

**AMENDMENT TO AGREEMENT FOR MAINTENANCE OF STORM WATER  
DETENTION SYSTEM**


On the 18<sup>th</sup> day of August, 2004, Singh IV Limited Partnership, a Michigan limited partnership, of 7125 Orchard Lake Road, Suite 200, West Bloomfield, MI 48322, entered into with the City of Rochester Hills, MI, whose address is 1000 Rochester Hills Drive, Rochester Hills, MI 48307 (the "City"), an Agreement for Maintenance of Storm Water Detention System, as recorded by the Oakland County Register of Deeds on February 16, 2005 in Liber 34986, Page 113 (the "Agreement"), specifically pertaining to certain property located in the City of Rochester Hills, Oakland County, Michigan, more particularly described as Exhibit A attached hereto.

Subsequent to the Agreement, Waltonwood at Main LLC, a Michigan limited liability company (successor in title to Singh IV Limited Partnership) has elected to expand the parking area for its existing assisted living facility, known as Waltonwood Main, such that it is now necessary to amend the Agreement to provide for the location of an additional storm water detention system needed to accommodate the additional parking area.

Based on these facts and circumstances, the parties agree to and by this document do hereby amend the existing Agreement so that the previous Exhibit B and Exhibit C attached to and included as part of the originally recorded Agreement are hereby superseded and replaced with the revised Exhibit B and Exhibit C attached hereto and the original Exhibit B and Exhibit C shall be of no further force or effect.

IN WITNESS HEREOF, the undersigned have hereunto affixed their signatures on the 15<sup>th</sup> day of August, 2014.

**WALTONWOOD AT MAIN LLC, a**  
Michigan limited liability company

By:   
Lushman S. Grewal  
Its: Manager 

CITY OF ROCHESTER HILLS

By: \_\_\_\_\_  
Bryan K. Barnett, Mayor

By: \_\_\_\_\_  
Tina Barton, City Clerk

STATE OF MICHIGAN        )  
  ) SS  
COUNTY OF OAKLAND     )

This instrument was acknowledged before me on August 1, 2014, by Lushman S. Grewal, the Manager of Waltonwood at Main LLC, a Michigan limited liability company, on behalf of the said limited liability company.

LAWRENCE A. KILGORE  
NOTARY PUBLIC-STATE OF MICHIGAN  
COUNTY OF OAKLAND  
MY COMMISSION EXPIRES: DEC. 20, 2016  
ACTING IN THE COUNTY OF OAKLAND

*Lawrence A. Kilgore*

\_\_\_\_\_  
Lawrence A. Kilgore, Notary Public,  
Oakland County, Michigan  
My commission expires: 12/20/16

:  
STATE OF MICHIGAN        )  
  ) SS  
COUNTY OF OAKLAND     )

This instrument was acknowledged before me on \_\_\_\_\_, 2014, by Bryan K. Barnett, Mayor, and Tina Barton, Clerk, of the City of Rochester Hills, on behalf of the City.

\_\_\_\_\_  
Notary Public  
Oakland County, Michigan  
My commission expires:

Drafted by:  
Lawrence A. Kilgore  
7125 Orchard Lake Road  
Suite 200  
West Bloomfield, MI 48322

When Recorded Return to:  
Clerks Dept.  
City of Rochester Hills  
1000 Rochester Hills Drive  
Rochester Hills, MI 48309

