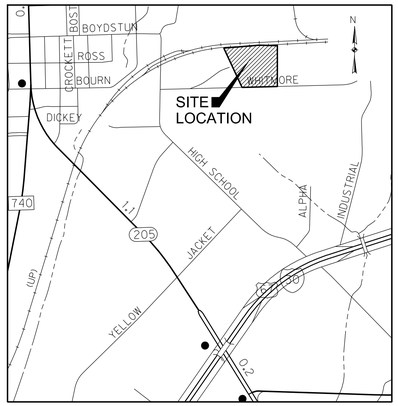
CIVIL ENGINEERING CONSTRUCTION PLANS
FOR

THE WHITMORE MANUFACTURING COMPANY
(INST. NO. 2008-00403192)

LOT1, BLOCK A

CITY OF ROCKWALL, TEXAS



SHEET INDEX

OWNER

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TBPE FIRM# F-312

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TBPE FIRM# F-312

AVO 29023 APRIL, 2013

PROBABLE START OF PROJECT CONSTRUCTION APRIL, 2013

RECORD DRAWING SUBMITTAL
NOV. 04, 2013
This Record Drawing is based upon information provided by Hill & Wilkinson General Contractors, Halff Associates, Inc. survey dated 9-12-2013 and final visual observation. Texas Board of Professional Engineers-Firm #F-312.

B. DAVID LITTLETON — 62128
NAME — P.E. NO.

DATE — NOV.04, 2013
TBPE FIRM#F-312

ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITYOF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACYOF DESIGN.

GENERAL NOTES

1.Contractor is responsible for, and must obtain prior to construction, all necessary construction permits required by the City of Rockwall.

2. The Contractor shall abide by all applicable federal, state, and local laws governing excavation. The Contractor shall provide detailed plans and specifications for trench safety systems that comply with applicable laws governing excavation. These plans shall be sealed by an Engineer experienced in the design of trench safety systems and licensed by the State of Texas. Submit plan to the Owner prior to commencing work. The Contractor shall be solely responsible for all aspects of work related to excavation.

3. Existing utility locations shown are taken from available records provided by the utility Owner and field locations of surface appurtenances. Locations shown are generally schematic in nature and may not accurately reflect the size and location of each particular utility. Some utility lines may not be shown. Contractor shall assume responsibility for actual field location and protection of existing facilities whether shown or not. Contractor shall also assume responsibility for repairs to existing facilities, whether shown or not, damaged by contractor's activities. Differences in horizontal or vertical location of existing utilities shall not be a basis for additional expense.

4. Contractor shall locate and adjust existing utility manhole lids, cleanouts, water valves and other surface appurtenances as required for new construction. Contractor shall coordinate utility adjustments with other disciplines and the appropriate utility agencies and provide for all fees for permits, connections, inspections, etc. These adjustments shall be considered incidental to the construction contract.

5. The Contractor shall protect existing property monumentation and primary control. Any such points which the Contractor believes will be destroyed shall have offset points established by the Contractor prior to construction. Any monumentation destroyed by the Contractor shall be reestablished at his expense.

6. Barricading and traffic control during construction shall be the responsibility of the Contractor and shall conform to the latest edition of the "Texas Manual on Uniform Traffic Control Devices", Part VI in particular. Traffic flow and access shall be maintained during all phases of the construction. The Contractor is responsible for providing traffic safety measures for work on project.

7.Onsite planametric and topographic mapping taken from data provided by North Texas Surveying, LLC, dated September 2012. Boundary data taken from Survey by North Texas Surveying, LLC, dated September 2012.

8. Any damages that may occur to real property or existing improvements shall be restored by the Contractor to at lease the same condition that the real property or existing improvements were in prior to the damages. This restoration shall be subject to the Owner's approval; moreover, this restoration shall not be a basis for additional compensation to the Contractor. Restoration shall include, but not be limited to, regrassing, revegetation, replacing fences, replacing trees, etc.

9. It shall be the responsibility of the Contractor to:
   A. Prevent any damage to private property and property owner's poles, fences, shrubs, etc.
   B. Provide access to all drives during construction.
   C. Protect all underground utilities to remain in service.
   D. Notify all utility companies and verify location of all utilities prior to start of construction.

10. Contractor shall maintain positive drainage at all time during construction. Ponding of water in streets, drives, truck courts, trenches, etc. will not be allowed.

11. Contractor shall maintain existing sanitary sewer and water service at all times during construction.
12. Contractor is responsible for coordination with utility companies and adjustment of existing sanitary sewer cleanouts, water meters and any other appurtenances to new grade as required.

13.Pavement removal and repair shall conform to the City of Rockwall requirements. All sawcuts shall be full depth cuts. Contractor shall make efforts to protect concrete and/or asphalt edges. Any large spalled or broken edges shall be removed by sawcutting pavement prior to replacement.

14.All materials and workmanship for construction shall conform to the Standard Specifications for Public Works Construction for North Central Texas, third edition, and the City of Rockwall General Standards of Design and Construction, Oct., 2003 & 2007 Edition.

DEMOLITION NOTES

1. For additional extents of demolition, refer to Grading, Storm Drainage, Paving and Dimension Control Plans.

2. Information provided on this plan does not delineate any underground foundations or objects that currently may be covered.

3. The Contractor shall be responsible for proper removal and disposal of materials as required by the Owner or Owner's representative.

PAVING NOTES

1.Contractor's work shall include pavement removal and disposal required for new walk, drive, curb, gutter and other paving features. Contractor shall be responsible for all coordination, Inspection and testing required by the Owner and/or the City of Rockwall.

2.For new pavement use minimum 10.5-inch thick 4000 p.s.i. portland cement concrete reinforced with #3bars at 18-inch on center for all fire lanes, a minimum 10.5-inch thick 4000 p.s.i. (min, 6.5" sack) portland cement concrete reinforced with #3bars at 18-inch on center for all truck areas, and a minimum 5-inch thick 30 00 p.s.i. portland cement concrete reinforced with #3bars at 18-inch on center for all parking traffic areas.

3.Concrete paving joints and expansion joints shall be placed at changes in direction of paving, at driveways and/or as shown on the drawings. Seal all joints as shown in NCTCOG Public Works Construction Standards, Detail 2050 with city revisions.

GRADING NOTES

1.All site work details shall be done in accordance with the City of Rockwall Standards of Design and Construction & NCTCOG 3rd Edition, Oct., 2003 & 2007 edition, and conform to the requirements of the plans and contract documents.

2.The Contractor shall administer sprinklers for dust control, earthwork or base construction as required or as directed by the Engineer in accordance with the City of Rockwall Standards of Design and Construction, Oct., 2003 & 2007 edition and NCTCOG 3rd Edition.

3.Contractor's work shall include pavement removal and disposal required for new walk, drive, curb, gutter and other grading features. Contractor shall be responsible for all coordination, inspection and testing required by the Owner and/or the City of Rockwall.

4.All sidewalks shall maintain 2% cross slope maximum.

5. 4:1 is the maximum allowable slope within the earthen areas.

6. All areas within the project limits shall be cleared of all stumps, roots, debris, and any above surface growth.

7. Prior to grading, grass vegetation shall be mowed and raked. After mowing and raking, existing soil shall be plowed and disced to a depth of six (6) inches prior to grading.

8. A quantity of topsoil sufficient for placing six (6) inches of topsoil on proposed landscape areas shall be stripped and stockpiled.

9. A site erosion control plan and stormwater pollution prevention plan shall be prepared and provided to the City of Rockwall by the contractor prior to start of construction. These plans shall conform to federal, state, and local requirements.

10. All clay fill materials shall be spread in loose lifts, less than 8 inches thick and uniformly compacted with a sheep's foot roller to a minimum of 95% of the maximum density as determined by ASTM D 698 (Standard Proctor) between optimum and +4 percentage points above its optimum moisture content. Reccomendation based on information from the Alliance Geotechnical Group March 12, 2012 geotechnical report.

DRAINAGE NOTES

1. All materials and workmanship for storm drain construction shall conform to the Standard Specifications for Public Works Construction for North Central Texas, 3rd edition, and the City of Rockwall Standards of Design and Construction, Oct., 2003 & 2007 edition.

2. During the construction of these improvements, any interpretation of the Standard Specifications for Public Works Construction for North Central Texas, and any matter which requires the approval of the Owner, must be approved by the appropriate governmental official before any construction involving that decision commences. Assumptions about what these decisions might be which are made during the bidding phase will have no bearing on the decision.

