated April 11, 2016.

19. Section 092900 GYPSUM BOARD delete 1.2, B, 1. "Section 092216 "Non-Structural Metal Framing" for non structural framing and suspension systems that support gypsum board panels".

DRAWINGS PHASE I

1. Sheet A1.10 SITE DETAILS, detail 4 planning information, performance standard & park fees. Add Note: Park fees paid by owner.

2. Delete Sheet A4.01 EXTERIOR ELEVATIONS BLDG 1 BASE BID & WINDOW TYPES and replace with attached sheet A4.01 dated April 26, 2016.

3. Delete Sheet A6.10 REFLECTED CEILING PLAN LEVEL 1 BUILDING 1, and replace with attached sheet A6.10 dated April 26, 2016.

4. Delete Sheet A6.20 REFLECTED CEILING PLAN LEVEL 1 BUILDING 2, and replace with attached sheet A6.20 dated April 26, 2016.

5. Delete Sheet M5.00 MECHANICAL DETAILS dated April 11, 2016 and replace with attached sheet M5.00 dated April 26, 2016.

DRAWINGS PHASE II

1. Delete Sheet A1.00 OVERALL SITE PLAN dated April 11, 2016 and replace with attached sheet A1.00 dated April 26, 2016.

2. Sheet A1.10 SITE DETAILS, detail 4 planning information, performance standard & park fees. Add Note: Park fees paid by owner.

3. Delete Sheet A4.01 EXTERIOR ELEVATIONS BLDG 1 BASE BID & WINDOW TYPES and replace with attached sheet A4.01 dated April 26, 2016.

4. Delete Sheet A6.10 REFLECTED CEILING PLAN LEVEL 1 BUILDING 3, and replace with attached sheet A6.10 dated April 26, 2016.

5. Delete Sheet M4.00 MECHANICAL DETAILS dated April 11, 2016 and replace with attached sheet M4.00 dated April 26, 2016.

6. Delete Sheet P1.31 PLUMBING WASTE & VENT BUILDING 3 LEVEL 1 dated April 11, 2016 and replace with attached sheet P1.31 dated April 26, 2016.

7. Delete Sheet P1.32 PLUMBING WASTE & VENT BUILDING 3 LEVEL 2 dated April 11, 2016 and replace with attached sheet P1.32 dated April 26, 2016.

8. Delete Sheet P1.33 PLUMBING WASTE & VENT BUILDING 3 LEVEL 3 dated April 11, 2016 and replace with attached sheet P1.33 dated April 26, 2016.

9. Delete Sheet P1.34 PLUMBING WASTE & VENT BUILDING 3 LEVEL 4 dated April 11, 2016 and replace with attached sheet P1.34 dated April 26, 2016.

10. Delete Sheet P1.35 PLUMBING WASTE & VENT BUILDING 3 LEVEL 5 dated April 11, 2016 and replace with attached sheet P1.35 dated April 26, 2016.

11. Delete Sheet P2.31 PLUMBING DOMESTIC WATER BUILDING 3 LEVEL 1 dated April 11, 2016 and replace with attached sheet P2.31 dated April 26, 2016.

12. Delete Sheet P2.32 PLUMBING DOMESTIC WATER BUILDING 3 LEVEL 2 dated April 11, 2016 and replace with attached sheet P2.32 dated April 26, 2016.

13. Delete Sheet P3.00 PLUMBING ENLARGED PLANS BUILDING 3 dated April 11, 2016 and replace with attached sheet P3.00 dated April 26, 2016.

14. Delete Sheet P4.00 PLUMBING DETAILS dated April 11, 2016 and replace with attached sheet P4.00 dated April 26, 2016.

15. Delete Sheet P4.02 PLUMBING DETAILS dated April 11, 2016 and replace with attached sheet P4.02 dated April 26, 2016.

16. Delete Sheet P4.03 PLUMBING DETAILS dated April 11, 2016 and replace with attached sheet P4.03 dated April 26, 2016.

17. Delete Sheet P5.00 PLUMBING SCHEDULES dated April 11, 2016 and replace with attached sheet P5.00 dated April 26, 2016.