*John Staran  
Approved 9/2/14*

## EXHIBIT A

August 5, 2014  
Job. No. 13-008  
Waltonwood at Main

SUBJECT PARCEL (Parcel ID 15-10-226-043)  
LEGAL DESCRIPTION

A part of the Northeast 1/4 of Section 10, Town 3 North, Range 11 East, City of Rochester Hills, Oakland County, Michigan; more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 825.23 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the POINT OF BEGINNING; thence continuing South 01°00'00" West, 322.78 feet, along the East line of said Section 10 and the centerline of said Rochester Road; thence North 89°10'00" West, 716.13 feet, to a point on the Easterly line of "North Hill Subdivision", as recorded in Liber 78 of Plats, on Pages 36 and 37, Oakland County Records; thence North 01°37'57" East, 323.20 feet, along the Easterly line of the platted right-of-way of Pine Street and the Easterly line of Lot 61, of said "North Hill Subdivision" (recorded as South 01°30'40" West), to the Northeast corner of said Lot 61; thence South 89°08'07" East, 712.56 feet, along the Southerly line of Lot 60 and Lot 1 of said "North Hill Subdivision" and an extension thereof (recorded as North 89°10' West), to the POINT OF BEGINNING. All of the above containing 5.296 Acres. All of the above being subject to easements, restrictions, and right-of-ways of record. All of the above being subject to the rights of the public in Rochester Road and Pine Street.

*Mike Tawnt  
Approved 9/9/14*

## EXHIBIT B

Revised August 5, 2014  
Revised October 12, 2004  
July 30, 2004  
Job. No. 13-008  
Waltonwood at Main

### EASEMENT FOR STORM WATER DETENTION (Over Parcel 15-10-226-043) LEGAL DESCRIPTION

An easement for storm water detention being a part of the Northeast 1/4 of Section 10, Town 3 North, Range 11 East, City of Rochester Hills, Oakland County, Michigan; said easement being more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 825.23 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the Northeast corner of the Subject Parcel; thence continuing South 01°00'00" West, 277.35 feet, along the East line of said Section 10 and the centerline of said Rochester Road; thence North 89°00'00" West, 65.96 feet, to the POINT OF BEGINNING 1; thence North 89°00'00" West, 59.33 feet; thence North 01°00'00" East, 35.52 feet; thence North 18°30'08" East, 30.15 feet; thence North 02°08'34" West, 72.31 feet; thence North 44°25'43" East, 31.20 feet; thence South 89°00'00" East, 23.42 feet; thence South 01°00'00" West, 41.74 feet; thence South 28°04'35" East, 19.25 feet; thence South 01°00'00" West, 100.57 feet, to the POINT OF BEGINNING 1.

AND ALSO, said easement being more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 825.23 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the Northeast corner of the Subject Parcel; thence continuing South 01°00'00" West, 322.78 feet, along the East line of said Section 10 and the centerline of said Rochester Road; thence North 89°10'00" West, 638.07 feet, along the Southerly boundary of the Subject Parcel; thence North 00°50'00" East, 61.85 feet, to the POINT OF BEGINNING 2; thence North 89°29'52" West, 16.69 feet; thence North 62°10'26" West, 5.14 feet; thence North 03°59'50" West, 53.90 feet; thence South 89°29'52" East, 34.10 feet; thence 58.25 feet along a curve to the left, said curve having a radius of 74.00 feet, a central angle of 45°05'51", and a chord bearing and distance of South 09°14'11" West, 56.75 feet, to the POINT OF BEGINNING 2.

AND ALSO, said easement being more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 1148.01 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the Southeast corner of the Subject Parcel; thence North 89°10'00" West, 686.13 feet, along the Southerly boundary of said Subject Parcel; thence North 01°37'57" East, 164.90 feet; thence North 70°20'13" East, 33.35 feet, to the POINT OF BEGINNING 3; thence Due East, 5.00 feet; thence Due South, 8.00 feet; thence Due East, 30.00 feet; thence Due South, 26.00 feet; thence Due West, 35.00 feet; thence Due North, 34.00 feet, to the POINT OF BEGINNING 3.