UTILITY NOTES

1. All materials and workmanship for private utility construction shall conform to the Standard Specifications for Public Works Construction for North Central Texas, 3rd edition, and the City of Rockwall Standards of Design and Construction, Oct., 2003 & 2007 edition.

2. Pipe material for water and waste water lines shall conform to the notes shown on this drawing and to the requirements of the project specifications. Water line for fire use shall be C900 PVC, DR 14 Class 200. Water lines for domestic use shall be AWWA C900 PVC, DR-18 Class 150

3. Sanitary sewer line shall be SDR-35 PVC if depth of line is 10' or less and SDR-26 if depth of line is greater than 10'. Embed sewer pipe in accordance with City of Rockwall design standards.

4. Water mains shall have the following minimum cover below street grades:

Size	Cover
6"	3.5'
8"	4.0'
10"	4.0'
12"	5.0'

5. Coordinate utility service locations with most current Architectural/MEP Plans for this project.

6. Fire service shall be sized and designed by a State of Texas licensed fire protection engineer/contractor registered in the State of Texas.

7. All underground fire lines shall be installed by a state licensed fire protection contractor.

8. Refer to City of Rockwall standard details for DDC valve and vault construction, Water and Sanitary Sewer embedment and water thrust blocking.

9. All fire line valve covers must be marked in red, labeled F.D. .

10. Field adjustments shall not be made without notification of the Owner and engineer.

11. Utility service locations shall be plug 5' from future building. Future Architectural/MEP Plans for this project shall be connected to these locations.

12. All water and sanitary sewer services shall be tested as required by the City of Rockwall. Paving shall not take place until utilities are tested and accepted by the City of Rockwall.

EROSION CONTROL NOTES

1. The Contractor is responsible for preparing and implementing a Storm Water Pollution Prevention Plan (SWP3) in accordance with TCEQ Texas Pollutant Discharge Elimination System (TPDES) Permit No. TXR150000 (PERMIT). The details shown on this sheet represent typical methods for controlling erosion during construction and are intended for the Contractor's guidance in preparing his Storm Water Pollution Prevention Plan. The Contractor's plan shall comply with the PERMIT and Federal, State and local requirements.

2. The Contractor shall be responsible for maintaining erosion control measures during construction and for obtaining any required construction related drainage permits, or making any construction related notifications. An inspection report that summarizes inspection activities and implementation of the SWP3 shall be performed as required by the PERMIT and retained by the Contractor and made a part of the construction documents. The Contractor shall provide copies of all SWP3 documents including, but not limited to, inspection records, original plans, and modified plans to the Owner at contact close-out.

3. Temporary storm drainage and/or erosion control materials shall be suitable for this application and shall be installed with the proper techniques by the Contactor as specified in NCTCOG Standard Specifications for Public Works Construction. Maintenance of the permanent erosion control measures at the site will be assumed by the Owner at contract close-out and acceptance of the work.

4. The Contractor shall make the Storm Water Pollution Prevention Plan (SWP3) available upon request to the TCEQ, other governmental agencies, and/or the Owner.

5. The Contractor must amend his SWP3 whenever there is a change in design, construction, operation, or maintenance of the SWP3, or when the existing SWP3 proves ineffective. Modifications shall not compromise the intent of the requirements of the law. Modifications including design and all additional materials and work shall be accomplished by the Contractor at no additional expense to the Owner.

6. Borrow areas, if excavated, shall be protected and stabilized by the Contractor in a manner acceptable to the Owner.

7. All non-paved areas shall be seeded and mulched with erosion protection grass by the Contractor immediately upon completion of final grading. This includes all ditches and embankments. The Contractor shall maintain final grading, and keep seeded areas watered until fully established and accepted by Owner.

8. The Contractor shall designate material and equipment storage areas mutually agreed to by the Owner. The storage areas shall be graded for positive drainage, and the surface stabilized by the Contractor with a minimum of 2-inches of compacted flex base on 6-inches of scarified and recompacted subgrade. A silt fence shall be installed by the Contractor around the storage areas to prevent eroded materials from leaving the site.

9. The sides and bottom of the detention pond to be stabalized with either sod or anchored seeded curlex prior to engineering acceptance.

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WHITMORE MANUFACTURING
STORM WATER COLLECTION AND TREATMENT EVALUATION
CITY OF ROCKWALL, TEXAS

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Revision No.	Date	Description

RECORD DRAWING SUBMITTAL
NOV. 04, 2013
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B. DAVID LITTLETON — 82128
NAME — P.E. NO.:
DATE — NOV.04, 2013
TBPE FIRM#F-312

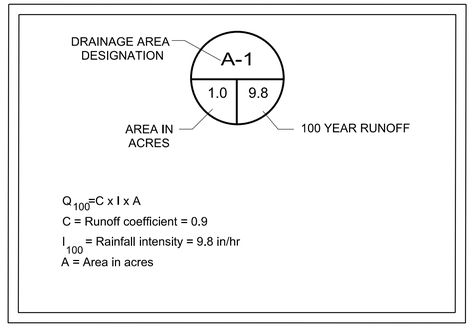
Project No.:	29023
Issued:	JUNE, 2013
Drawn By:	CAD
Checked By:	DL
Scale:	AS NOTED