18. Delete Sheet S2.01 FOUNDATION PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.01 dated April 26, 2016.

19. Delete Sheet S2.02 2nd FLOOR FRAMING PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.02 dated April 26, 2016.

20. Delete Sheet S2.03 3rd FLOOR FRAMING PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.03 dated April 26, 2016.

21. Delete Sheet S2.04 4th FLOOR FRAMING PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.04 dated April 26, 2016.

22. Delete Sheet S2.05 5th FLOOR FRAMING PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.04 dated April 26, 2016.

23. Delete Sheet S2.06 5th FLOOR CEILING PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.06 dated April 26, 2016.

24. Delete Sheet S2.07 ROOF FRAMING PLAN – BUILDING 3 dated April 11, 2016 and replace with attached sheet S2.07 dated April 26, 2016.

25. Delete Sheet S4.04 FRAMING DETAILS – BUILDING 3 dated April 11, 2016 and replace with attached sheet S4.04 dated April 26, 2016.

26. Delete Sheet S4.05 FRAMING DETAILS – BUILDING 3 dated April 11, 2016 and replace with attached sheet S4.05 dated April 26, 2016.

27. Delete Sheet S4.06 FRAMING DETAILS – BUILDING 3 dated April 11, 2016 and replace with attached sheet S4.06 dated April 26, 2016.

28. Delete Sheet S5.01 STAIRS ENLARGED PLANS – BUILDING 3 dated April 11, 2016 and replace with attached sheet S5.01 dated April 26, 2016.

29. Delete Sheet S5.02 STAIRS ENLARGED PLANS – BUILDING 3 dated April 11, 2016 and replace with attached sheet S5.02 dated April 26, 2016.

END OF ADDENDUM NO.2

Pre Bid Agenda
Sign in Sheet

Harris County Housing Authority
Fenix Estates Apartments
3815 Gulf Freeway
Houston, TX 77004

Date: April 22, 2016
Time: 2:00 p.m.
Location: 8933 Interchange Dr. Houston, TX 77054

Name	Organization	Phone Number	Email
Myra Ayala	HCCSD	713578 2023	Myra.ayala@csd.hctx.net
EDDIE SMITH	MORGANTI TX.	281.448.1015	esmith@morganti.com
Liberty Rawls	Construction Diversity Group	404-900-8430	LRAWLS@CDGROUP.US
Mike Poona	Alabaseri Construction Inc	281-216-4396	mpoona@teampoona.com
Marilyn Jones	Cleaning Com	832-373-9105	MJones4285@live.com
Michele Johnson	NJA section 3	832-712-8998	
RACHAEL TURNER	FACILITY INTERIORS	713-963-0089	RTURNER@FI.COM
Jamie Montz	Facility Interiors	713 963-0678	JamieM@FMGI.com
Rigo Vannucci	Qualified Const.	713 270-0500	VANNSTARR@WINDSTREAM.NET
DEBORAH JONES	QUALIFIED CONSTRUCTION	713-270-0500	djones8961@comcast.net
Jim Krueger	ABOFTX	(713) 398-3777	ABOFTX@AOL.com
Gregory Frazier	HCCSD	713-578-2127	gregory.frazier@csd.hctx.net
Lisa Champagne	HCCSD	713-578-2205	lisa.champagne@csd.hctx.net
ANDREW RENO	DIGGS CONSTRUCTION	314.369.3324	ARENO@DIGGSCONSTRUCTION.COM
DON KELL	DIGGS CONSTRUCTION	832.335.4570	DKELL@DIGGSCONSTRUCTION.COM