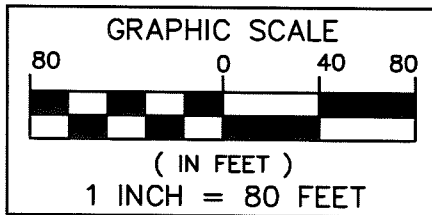
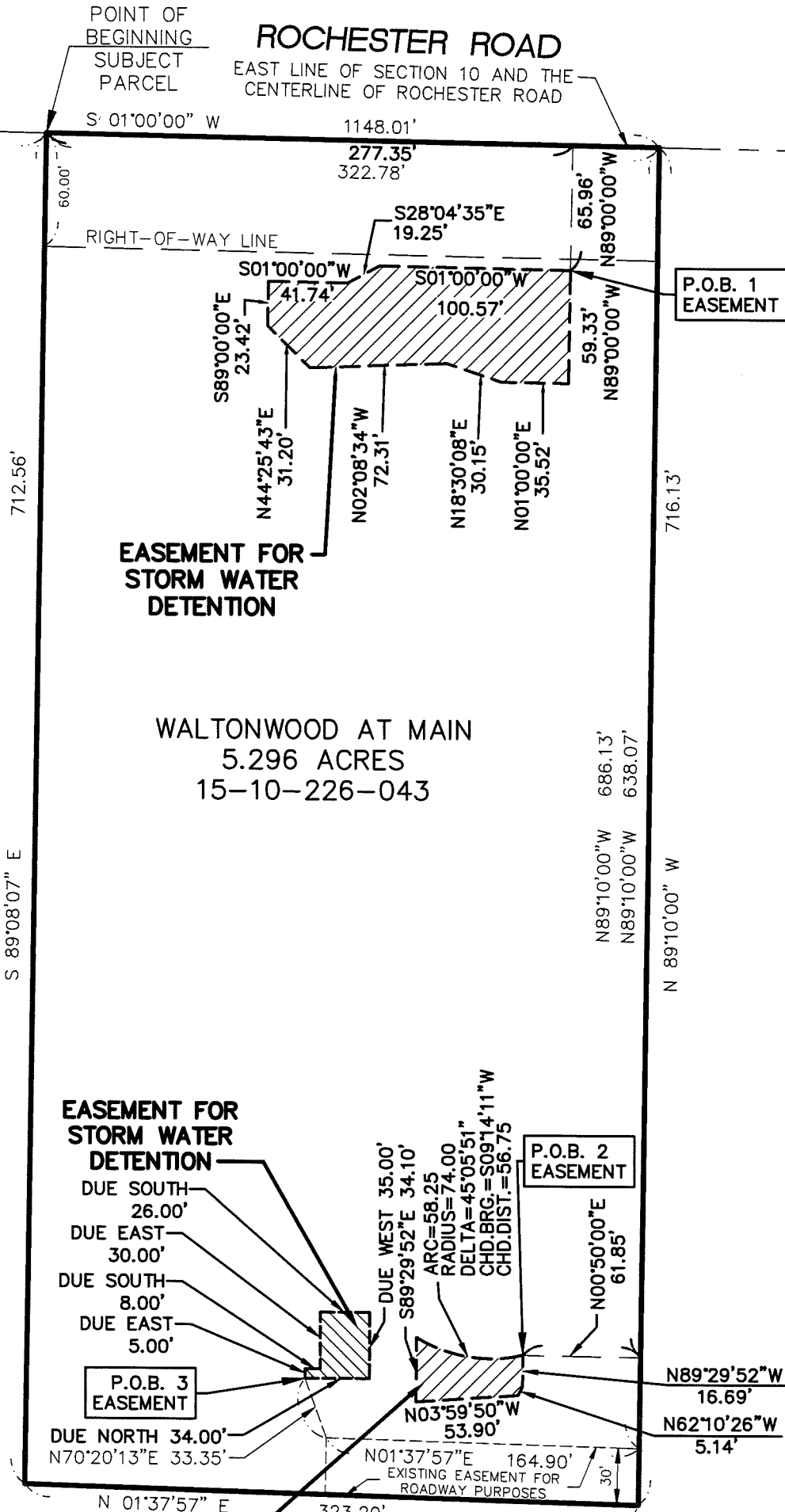
**EXHIBIT B**



NORTHEAST  
CORNER  
SECTION 10  
T. 3 N., R. 11 E.