Sheet Title

GENERAL NOTES

C0.01
Sheet Number

DRAINAGE AREA DESIGN CRITERIA



Q_{100}=C x I x A

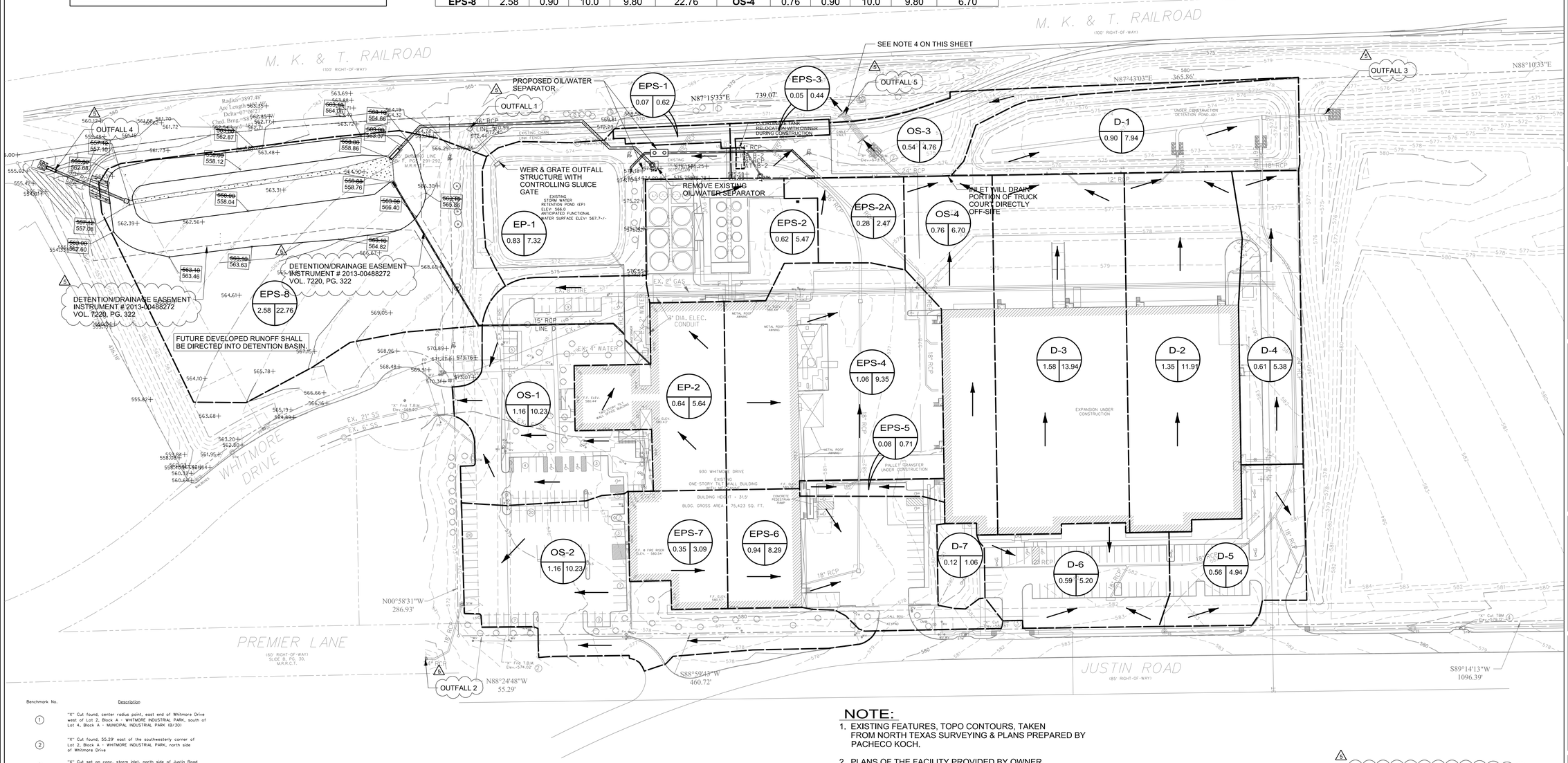
C = Runoff coefficient = 0.9

I_{100} = Rainfall intensity = 9.8 in/hr

A = Area in acres

DRAINAGE AREAS AND DRAINAGE DESTINATIONS (FULLY DEVELOPED FLOWS)

	AREA (acres)	C	TC (min)	I (in/hr)	Q (cfs)		AREA (acres)	C	TC (min)	I (in/hr)	Q (cfs)
EXISTING CONTAINMENT POND						**EXISTING DETENTION POND**					
EP-1	0.83	0.90	10.0	9.80	7.32	**D-1**	0.90	0.90	10.0	9.80	7.94
EPS-2	0.62	0.90	10.0	9.80	5.47	**D-2**	1.35	0.90	10.0	9.80	11.91
EPS-1	0.07	0.90	10.0	9.80	0.62	**D-3**	1.58	0.90	10.0	9.80	13.94
EPS-3	0.05	0.90	10.0	9.80	0.44	**D-4**	0.61	0.90	10.0	9.80	5.38
PROPOSED DETENTION POND						**D-5**	0.56	0.90	10.0	9.80	4.94
EP-2	0.64	0.90	10.0	9.80	5.64	**D-6**	0.59	0.90	10.0	9.80	5.20
EPS-2A	0.28	0.90	10.0	9.80	2.47	**D-7**	0.12	0.90	10.0	9.80	1.06
EPS-4	1.06	0.90	10.0	9.80	9.35	**OFF SITE DRAINAGE**					
EPS-5	0.08	0.90	10.0	9.80	0.71	**OS-1**	1.16	0.90	10.0	9.80	10.23
EPS-6	0.94	0.90	10.0	9.80	8.29	**OS-2**	1.16	0.90	10.0	9.80	10.23
EPS-7	0.35	0.90	10.0	9.80	3.09	**OS-3**	0.54	0.90	10.0	9.80	4.76
EPS-8	2.58	0.90	10.0	9.80	22.76	**OS-4**	0.76	0.90	10.0	9.80	6.70



Benchmark No.	Description
1	"X" Cut found, center radius point, east end of Whitmore Drive west of Lot 2, Block A - WHITMORE INDUSTRIAL PARK, south of Lot 4, Block A - MUNICIPAL INDUSTRIAL PARK (B/.30)
2	"X" Cut found, 55.29' east of the southwesterly corner of Lot 2, Block A - WHITMORE INDUSTRIAL PARK, north side of Whitmore Drive
3	"X" Cut set on conc. storm inlet, north side of Justin Road 8' east of the southeasterly corner of Lot 2, Block A and the southwesterly corner of Lot 3, Block A - WHITMORE INDUSTRIAL PARK
4	"X" Cut set on conc. storm inlet, north side of Justin Road 185' east of the southeasterly corner of Lot 3, Block A and the southwesterly corner of Lot 4, Block A - WHITMORE INDUSTRIAL PARK
7	"X" Cut set on the southerly conc. headwall, 120' SW of the north northeasterly corner of Lot 2, Block A and the northwesterly corner Lot 3, Block A - WHITMORE INDUSTRIAL PARK, also being 99.0' south of the south track of the main railroad track for M. K. & T. Railroad
8	"X" Cut set on a back of curb in the general northside of Lot 2, Block A of WHITMORE INDUSTRIAL PARK, 83.8' south of the south track of the main railroad track for M. K. & T. Railroad, 200.8' southeast of the northwesterly corner of said Lot 2, Block A

NOTE:

1. EXISTING FEATURES, TOPO CONTOURS, TAKEN FROM NORTH TEXAS SURVEYING & PLANS PREPARED BY PACHECO KOCH.
2. PLANS OF THE FACILITY PROVIDED BY OWNER.
3. UTILITIES SHOWN ARE TAKEN FROM AS-BUILT OR DESIGN PLANS AND ARE APPROXIMATELY LOCATED.
4. ORIGINAL UNDEVELOPED FLOW 11.3 cfs. FROM PLAN PREPARED BY PACHECO KOCH DATED MAY 2012 (DRAINAGE AREA - DA 1). DEVELOPED FLOW FROM OS-3 AND OS-4 OF 11.4 cfs. 0.1 cfs MORE THAN THE ORIGINAL UNDEVELOPED FLOW IS NEGLIGIBLE. THEREFORE NO DETENTION IS NEEDED.

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△5 **Storm Sewer Outfall Coordinates**

Outfall #	State Plane Coordinates X	Y	Z
1	2597835.51	7025027.80	565.49
2	2597781.57	7024386.13	564.63
3	2598869.13	7025045.94	571.15
4	2597331.30	7024977.56	556.35
5	2598286.73	7025048.06	570.80

per plan

N

0 30 60 90 120

SCALE: 1"=60'

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1	3-6-2013	Revised as shown
2	11-4-2013	As Built Revision

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NOV, 04, 2013
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R. DAVID LITTLETON — SEAL — P.E. NO.
DATE NOV.04, 2013
TBPE FIRM#F-312

Project No.:	29023
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Sheet Title

OVERALL SITE PLAN AND DRAINAGE AREA MAP

C1.01

Sheet Number

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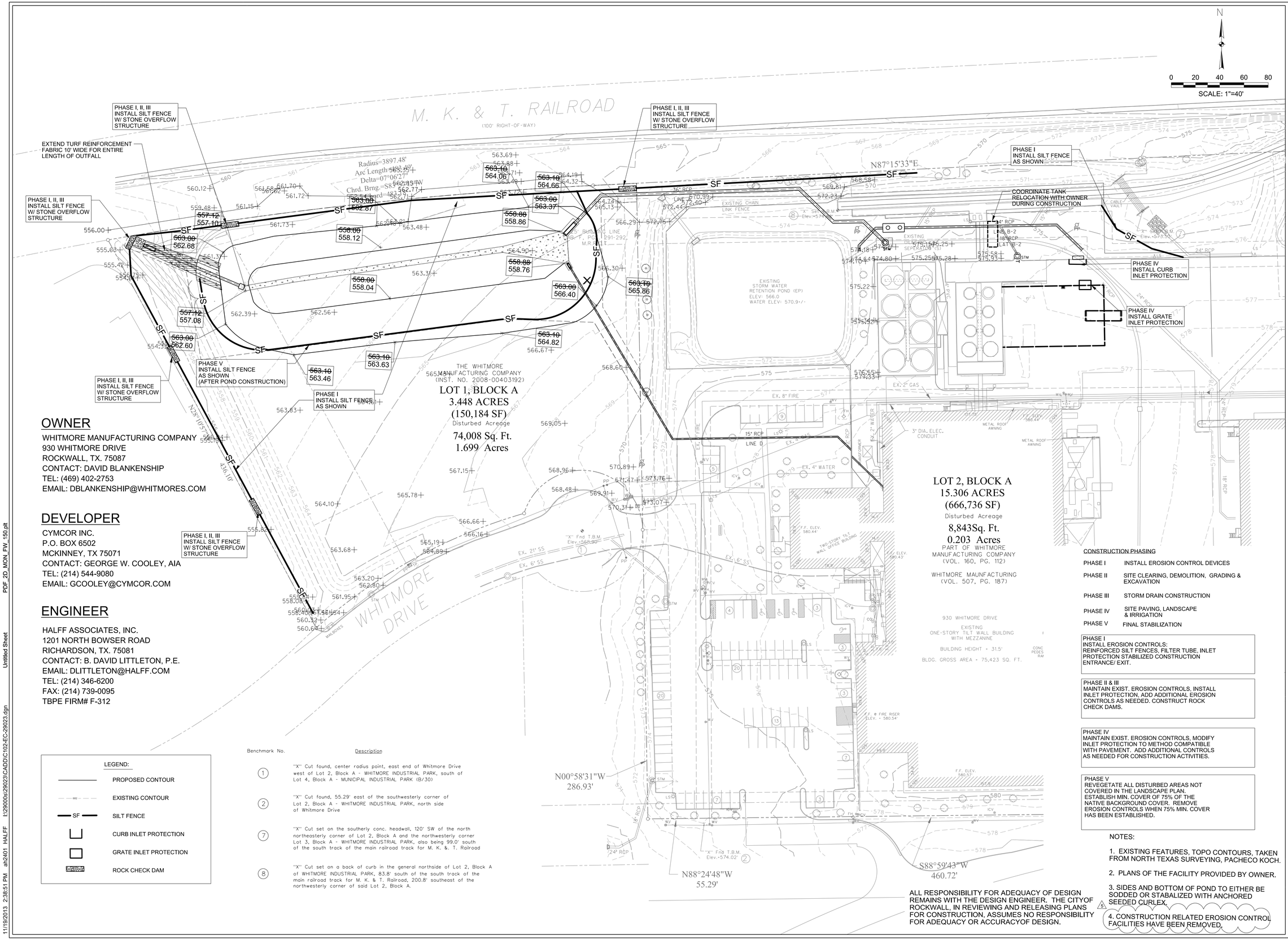
CITY OF ROCKWALL, TEXAS