Pre Bid Agenda
Sign in Sheet

Harris County Housing Authority
Fenix Estates Apartments
3815 Gulf Freeway
Houston, TX 77004

Date: April 22, 2016
Time: 2:00 p.m.
Location: 8933 Interchange Dr. Houston, TX 77054

Sterling Flemon	Tri Coastal	713-791-8069	sterlingfjr@gmail.com
John Bowles	Koasati CM	281-848-4600	jbowles@koasaticm.com
Nereyda Vega	HCCSD	713-578-2293	nereyda.vega@csd.hctx.net

SECTION 13204.1- STANDARD SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREAMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for constructing underground stormwater treatment chambers to construct the complete Oil Grit Separator (OGS) device. Work includes supply and installation of concrete bases, precast sections, and the appropriate precast section with all internal components completely and correctly installed within the OGS device, water tight seals prior to arrival to the project site.

1.2 REFERENCE STANDARDS

1.2.1 For Canadian projects only, the following reference standards apply:

Canadian Standards Association
CAN/CSA-A257.3-M92: Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections, and Fittings Using Rubber Gaskets
CAN/CSA-A257.4-M92: Precast Reinforced Circular Concrete Manhole Sections, Catch Basins, and Fittings
CAN/CSA-S6-00: Canadian Highway Bridge Design Code

1.2.2 For ALL projects, the following reference standards apply:

ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks
ASTM C 478: Specification for Precast Reinforced Concrete Manhole Sections
ASTM C 443: Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM D2563: Standard Practice for Classification of Visual Defects in Reinforced Plastics
ASTM D2584: Test Method for Ignition Loss of Cured Reinforced Plastics

1.3 SHOP DRAWINGS

Shop drawings shall be submitted upon request with each order to the contractor then forwarded to the consulting engineer for review and acceptance. Shop drawings shall detail the precast concrete components and the precast concrete component detailing all OGS internal components pre-installed and watertight sealed at the precast facility prior to shipment, including the sequence for installation.

1.4 HANDLING AND STORAGE

Prevent damage to materials during storage and handling.

1.4.1 Internal OGS device materials supplied by the Manufacturer for connection to the precast concrete shall be pre-fabricated and bolted to the precast and watertight sealed to the precast surface prior to delivery to the project site to ensure Manufacturer's internal assembly process and quality control processes are fully adhered to, and to prevent damage to the materials on site. No exceptions will be accepted.

1.4.2 Follow all instructions labeled on precast concrete components during installation.

PART 2 – PRODUCTS

2.1 GENERAL

2.1.1 The separator shall be circular and constructed from the pre-cast concrete circular riser and slab components.

2.1.2 The concrete separator shall include a fiberglass insert bolted and sealed, watertight inside the concrete precast chamber, prior to delivery to the project site. The fiberglass insert must provide a lining for oil storage and retention as a secondary containment system within the OGS.

2.1.3 The separator shall be allowed to be specified as a bend or junction structure in the stormwater drainage system.

2.2 PRECAST CONCRETE SECTIONS

All precast concrete components shall be manufactured to a minimum live load of HS-20 truck loading or greater based on local regulatory specifications.

2.3 GASKETS

For Canadian projects only: Only profile neoprene or nitrile rubber gaskets in accordance to CSA A257.3-M92 will be accepted. Mastic sealants, butyl tape or Conseal CS-101 are not acceptable gasket materials.

2.4 JOINTS

The concrete joints shall be water-tight and meet the design criteria according to ASTM C-443. Mastic sealants or butyl tape are not an acceptable alternative.

2.5 FRAME AND COVER

Frame and covers shall be manufactured in accordance with local regulatory specifications and shall be clearly embossed with manufacturer's product name.

2.6 CONCRETE

All concrete components shall conform to the appropriate CSA or ASTM specifications.

2.7 FIBERGLASS

The fiberglass portion of the water treatment device shall be constructed in accordance with the following standard: ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks.