**ROCHESTER ROAD**

EAST LINE OF SECTION 10 AND THE  
CENTERLINE OF ROCHESTER ROAD



**EASEMENT FOR STORM WATER DETENTION**



**SEIBER, KEAST  
ENGINEERING, L.L.C.**

CONSULTING ENGINEERS

7125 ORCHARD LAKE ROAD • SUITE 304 • WEST BLOOMFIELD, MI • 48322  
PHONE: 248.562.7357 FAX: 248.562.7397

**WALTONWOOD AT MAIN**

SECTION 10, TOWN 3 NORTH,  
RANGE 11 EAST,  
CITY OF ROCHESTER HILLS,  
OAKLAND COUNTY, MICHIGAN

SCALE:	1" = 80'
DATE:	8-5-2014
JOB NO.:	13-008
DWG FILE:	13-008ESMT-ST
DRAWN BY:	DFR
CHECK:	PK
SHEET:	1 OF 1

## EXHIBIT C

Revised August 5, 2014  
Revised October 12, 2004  
July 30, 2004  
Job. No. 13-008  
Waltonwood at Main

### 12' WIDE EASEMENT FOR STORM WATER DETENTION ACCESS AND MAINTENANCE (Over Parcel 15-10-226-043) LEGAL DESCRIPTION

A 12 foot wide easement for detention basin access and maintenance being a part of the Northeast 1/4 of Section 10, Town 3 North, Range 11 East, City of Rochester Hills, Oakland County, Michigan; said easement being more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 825.23 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the Northeast corner of the Subject Parcel; thence continuing South 01°00'00" West, 303.78 feet, along the East line of said Section 10 and the centerline of said Rochester Road; thence North 89°10'00" West, 72.92 feet, to the POINT OF BEGINNING 1; thence North 89°10'00" West, 12.00 feet; thence North 01°00'00" East, 26.68 feet; thence South 89°00'00" East, 12.00 feet; thence South 01°00'00" West, 26.64 feet, to the POINT OF BEGINNING 1.

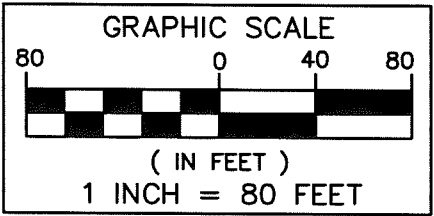
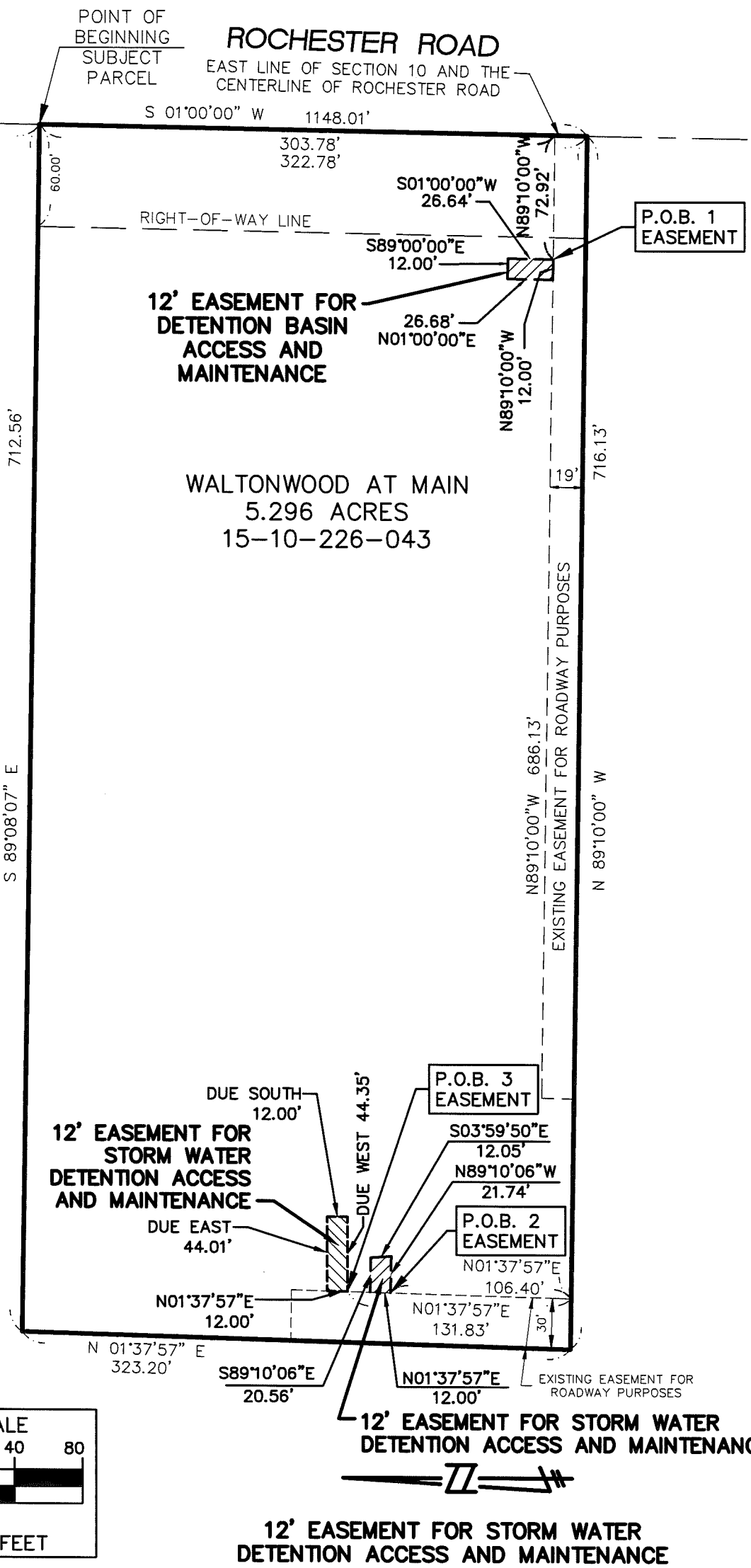
AND ALSO, said easement being more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 825.23 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the Northeast corner of the Subject Parcel; thence continuing South 01°00'00" West, 322.78 feet, along the East line of said Section 10 and the centerline of said Rochester Road; thence North 89°10'00" West, 686.13 feet, along the Southerly boundary of the Subject Parcel; thence North 01°37'57" East, 106.40 feet, to the POINT OF BEGINNING 2; thence North 01°37'57" East, 12.00 feet; thence South 89°10'06" East, 20.56 feet; thence South 03°59'50" East, 12.05 feet; thence North 89°10'06" West, 21.74 feet, to the POINT OF BEGINNING 2.