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LEGEND:
- PROPOSED CONTOUR
- EXISTING CONTOUR
- SF — SILT FENCE
- CURB INLET PROTECTION
- GRATE INLET PROTECTION
- ROCK CHECK DAM

Benchmark No.	Description
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CONSTRUCTION PHASING

PHASE I	INSTALL EROSION CONTROL DEVICES
PHASE II	SITE CLEARING, DEMOLITION, GRADING & EXCAVATION
PHASE III	STORM DRAIN CONSTRUCTION
PHASE IV	SITE PAVING, LANDSCAPE & IRRIGATION
PHASE V	FINAL STABILIZATION

PHASE I
INSTALL EROSION CONTROLS:
REINFORCED SILT FENCES, FILTER TUBE, INLET PROTECTION STABILIZED CONSTRUCTION ENTRANCE/ EXIT.

PHASE II & III
MAINTAIN EXIST. EROSION CONTROLS, INSTALL INLET PROTECTION, ADD ADDITIONAL EROSION CONTROLS AS NEEDED. CONSTRUCT ROCK CHECK DAMS.

PHASE IV
MAINTAIN EXIST. EROSION CONTROLS, MODIFY INLET PROTECTION TO METHOD COMPATIBLE WITH PAVEMENT. ADD ADDITIONAL CONTROLS AS NEEDED FOR CONSTRUCTION ACTIVITIES.

PHASE V
REVEGETATE ALL DISTURBED AREAS NOT COVERED IN THE LANDSCAPE PLAN. ESTABLISH MIN. COVER OF 75% OF THE NATIVE BACKGROUND COVER. REMOVE EROSION CONTROLS WHEN 75% MIN. COVER HAS BEEN ESTABLISHED.

NOTES:

1. EXISTING FEATURES, TOPO CONTOURS, TAKEN FROM NORTH TEXAS SURVEYING, PACHECO KOCH.
2. PLANS OF THE FACILITY PROVIDED BY OWNER.
3. SIDES AND BOTTOM OF POND TO EITHER BE SODDED OR STABALIZED WITH ANCHORED SEEDED CURLEX.
4. CONSTRUCTION RELATED EROSION CONTROL FACILITIES HAVE BEEN REMOVED.

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B. DAVID LITTLETON — 83128
NAME — P.E. NO.
DATE — NOV/04, 2013
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Project No.:	29023
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Checked By:	DL
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Sheet Title
EROSION CONTROL PLAN

C1.02
Sheet Number

EROSION CONTROL NOTES

1. The Contractor is responsible for preparing and implementing a Storm Water Pollution Prevention Plan (SWP3) in accordance with TCEQ Texas Pollutant Discharge Elimination System (TPDES) Permit No. TXR150000 (PERMIT). The details shown on this sheet represent typical methods for controlling erosion during construction and are intended for the Contractor's guidance in preparing his Storm Water Pollution Prevention Plan. The Contractor's plan shall comply with the PERMIT and Federal, State and local requirements.

2. The Contractor shall be responsible for maintaining erosion control measures during construction and for obtaining any required construction related drainage permits, or making any construction related notifications. An inspection report that summarizes inspection activities and implementation of the SWP3 shall be performed as required by the PERMIT and retained by the Contractor and made a part of the construction documents. The Contractor shall provide copies of all SWP3 documents including, but not limited to, inspection records, original plans, and modified plans to the Owner at contact close-out.

3. Temporary storm drainage and/or erosion control materials shall be suitable for this application and shall be installed with the proper techniques by the Contactor as specified in NCTCOG Standard Specifications for Public Works Construction. Maintenance of the permanent erosion control measures at the site will be assumed by the Owner at contract close-out and acceptance of the work.

4. The Contractor shall make the Storm Water Pollution Prevention Plan (SWP3) available upon request to the TCEQ, other governmental agencies, and/or the Owner.

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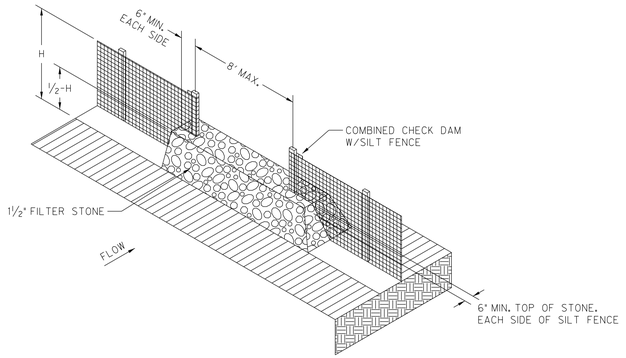
6. Borrow areas, if excavated, shall be protected and stabilized by the Contractor in a manner acceptable to the Owner.

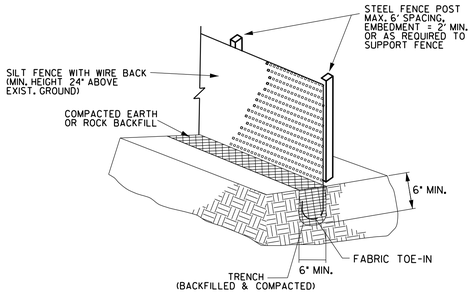
7. All non-paved areas shall be seeded and mulched with erosion protection grass by the Contractor immediately upon completion of final grading. This includes all ditches and embankments. The Contractor shall maintain final grading, and keep seeded areas watered until fully established and accepted by Owner.

8. The Contractor shall designate material and equipment storage areas mutually agreed to by the Owner. The storage areas shall be graded for positive drainage, and the surface stabilized by the Contractor with a minimum of 2-inches of compacted flex base on 6-inches of scarified and recompacted subgrade. A silt fence shall be installed by the Contractor around the storage areas to prevent eroded materials from leaving the site.



STONE OVERFLOW STRUCTURE

N.T.S



SILT FENCE

N.T.S.

SILT FENCE GENERAL NOTES:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED WITH A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF TWO FEET.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.

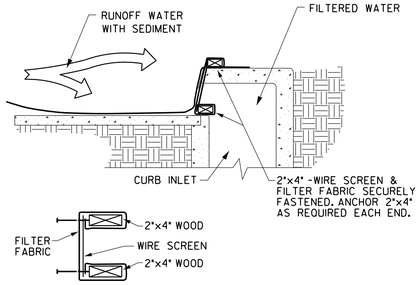
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 6" DOUBLE OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES. THE SILT SHALL BE DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.



FILTER FABRIC CURB INLET PROTECTION

N.T.S.