2.8 LADDERS

Ladder rungs, to be provided upon request.

2.9 SAFETY GRATE

A safety grate shall be installed within the chamber of the unit.

2.10 INSPECTION

All precast concrete sections shall be inspected to ensure dimensions, appearance, integrity of internal components, and quality of the product meets local municipal specifications and associated standards.

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS device shall remove oil and sediment from stormwater during frequent wet weather events, and retain these pollutants within the device for later removal.

3.2 RUNOFF VOLUME

The OGS device shall be engineered, designed and sized to treat a minimum of 90 percent of the annual runoff volume using a widely accepted continuous simulation runoff model which uses rainfall data records which includes antecedent conditions as well as rainfall periods. Rainfall records should be comprised of 15-years of rainfall data or a longer continuous period if available for a given location, but in all cases at least a minimum of 5-years continuous rainfall.

3.3 TOTAL SUSPENDED SOLIDS (TSS)

The OGS device shall be capable of removing the Engineer-specified total suspended solids (TSS) load, without scouring previously captured pollutants.

3.4 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to treat a minimum of 90 percent of the annual runoff volume using a widely accepted continuous simulation runoff model which uses rainfall data records which includes antecedent conditions as well as rainfall periods. Rainfall records should be comprised of 15-years of rainfall data or a longer continuous period if available for a given location, but in all cases at least a minimum of 5-years continuous rainfall. The Peclet Number is not an approved method or model for calculating TSS removal, sizing, or scaling OGS devices.

3.5 PARTICLE SIZE DISTRIBUTION (PSD) FOR SIZING

The OGS device shall be sized to remove the Engineer-specified total suspended sediment (TSS) load using the particle size distribution (PSD) in Table 3.5, in addition to adhering to sections 3.2 & 3.4 of this specification. No alternative PSDs or deviations from Table 3.5 shall be accepted.

Table 3.5 – Particle Size Distribution

Particle Size Distribution to be used to size OGS		
Particle Diameter (Micron)	% by Mass of All Particles	Specific Gravity
1000	5%	2.65
500	5%	2.65
250	15%	2.65
150	15%	2.65
100	10%	2.65
75	5%	2.65
50	10%	2.65
20	15%	2.65
8	10%	2.65
5	5%	2.65
2	5%	2.65

3.6 VERIFIED SCOUR TESTING

3.6.1 The OGS device shall have New Jersey Corporation for Advanced Technology (NJCAT) verification that the device is acceptable for on-line installation based on full-scale third-party scour testing performed with the device pre-loaded with the particle size distribution (PSD) illustrated in TABLE 1 - Scour Test Particle Size Distribution. Alternatively, the OGS device shall have Toronto and Region Conservation Authority (TRCA) verification of third-party scour testing performed in accordance with the Canadian ETV “Procedure for Laboratory Testing of Oil-Grit Separators.”

3.6.1.1 Scour testing data from laboratory scour testing performed with the OGS device pre-loaded with a coarser PSD than the PSD shown in TABLE 1 (i.e. the coarser PSD has no particles in the 1 – 50 micron size range) shall not be acceptable for the determination of the device's suitability for on-line installation.

TABLE 1 - Scour Test Particle Size Distribution[1]	
Particle Size (Microns)	Percent by Mass of All Particles
500 – 1000	5%
250 – 500	5%
100 – 250	30%
50 – 100	15%
8 – 50	25%
2 – 8	15%
1 – 2	5%
1. The Materials shall be hard, firm and inorganic with a specific gravity of 2.65. The various particle sizes shall be uniformly distributed throughout the material prior to use.	