AND ALSO, said easement being more particularly described as commencing at the Northeast Corner of said Section 10; thence South 01°00'00" West, 1148.01 feet, along the East line of said Section 10 and the centerline of Rochester Road, to the Southeast corner of the Subject Parcel; thence North 89°10'00" West, 686.13 feet, along the Southerly boundary of said Subject Parcel; thence North 01°37'57" East, 131.83 feet, to the POINT OF BEGINNING 3; thence continuing North 01°37'57" East, 12.00 feet; thence Due East, 44.01 feet; thence Due South, 12.00 feet; thence Due West, 44.35 feet, to the POINT OF BEGINNING 3.

**EXHIBIT C**



NORTHEAST  
CORNER  
SECTION 10  
T. 3 N., R. 11 E.



**12' EASEMENT FOR STORM WATER  
DETENTION ACCESS AND MAINTENANCE**



**SEIBER, KEAST  
ENGINEERING, L.L.C.**  
CONSULTING ENGINEERS

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**WALTONWOOD AT MAIN**  
SECTION 10, TOWN 3 NORTH,  
RANGE 11 EAST,  
CITY OF ROCHESTER HILLS,  
OAKLAND COUNTY, MICHIGAN

SCALE:	1" = 80'
DATE:	8-5-2014
JOB NO.:	13-008
DWG FILE:	13-008ESMT-ST
DRAWN BY:	DFR
CHECK:	PK
SHEET:	