THIS IS NOT A STORM WATER POLLUTION PREVENTION PLAN. THE CONTRACTOR MUST PREPARE ALL RELEVANT DOCUMENTS INCLUDING HIS OPERATION SPECIFIC INFORMATION PER THE TCEQ TPDES PERMIT NO. TXR150000, INCLUDING ALL DOCUMENTATION & CERTIFICATIONS AS REQUIRED BY THE PERMIT.

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WHITMORE MANUFACTURING
STORM WATER COLLECTION AND TREATMENT EVALUATION
CITY OF ROCKWALL, TEXAS

HALFF
1201 NORTH BOWSER ROAD
RICHARDSON, TEXAS 75081-2275
TEL (214) 346-6200
FAX (214) 739-0095

Revision No.	Date	Description

RECORD DRAWING SUBMITTAL
NOV. 04, 2013
This Record Drawing is based upon information provided by Hill & Wilkinson General Contractors, Halff Associates, Inc. survey dated 9-12-2013 and final visual observation. Texas Board of Professional Engineers-Firm #F-312.

R. DAVID LITTLETON — 83128
NAME — P.E. NO.

NOV.04, 2013
DATE
TBPE FIRM#F-312

Project No.:	29023
Issued:	JUNE, 2013
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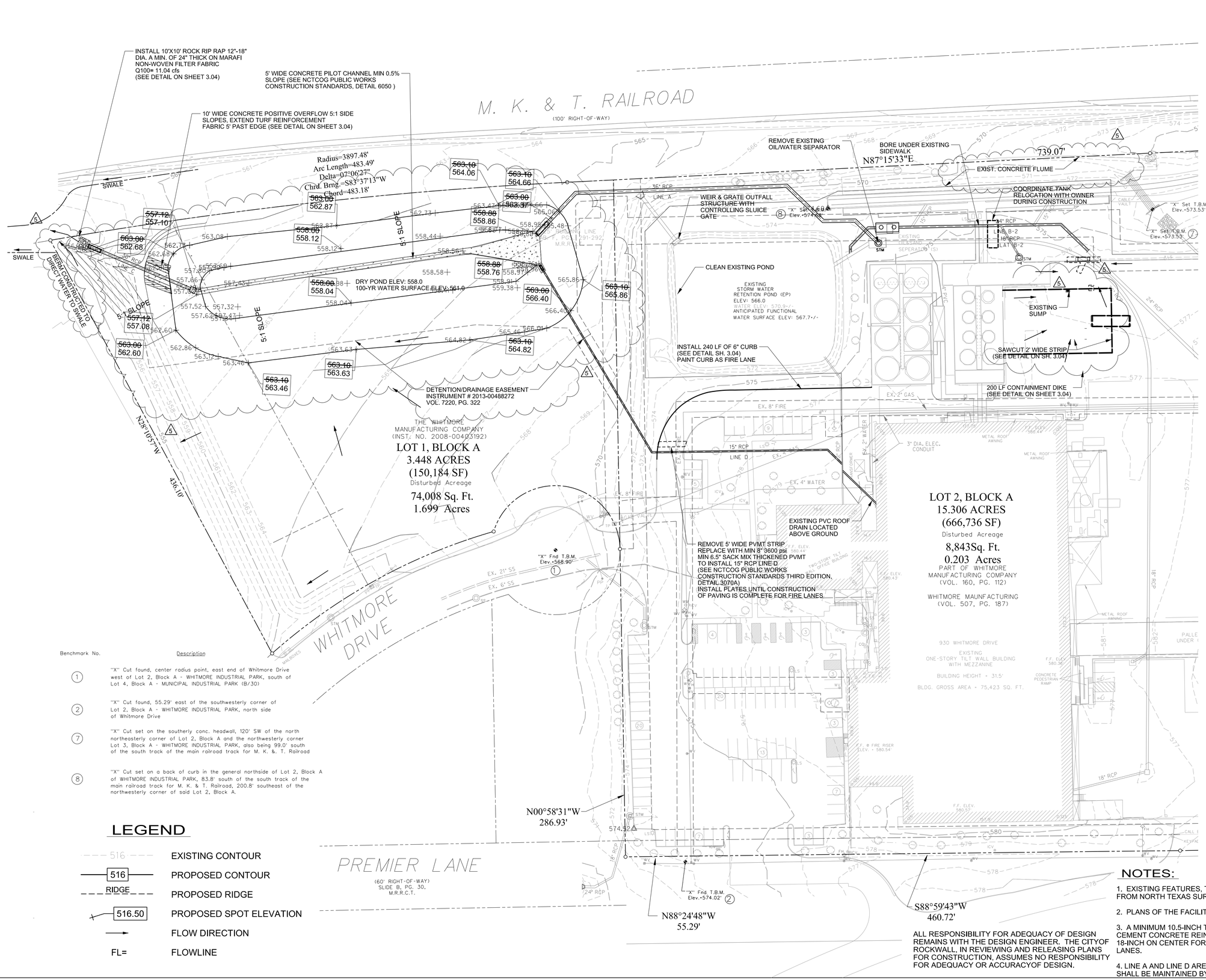
Scale:	AS NOTED

Sheet Title

EROSION CONTROL NOTES & DETAILS

C1.03
Sheet Number



Benchmark No. — Description

(1) "X" Cut found, center radius point, east end of Whitmore Drive west of Lot 2, Block A - WHITMORE INDUSTRIAL PARK, south of Lot 4, Block A - MUNICIPAL INDUSTRIAL PARK (B/30)

(2) "X" Cut found, 55.29' east of the southwesterly corner of Lot 2, Block A - WHITMORE INDUSTRIAL PARK, north side of Whitmore Drive

(7) "X" Cut set on the southerly conc. headwall, 120' SW of the north northeasterly corner of Lot 2, Block A and the northwesterly corner Lot 3, Block A - WHITMORE INDUSTRIAL PARK, also being 99.0' south of the south track of the main railroad track for M. K. & T. Railroad

(8) "X" Cut set on a back of curb in the general northside of Lot 2, Block A of WHITMORE INDUSTRIAL PARK, 83.8' south of the south track of the main railroad track for M. K. & T. Railroad, 200.8' southeast of the northwesterly corner of said Lot 2, Block A.

LEGEND

- 516 — EXISTING CONTOUR
- 516 — PROPOSED CONTOUR
- RIDGE — PROPOSED RIDGE
- 516.50 — PROPOSED SPOT ELEVATION
- FLOW DIRECTION
- FL= — FLOWLINE

NOTES:

1. EXISTING FEATURES, TOPO CONTOURS, TAKEN FROM NORTH TEXAS SURVEYING, PACHECO KOCH.
2. PLANS OF THE FACILITY PROVIDED BY OWNER.
3. A MINIMUM 10.5-INCH THICK 4000 p.s.i. PORTLAND CEMENT CONCRETE REINFORCED WITH #3BARS AT 18-INCH ON CENTER FOR ALL TRUCK AREAS & FIRE LANES.
4. LINE A AND LINE D ARE PRIVATE UTILITIES AND SHALL BE MAINTAINED BY THE OWNER.

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RICHARDSON, TEXAS 75081-2275
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2	4-2-2013	Revised as shown
3	11-4-2013	As Built Revision

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NOV. 04, 2013
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B. DAVID LITTLETON — 82109
NAME — P.E. NO.
DATE — NOV.04, 2013
TBPE FIRM#F-312

Project No.:	29023
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Sheet Title
GRADING & PAVING PLAN