3.7 DESIGN ACCOUNTING FOR BYPASS

3.7.1 The OGS system design shall be specified to achieve the TSS removal performance and water quality objectives without washout of previously captured pollutants. To ensure that this is achieved, there are two design options with associated requirements:

3.7.1.1 The OGS device shall be placed off-line with an upstream external water quality bypass diversion structure (typically in an upstream manhole) that only allows the water quality volume to be diverted to the OGS device, and excessive flows diverted downstream around the OGS device to prevent high flow washout of pollutants previously captured. This design typically incorporates a triangular configuration layout including an upstream bypass manhole with an appropriately engineered weir wall, the OGS device, and a downstream junction manhole, which is connected to both the OGS device and bypass structure. In this case with an external bypass required, the OGS device manufacturer must provide calculations and designs for all structures, piping and any other required material applicable to the proper functioning of the system, stamped by a Professional Engineer.

3.7.1.2 Alternatively, OGS devices in compliance with Section 3.6.1 shall be acceptable for an on-line design configuration, thereby eliminating the requirement for an upstream bypass manhole and downstream junction manhole.

3.8 SEDIMENT STORAGE CAPACITY

Manufacturer's sediment storage capacity guidelines for the OGS device shall be confirmed by the Engineer to be adequate for the anticipated sediment loadings. Sediment loadings shall be determined by land-use and defined as a minimum of 450 kg (992 lb) of sediment (TSS) per impervious hectare of drainage area per year or greater as noted in the "Typical Urban Areas and Pollutant Yields (Sediment)" table below. The OGS device shall be specified as to not require maintenance (sediment removal) more frequently than once per year.

Typical Urban Areas and Pollutant Yields (Sediment) (Burton and Pitt, 2002)

Pollutant	Pollutant Load by Land Use (Kg/ha/year)							
	Commercial	Parking Lot	Residential Density			Highways	Industrial	Shopping Centers
			High	Med.	Low			
TSS	1000	400	400	250	10	880	500	440

Source: U.S. EPA Stormwater Best Management Practice Design Guide, Volume 1, Appendix D, Table D-1

NOTE: to determine volume of adequate sediment storage capacity a bulk density of 1602 kg/m^3 (100 lbs/ft^3) shall be applied.

3.9 PETROLEUM HYDROCARBON CAPTURE AND STORAGE

3.9.1 Petroleum hydrocarbon storage capacity in the OGS device shall be a minimum 35 gallons (132 Liters), or more as specified.

3.9.2 The OGS device internal hydrocarbon storage area shall include a minimum of 12 inches (305 mm) of double wall containment for the full circumference of the device to provide safe oil and other hydrocarbon material storage and ground water protection.

3.10 SURFACE LOADING RATE SCALING OF DIFFERENT MODEL SIZES

The reference device for scaling shall be an OGS device that has been third-party laboratory tested and verified by NJCAT or TRCA. Other model sizes of the tested device shall be scaled such that the claimed TSS removal efficiency of the scaled device shall be no greater than the TSS removal efficiency of the tested device at identical surface loading rate (flow rate divided by settling surface area). Alternative scaling methodologies shall not be accepted without providing a minimum of three (3) full-scale

third-party laboratory performance and scour testing of differing OGS model sizes. The Peclet Number is not an approved method for scaling OGS devices.

PART 4 – INSPECTION & MAINTENENACE

The OGS manufacturer shall provide an Owner's Manual upon request.

4.1 A Quality Assurance Plan that covers inspection and maintenance for up to 5 years shall be included with the OGS, and written into the COA.

4.2 Inspection of the OGS device, which includes determination of sediment depth and presence of petroleum hydrocarbons, shall be easily conducted from finished grade.

4.3 Sediment removal from the OGS shall be conducted using a standard maintenance truck and vacuum apparatus.

4.4 No confined space for sediment removal or inspection of screens or other internal components shall be required for normal annual inspection or maintenance activity.

PART 5 – EXECUTION

5.1 CONCRETE INSTALLATION

The installation of the concrete OGS device should conform to state highway, provincial, or local specifications for the construction of manholes. Selected sections of a general specification that are applicable are summarized below.