# CDS Guide Operation, Design, Performance and Maintenance





## CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

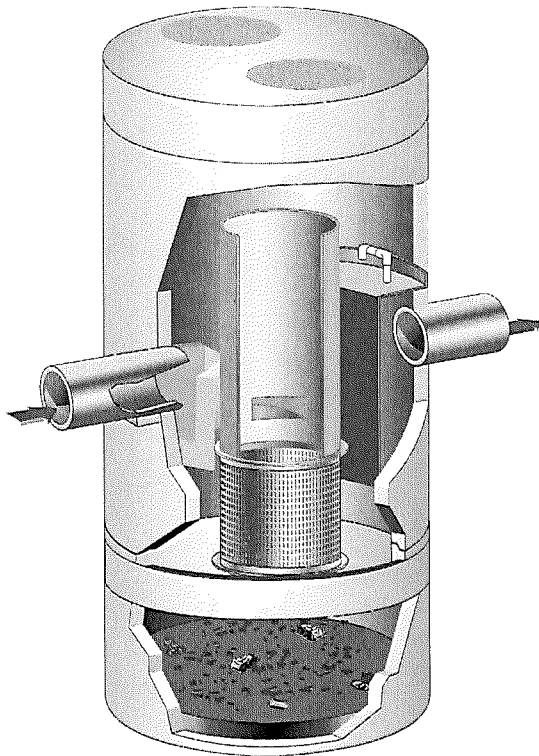
## Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



## Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the United States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns ( $\mu\text{m}$ ). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns ( $\mu\text{m}$ ) or 50 microns ( $\mu\text{m}$ ).

### Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

### Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are

determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

### Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

### Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

### Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

## Performance

### Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation ( $d_{50} = 20$  to  $30 \mu\text{m}$ ) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer  $d_{50}$  ( $d_{50}$  for NJDEP is approximately  $50 \mu\text{m}$ ) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size ( $d_{50}$ ) of 106 microns. The PSDs for the test material are shown in Figure 1.

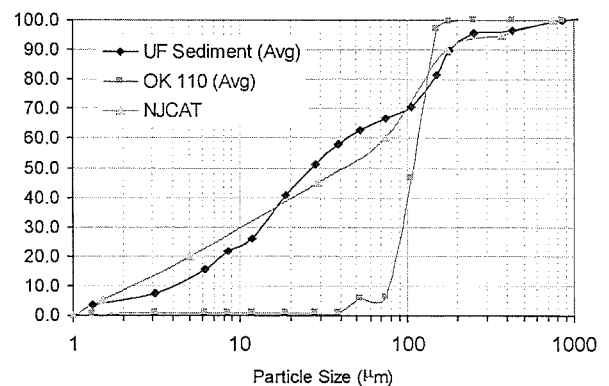


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

## Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect

to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

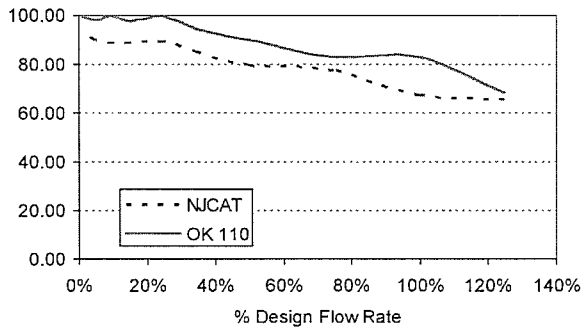


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size ( $d_{50}$ ) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution ( $d_{50} = 125 \mu\text{m}$ ).