C2.01
Sheet Number

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Sheet
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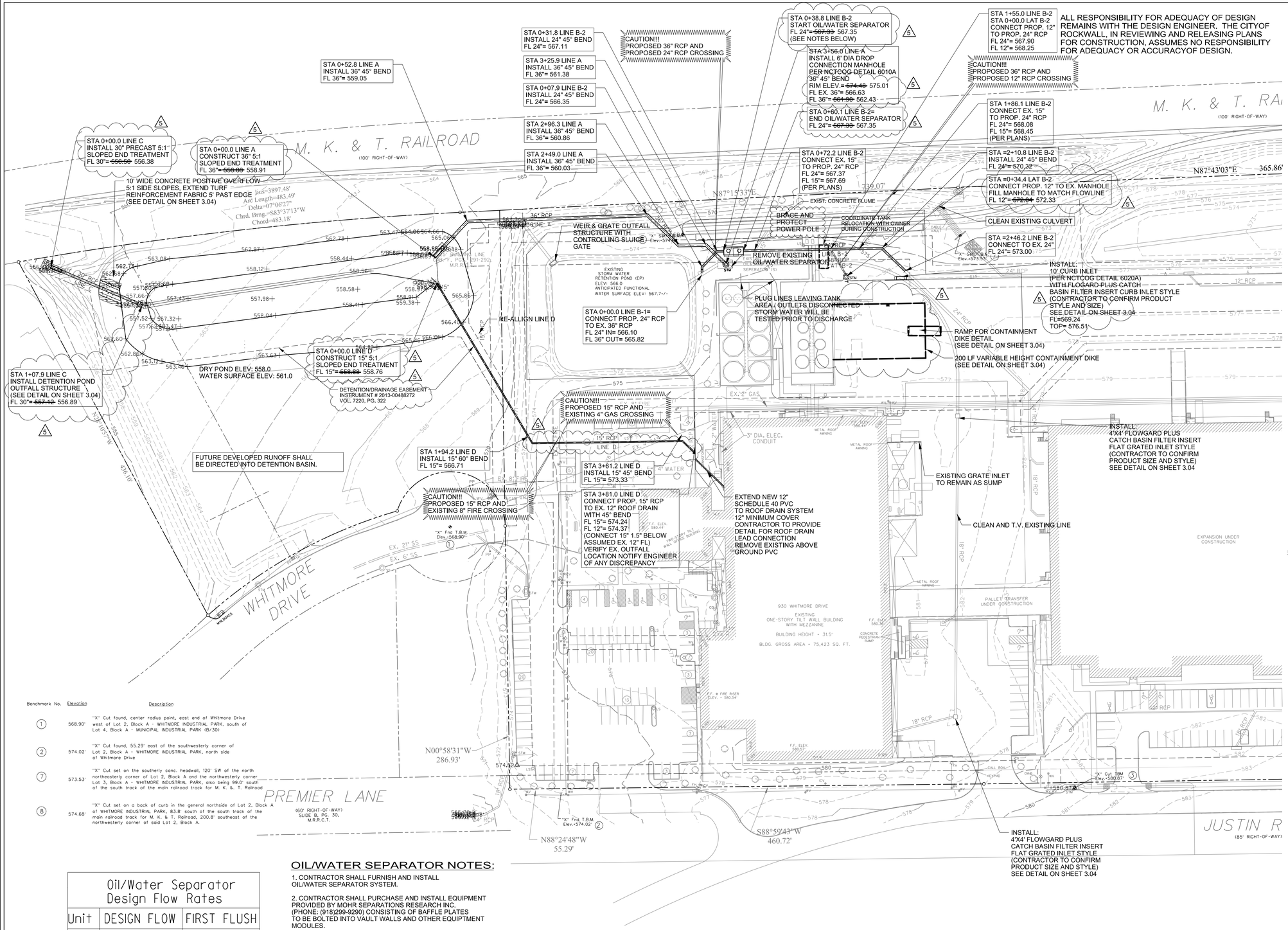

Benchmark No.	Elevation	Description
1	568.90'	"X" Cut found, center radius point, east end of Whitmore Drive west of Lot 2, Block A - WHITMORE INDUSTRIAL PARK, south of Lot 4, Block A - MUNICIPAL INDUSTRIAL PARK (B/301
2	574.02'	"X" Cut found, 55.29' east of the southwesterly corner of Lot 2, Block A - WHITMORE INDUSTRIAL PARK, north side of Whitmore Drive
7	573.53'	"X" Cut set on the southerly conc. headwall, 120' SW of the north northeasterly corner of Lot 2, Block A and the northwesterly corner Lot 3, Block A - WHITMORE INDUSTRIAL PARK, also being 99.0' south of the south track of the main railroad track for M. K. &. T. Railroad
8	574.68'	"X" Cut set on a back of curb in the general northside of Lot 2, Block A of WHITMORE INDUSTRIAL PARK, 83.8' south of the south track of the main railroad track for M. K. & T. Railroad, 200.8' southeast of the northwesterly corner of said Lot 2, Block A.

Oil/Water Separator Design Flow Rates		
Unit #	DESIGN FLOW (gpm)	FIRST FLUSH (gpm)
B-1	500	420
B-2	500	75

• First Flush accounts for the first 1.5" rainfall per TCEQ

OIL/WATER SEPARATOR NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL OIL/WATER SEPARATOR SYSTEM.

2. CONTRACTOR SHALL PURCHASE AND INSTALL EQUIPMENT PROVIDED BY MOHR SEPARATIONS RESEARCH INC. (PHONE: (918)299-9290) CONSISTING OF BAFFLE PLATES TO BE BOLTED INTO VAULT WALLS AND OTHER EQUIPTMENT MODULES.

3. VAULT SHALL INCLUDE 4'X6' EXPLOSION PROOF METAL DOOR FOR VAULT ACCESS.

4. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT PROVIDER (MOHR SEPARATIONS RESEARCH INC.) FOR SUPERVISION OF EQUIPMENT INSTALLATION

5. CONTRACTOR'S WORK SHALL INCLUDE ALL REQUIRED OIL/WATER SEPARATOR SYSTEM ENGINEERING, PRODUCTS, AND INSTALLATION SUPERVISION PROVIDED BY MOHR SEPARATIONS RESEARCH INC.

NOTE:

1. UTILITIES SHOWN ARE TAKEN FROM AS-BUILT OR DESIGN PLANS AND ARE APPROXIMATELY LOCATED.

LEGEND

- PROPOSED STORM DRAIN
- WYE INLET
- CURB INLET

WHITMORE MANUFACTURING
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NAME — P.E. NO.
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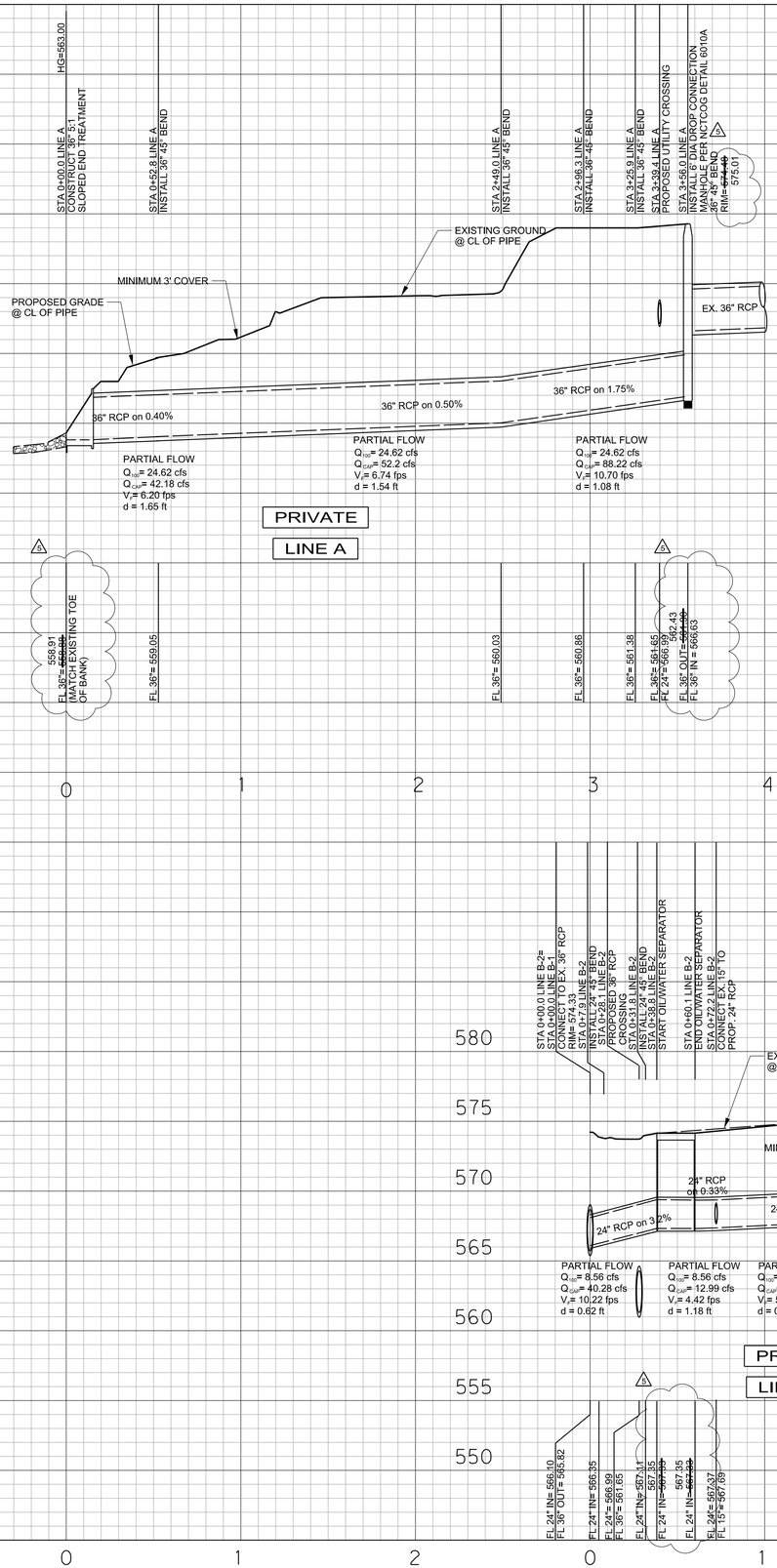
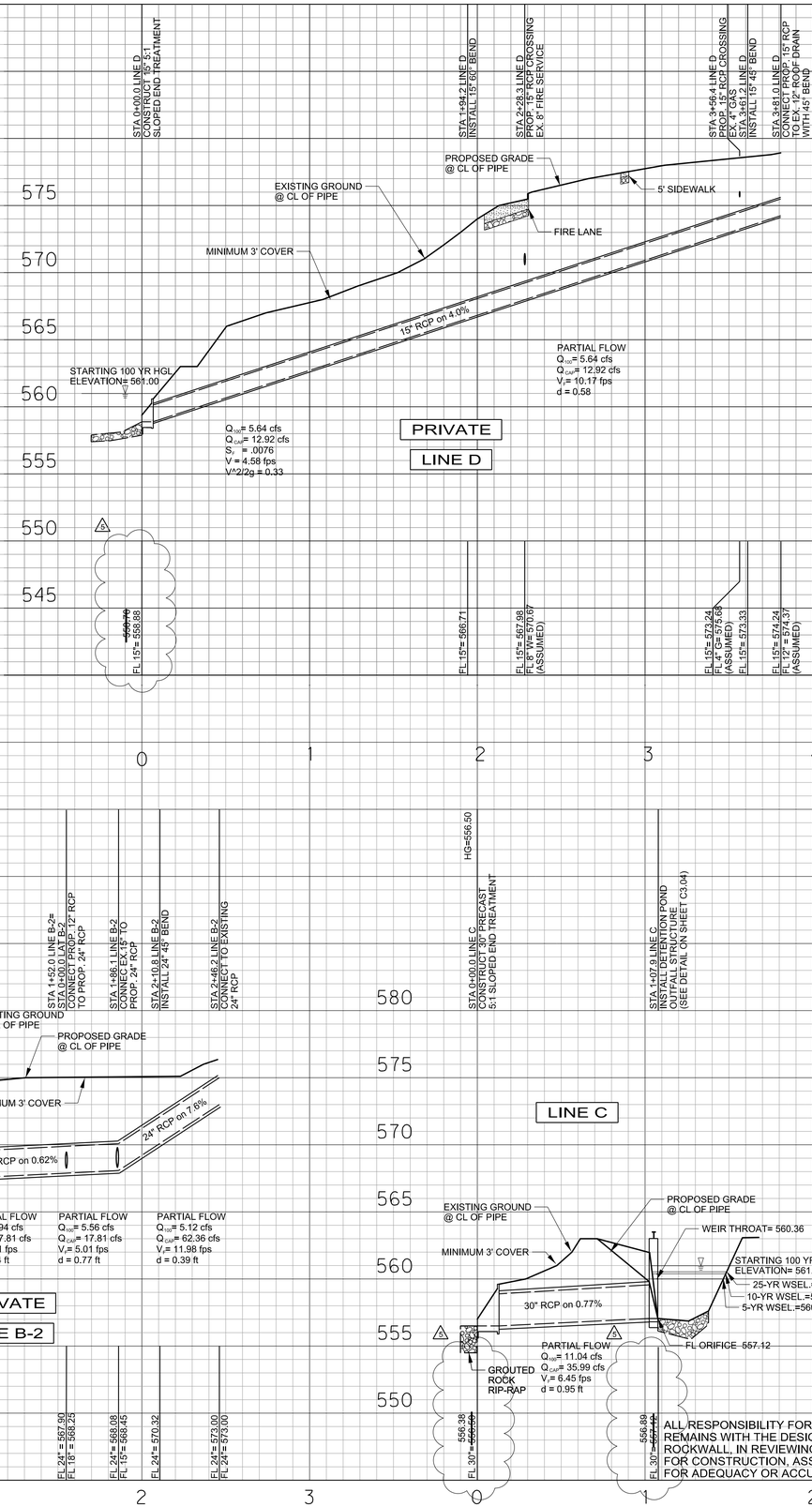
Sheet Title
STORM DRAINAGE IMPROVEMENT PLAN

C3.01
Sheet Number

WHITMORE MANUFACTURING
STORM WATER COLLECTION AND TREATMENT EVALUATION
CITY OF ROCKWALL, TEXAS





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Sheet Title

STORM DRAINAGE PROFILES

C3.02

Sheet Number

DRAINAGE AREA CALCULATIONS
100-YR EVENT EXISTING/PROPOSED CONDITIONS

TABLE 1: 100-YR EVENT EXISTING CONDITIONS

	AREA	C	TC	I	Q
	(acres)		(mln)	(in/hr)	(cfs)
EP-1	0,83	0,35	20,0	8,30	2,41
EP-2	0,64	0,35	20,0	8,30	1,86
EPS-1	0,07	0,35	20,0	8,30	0,20
EPS-2	0,62	0,35	20,0	8,30	1,80
EPS-2A	0,28	0,35	20,0	8,30	0,81
EPS-3	0,05	0,35	20,0	8,30	0,15
EPS-4	1,06	0,35	20,0	8,30	3,08
EPS-5	0,08	0,35	20,0	8,30	0,23
EPS-6	0,94	0,35	20,0	8,30	2,73
EPS-7	0,35	0,35	20,0	8,30	1,02
EPS-8	2,58	0,35	20,0	8,30	7,49
D-1	0,90	0,35	20,0	8,30	2,61
D-2	1,35	0,35	20,0	8,30	3,92
D-3	1,58	0,35	20,0	8,30	4,59
D-4	0,61	0,35	20,0	8,30	1,77
D-5	0,56	0,35	20,0	8,30	1,63
D-6	0,59	0,35	20,0	8,30	1,71
D-7	0,12	0,35	20,0	8,30	0,35
OS-1	1,16	0,35	20,0	8,30	3,37
OS-2	1,16	0,35	20,0	8,30	3,37
OS-3	0,54	0,35	20,0	8,30	1,57
OS-4	0,76	0,35	20,0	8,30	2,21
Area=:	16,83			TOTAL:	48,89

TABLE 1: 100-YR EVENT DEVELOPED CONDITIONS

	AREA	C	TC	I	Q
	(acres)		(mln)	(in/hr)	(cfs)
EP-1	0,83	0,90	10,0	9,80	7,32
EP-2	0,64	0,90	10,0	9,80	5,64
EPS-1	0,07	0,90	10,0	9,80	0,62
EPS-2	0,62	0,90	10,0	9,80	5,47
EPS-2A	0,28	0,90	10,0	9,80	2,47
EPS-3	0,05	0,90	10,0	9,80	0,44
EPS-4	1,06	0,90	10,0	9,80	9,35
EPS-5	0,08	0,90	10,0	9,80	0,71
EPS-6	0,94	0,90	10,0	9,80	8,29
EPS-7	0,35	0,90	10,0	9,80	3,09
EPS-8	2,58	0,90	10,0	9,80	22,76
D-1	0,90	0,90	10,0	9,80	7,94
D-2	1,35	0,90	10,0	9,80	11,91
D-3	1,58	0,90	10,0	9,80	13,94
D-4	0,61	0,90	10,0	9,80	5,38
D-5	0,56	0,90	10,0	9,80	4,94
D-6	0,59	0,90	10,0	9,80	5,20
D-7	0,12	0,90	10,0	9,80	1,06
OS-1	1,16	0,90	10,0	9,80	10,23
OS-2	1,16	0,90	10,0	9,80	10,23
OS-3	0,54	0,90	10,0	9,80	4,76
OS-4	0,76	0,90	10,0	9,80	6,70
Area=:	16,83			TOTAL:	148,44