5.2 EXCAVATION

5.2.1 Excavation for the installation of the stormwater quality treatment device should conform to state highway, municipal or local specifications. Topsoil that is removed during the excavation for the stormwater quality treatment device should be stockpiled in designated areas and should not be mixed with subsoil or other materials. Topsoil stockpiles and the general site preparation for the installation of the water quality device should conform to state highway, provincial or local specifications.

5.2.2 The OGS device should not be installed on frozen ground. Excavation should extend a minimum of 12 inch (300 mm) from the precast concrete surfaces plus an allowance for shoring and bracing where required. If the bottom of the excavation provides an unsuitable foundation additional excavation may be required.

5.2.3 In areas with a high water table, continuous dewatering should be provided to ensure that the excavation is stable and free of water.

5.3 BACKFILLING

Backfill material should conform to state highway, municipal or local specifications. Backfill material should be placed in uniform layers not exceeding 12 inches (300 mm) in depth and compacted to state highway, provincial or local specifications.

5.4 WATER QUALITY DEVICE (OGS) CONSTRUCTION SEQUENCE

5.4.1 The concrete water quality device is installed in sections in the following sequence:

- aggregate base
- base slab
- treatment chamber section(s); shall include the internals bolted/secured to the precast walls and water tight sealed prior to arrival to the project site to ensure quality control
- transition slab (if required)
- bypass section
- connect inlet and outlet pipes
- riser section and/or transition slab (if required)
- maintenance riser section(s) (if required)
- frame and access cover

5.4.2 The precast base should be placed level at the specified grade. The entire base should be in contact with the underlying compacted granular material. Subsequent sections, complete with joint seals, should be installed in accordance with the precast concrete manufacturer's recommendations.

5.4.3 Adjustment of the stormwater quality treatment device can be performed by lifting the upper sections free of the excavated area, re-leveling the base, and re-installing the sections. Damaged sections and gaskets should be repaired or replaced as necessary. Once the stormwater quality treatment (OGS) device has been constructed, any lift holes must be plugged with mortar.

5.5 DROP PIPE, RISER PIPE, AND OIL PORT

Once the upper chamber has been attached to the lower chamber, the inlet drop tee, and riser pipe must be attached. If an oil port is included, this must be attached as well. Pipe installation instructions and required materials shall be provided with the insert.

5.6 INLET AND OUTLET PIPES

Inlet and outlet pipes should be securely set into the upper chamber using grout or approved pipe seals (flexible boot connections, where applicable) so that the structure is watertight. Non-secure inlets and outlets will result in improper performance.

5.7 FRAME AND COVER OR FRAME AND GRATE INSTALLATION

Precast concrete adjustment units should be installed to set the frame and cover at the required elevation. The adjustment units should be laid in a full bed of mortar with successive units being joined using sealant recommended by the manufacturer. Frames for the cover should be set in a full bed of mortar at the elevation specified.

END OF SECTION 13204.1

SECTION 072413 – DIRECT APPLIED EXTERIOR FINISH SYSTEM

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes: Work includes all labor, materials, and equipment necessary to install all aspects of the Applied Exterior Finishing System (DEFS).

B. Related Sections

1. 054000 – Light gauge cold-formed steel framing
2. 061600 – Sheathing
3. 079000 – Joint Sealers
4. 092900 – Gypsum Board

1.2 SYSTEM DESCRIPTION

A. General: The direct applied system is comprised of a water-resistive barrier, approved sheathing, base coat with embedded mesh, and a finish coat.

B. Application Methods: The systems are applied directly to a structure at the construction site or may be applied to prefabricated panels.

1.3 SUBMITTALS

A. Product Data: All product data sheets, details, and warranty information that pertain to the project in accordance with Section 01 30 00 Submittal Procedures.

B. Samples: Submitted upon request.

1. Samples of the finish coat shall be of an adequate size as required to represent each color and texture to be utilized on the project and produced using the same techniques and tools required to complete the project.