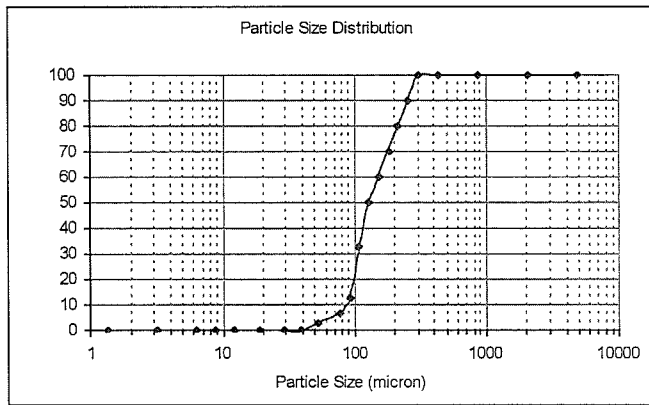


Figure 3. WASDOE PSD

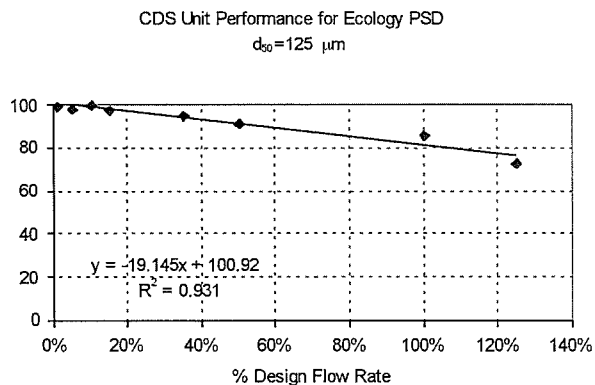


Figure 4. Modeled performance for WASDOE PSD.

## Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

## Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified



during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allow both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine whether the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

## Cleaning

Cleaning of a CDS system should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

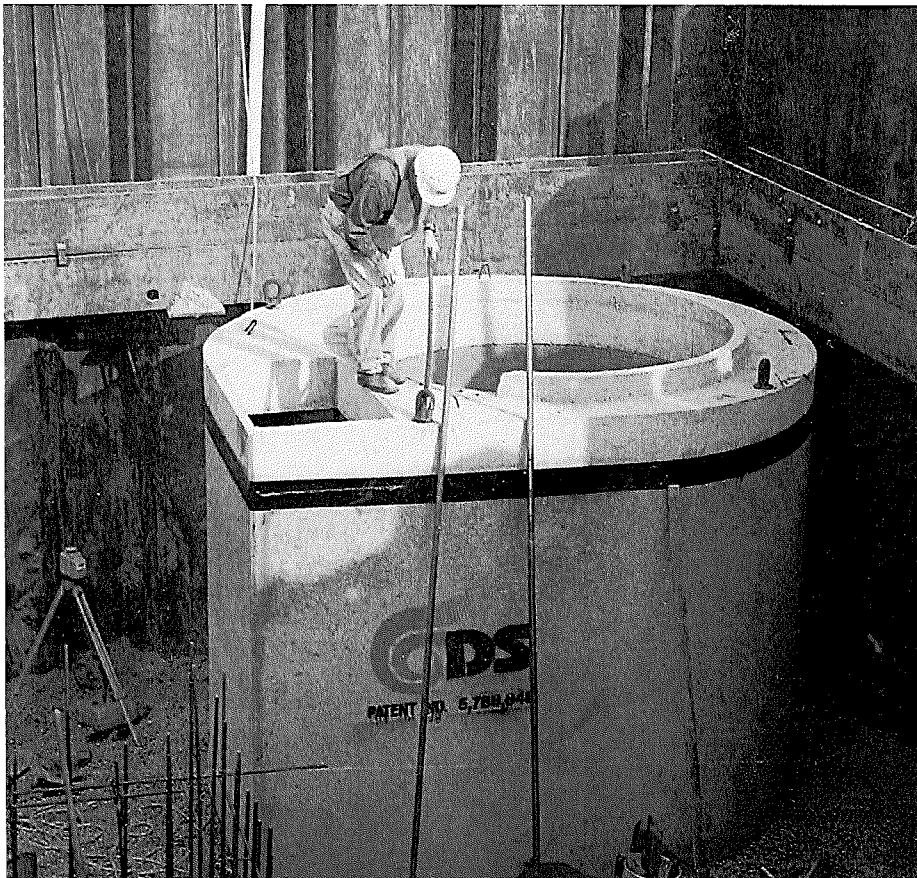
Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.



CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	yd <sup>3</sup>	m <sup>3</sup>
CDS2015-4	4	1.2	3.0	0.9	0.5	0.4
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



# CDS Inspection & Maintenance Log

CDS Model: \_\_\_\_\_ Location: \_\_\_\_\_

Date	Water depth to sediment <sup>1</sup>	Floatable Layer Thickness <sup>2</sup>	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than eighteen inches the system should be cleaned out. **Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

## Support

- Drawings and specifications are available at [www.ContechES.com/urbangreen](http://www.ContechES.com/urbangreen).
- Site-specific design support is available from our engineers.

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