2. Retain approved samples at the construction site throughout the application process.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: System component materials shall be manufactured or approved by one manufacturer and shall be distributed by the same or its authorized dealers.

B. Plastering Contractor:

1. Shall be knowledgeable in DEFS installation with documented experience.
2. Shall provide proof of current contractor's license and bond where required.

C. On-Site Mock-Ups: Produced upon request.

1. Prior to commencement of work, provide a mock-up for approval.

2. Mock-up suitable to represent the products to be installed for each color and texture constructed using the same tools and techniques to be utilized on the project.

3. Retain approved mock-up at job site throughout the application process.

a. Where acceptable to the Architect, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver all materials to the construction site in their original, unopened packaging with labels intact.

B. Inspection: Inspect the materials upon delivery to assure that specified products have been received. Report defects or discrepancies to the responsible party according to the construction documents; do not use reported material for application.

C. Storage: Store all products per manufacturer's recommendations. Generally, store materials in a cool, dry location; away from direct contact with the ground and/or concrete; out of direct sunlight; and protect from weather and other damage.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Follow product data sheet's recommendations for environmental conditions and surface preparation.

1. Temperatures: Before, during and following the application of the base coat and finish, the ambient and surface temperatures must remain above 40°F (4°C) for a minimum period of 24 hours. Protect materials from uneven and excessive evaporation, especially during hot, dry, windy weather. Protect from freezing for a period of not less than 24-hours after application has occurred.
2. Substrates: Prior to installation, inspect the wall for surface contamination or other defects that may adversely affect the performance of the materials, and insure that the wall be free of residual moisture. Do not apply DEFS to substrates whose temperature are less than 40°F (4°C) or contain frost or ice.
3. Inclement Weather: Protect applied material from inclement weather until dry.

B. Existing Conditions:

1. Jobsite Resources: Provide access to electrical outlets, clean, potable water, and a suitable work area at the construction site throughout the application of the System.

1.7 SEQUENCING AND SCHEDULING

A. Sequencing: Coordinate the installation with all other construction trades.

B. Staffing: Provide sufficient manpower to ensure continuous operation, free of cold joints, scaffolding lines, variations in texture, etc.

1.8 WARRANTY

A. System Warranty: Submit documentation on's standard system warranties. At completion of work, provide written system warranty documentation.

B. Warranty Length: Five (5) years commencing at the time of substantial completion.

1.9 MAINTENANCE

A. The following materials shall be presented to the owner following the application of the System:

1. One container of finish for each color and texture utilized on the project.
2. One bag of base coat of each utilized on the project.
3. A maintenance program for finishes as required.

PART 2 – PRODUCTS

2.1 COMPATIBILITY

A. Compatibility: Provide water-resistive barrier, fasteners, reinforcing meshes, base and finish coat systems, sealants, and accessories that are compatible with one another and with substrates and approved for use by the manufacturer for the project.

2.2 WATER-RESISTIVE BARRIER

A. One layer of Grade D kraft building paper with a 60-minute water-resistance rating.

2.3 SHEATHING

A. Gypsum Board: Glass mat faced, water-resistant treated core gypsum sheathing must comply with ASTM C1177 and be recognized in a current evaluation report.

2.4 REINFORCING MESH

A. Meshes: Are alkali-resistant woven glass fiber fabrics specially designed to be used with DEF System.
   1. Standard Mesh (4.5oz): For field locations.
   2. Starter Mesh (4.5 oz.): For back wrapping, board joints, and detail work.

2.5 BASE COAT

A. StyroGlue DryBond: A factory blended, polymer modified cement-based material. StyroGlue: 100% polymer-based base coat and adhesive, which is field, mixed in a 1:1 ratio by weight Portland cement complying with ASTM C150.

2.6 ACCESSORIES

A. Caulking: Must be compatible with DEFS components and adjacent materials, be approved by manufacturer, and must meet ASTM C920 (Type S or M, minimum Grade NS, minimum Class 25, and Use O sealant).

B. Flashing: Flashing complying with UBC Section 1404.2, IBC Section 1405.3 as applicable, must be provided. Rigid flashings must be sloped towards the exterior, with an upturned leg on the interior side and at the ends, and must extend beyond the surface of the exterior wall.

C. Fasteners: Nails, staples, or screws used to rigidly secure associated accessories shall be corrosion-resistant and suitable for the substrate and/or framing.

D. Trim: Fabricated from high-impact PVC.

2.7 FINISHES

A. Color and Texture: Color and finish texture shall be as selected by the Architect.

2.8 MIXES

All material and tinting mixing instructions are contained in the appropriate Product Data Sheet

PART 3 – EXECUTION

3.1 EXAMINATION

A. Framing: Stud size, spacing, and depth shall meet minimum code and sheathing manufacturer requirements. Framing shall be sufficiently straight and true to ensure the sheathing surface requirements can be met.

B. Substrates:

1. Acceptable substrates must be securely fastened per applicable building code requirements.
2. Acceptable substrates and adjacent materials must be dry, clean, and sound. Substrate surface must be flat, free of fins or planar irregularities greater than 1/4-inch in 10-feet (6mm in 3m).

C. Flashings: All flashing around windows, at deck attachments, utility penetrations, roof lines, etc. and all kick-out flashing must be properly installed prior to application.

D. Unsatisfactory conditions shall be reported to the general contractor and/or builder and/or architect and/or owner. Do not proceed until all unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Substrate: Clean the substrate to which the System is to be applied, ensuring that there are no foreign materials present; including, but are not limited to, oil, dirt, dust form release agents, efflorescence, paint, wax, water repellants, moisture, frost, and or extended nails.

B. Surrounding Areas: Protect surfaces near the work of this section from damage, disfiguration, and overspray. Mask off all dissimilar materials.

3.3 INSTALLATION, GENERAL

A. General Installation: Refer to the appropriate manufacturer's product data sheet for additional installation requirements and recommendations.

3.4 INSTALLING TRIM

A. Install square and drip edge track according to manufacturer's written instructions and/or specifications.

3.5 INSTALLING WATER-RESISTIVE BARRIER

A. Water-Resistive Barrier: Apply water-resistive barrier complying with Section 1404.2 of the IBC.

3.6 INSTALLING SHEATHING

A. Install sheathing per local code and manufacturer's instructions.

3.7 INSTALLING BASE COAT AND MESH

A. Openings and Penetrations: Apply minimum 9.5 x 12-inch (240 x 300mm) diagonal strips of starter mesh at corners of all penetrations. Embed mesh in the base coat while avoiding wrinkles.

B. Board Joints: Apply minimum of 9.5-inch (240 mm) wide strips of mesh at all board joints. Embed mesh in the base coat while avoiding wrinkles.

C. Substrate: Once the base coat from the board joints, openings, and/or penetrations applications has dried, apply the mesh to the entire field. Use a double layer of mesh at all inside and outside corners and overlap a minimum of 2-1/2-inches (63.5mm) at all mesh joints. Embed mesh in the base coat while avoiding wrinkles.

D. Drying: Allow base coat to fully dry a minimum of 24-hours before application of primer or finish.

3.8 INSTALLING FINISH COAT

A. General: Apply per approved finish product data sheet.

B. Verification: Verify the desire color and texture match the approved sample and/or mock-up prior to installation.

3.9 CLEANING

A. Cleaning: Remove any and all materials used, overspray from adjacent surfaces, and all protective masking.

3.10 PROTECTION

A. Protection: Protect applied material from inclement weather until dry and prevent it from freezing for a minimum of 24-hours after application and/or until dry. Refer to product data sheet for additional requirements.

END OF SECTION 072413