HISTORICAL RAINFALL CONTAINMENT ANALYSIS

Historical Rainfall Containment Analysis

Intial Conditions:

Existing Pond Contributing Area:	4.62 acres
Under Construction Pond Contributing Area:	5.71 acres
Existing Pond Containment Capacity:	68400 ft3
Expected Fire Flow	6163 ft3
Under Construction Pond Containment Capacity:	59200 ft3
C factor:	0.9
City of Rockwall's 25 YR 24 HR Storm	6.7 in

Assumptions:

Calculation assumes both ponds are dry before rain events and both sluice gates are closed until after the rain events

Calculation uses historical information provided by the NOAA as recorded at station 41-2244 (Love Field) from 1948-2010

Containment Findings:

Total Historical Rain Events	Average Contributing Volume Per Rain Event to Existing Pond (ft3)	Average Contributing Volume Per Rain Event to Pond Under Construction (ft3)	**Percentage of Rain Events Not Contained by Existing Pond**	**Percentage of Rain Events Not Contained by Pond Under Construction**
4135	7300	9000	**0.22%**	**1.09%**
Maximum Historical Rain Event (in)	**Maximum Contributing Volume to Existing Pond (ft3)**	**Maximum Contributing Volume to Pond Under Construction (ft3)**	**Total Rain Events Not Contained by Existing Pond**	**Total Rain Events Not Contained by Pond Under Construction**
6.9	103300	127700	9	45
	Rockwall 24hr 25yr to Existing Pond (ft3)	Rockwall 24hr 25yr to Pond Under Construction (ft3)		
	101100	125000		

NEW STORMWATER DETENTION CALCULATIONS
(Q_{100}, Q_{25}, Q_{10}, and Q_5)

100 YR. MODIFIED RATIONAL METHOD

EXISTING SITE CONDITIONS

Cf	i	Tc	A	Q
0.35	8.3	20	3.8	11.04

FUTURE CONDITIONS

Cf	0.9
Tc	10
I_{100}	9.8
A	5.93
Q_{100}	52.30

CITY OF ROCKWALL DETENTION CALCULATION

Duration (minutes)	Intensity (in/hr)	Cf	Q (cfs)	Inflow (cu-ft)	Outflow (cu-ft)	Storage (cu-ft)
10	9.8	0.9	52.3	31381.6	6623.4	24758.2
15	9	0.9	48.0	43229.7	8279.3	34950.5
20	8.3	0.9	44.3	53156.5	9935.1	43221.4
30	6.9	0.9	36.8	66285.5	13246.8	53038.7
40	5.8	0.9	31.0	74291.0	16558.5	57732.5
50	5	0.9	26.7	80055.0	19870.2	60184.8
60	4.5	0.9	24.0	86459.4	23181.9	63277.5
70	4	0.9	21.3	89661.6	26493.6	63168.0
80	3.7	0.9	19.7	94785.1	29805.3	64979.8
90	3.5	0.9	18.7	100869.3	33117.0	67752.3
100	3.3	0.9	17.6	105672.6	36428.7	69243.9
110	2.9	0.9	15.5	102150.2	39740.4	62409.8

25 YR. MODIFIED RATIONAL METHOD

EXISTING SITE CONDITIONS

Cf	i	Tc	A	Q
0.35	6.6	20	3.8	8.78

FUTURE CONDITIONS

Cf	0.9
Tc	10
I_{25}	8.3
A	5.93
Q_{25}	44.30

CITY OF ROCKWALL DETENTION CALCULATION

Duration	Intensity	Cf	Q	Inflow	Outflow	Storage
10	8.3	0.9	44.3	26578.3	5266.8	21311.5
15	7.50	0.9	40.0	36024.8	6583.5	29441.3
20	6.60	0.9	35.2	42269.0	7900.2	34368.8
30	5.50	0.9	29.4	52836.3	10533.6	42302.7
40	4.60	0.9	24.6	58920.5	13167.0	45753.5
50	4.00	0.9	21.3	64044.0	15800.4	48243.6
60	3.50	0.9	18.7	67246.2	18433.8	48812.4
70	3.30	0.9	17.6	73970.8	21067.2	52903.6
80	3.10	0.9	16.5	79414.6	23700.6	55714.0
90	2.90	0.9	15.5	83577.4	26334.0	57243.4
100	2.70	0.9	14.4	86459.4	28967.4	57492.0
110	2.50	0.9	13.3	88060.5	31600.8	56459.7

10 YR. MODIFIED RATIONAL METHOD

EXISTING SITE CONDITIONS

Cf	i	Tc	A	Q
0.35	5.9	20	3.8	7.85

FUTURE CONDITIONS

Cf	0.9
Tc	10
I_{10}	7.1
A	5.93
Q_{10}	37.89

CITY OF ROCKWALL DETENTION CALCULATION

Duration	Intensity	Cf	Q	Inflow	Outflow	Storage
10	7.1	0.9	37.9	22735.6	4708.2	18027.4
15	6.5	0.9	34.7	31221.5	5885.3	25336.2
20	5.9	0.9	31.5	37786.0	7062.3	30723.7
30	4.8	0.9	25.6	46111.7	9416.4	36695.3
40	4	0.9	21.3	51235.2	11770.5	39464.7
50	3.5	0.9	18.7	56038.5	14124.6	41913.9
60	3	0.9	16.0	57639.6	16478.7	41160.9
70	2.8	0.9	14.9	62763.1	18832.8	43930.3
80	2.6	0.9	13.9	66605.8	21186.9	45418.9
90	2.5	0.9	13.3	72049.5	23541.0	48508.5
100	2.4	0.9	12.8	76852.8	25895.1	50957.7
110	2.3	0.9	12.3	81015.7	28249.2	52766.5

5 YR. MODIFIED RATIONAL METHOD

EXISTING SITE CONDITIONS

Cf	i	Tc	A	Q
0.35	4.9	20	3.8	6.52

FUTURE CONDITIONS

Cf	0.9
Tc	10
I_5	6.1
A	5.93
Q_5	32.56

CITY OF ROCKWALL DETENTION CALCULATION

Duration	Intensity	Cf	Q	Inflow	Outflow	Storage
10	6.1	0.9	32.6	19533.4	3910.2	15623.2
15	5.5	0.9	29.4	26418.2	4887.8	21530.4
20	4.9	0.9	26.2	31381.6	5865.3	25516.3
30	4.1	0.9	21.9	39387.1	7820.4	31566.7
40	3.4	0.9	18.1	43549.9	9775.5	33774.4
50	2.8	0.9	14.9	44830.8	11730.6	33100.2
60	2.6	0.9	13.9	49954.3	13685.7	36268.6
70	2.4	0.9	12.8	53797.0	15640.8	38156.2
80	2.3	0.9	12.3	58920.5	17595.9	41324.6
90	2.1	0.9	11.2	60521.6	19551.0	40970.6
100	1.9	0.9	10.1	60841.8	21506.1	39335.7
110	1.8	0.9	9.6	63403.6	23461.2	39942.4

STORAGE VOLUME REQUIRED vs. PROVIDED

Storm Frequency	Storage Required (cu-ft)	Water Surface Elev.	Storage Provided (cu-ft)
100 yr	69244	561.45	70300
25 yr	57492	561.00	57800
10 yr	52767	560.85	53600
5 yr	41325	560.45	43400

OUTFALL STRUCTURE FLOW
Q_{ACTUAL} vs. $Q_{ALLOWABLE}$

Storm Frequency	Allowable Flow (cfs)	Actual Flow (cfs)
100 yr	11.04	11.04
25 yr	8.78	7.80
10 yr	7.85	7.06
5 yr	6.52	6.52

5

OUTFALL STRUCTURE CALCULATIONS

5-yr Storm Calculations

Q=CA(2gh)^(1/2)

Q= Max allowable flowrate (cfs)

C= Entrance coefficient, Assumed to be 0.6

A= Cross sectional area (sqft)

g= gravity, 32.2 ft/sec^2

h= Head; depth at outfall - centroid distance

*Assume the head on the centroid is the 5-yr water surface elev.

*Assume orifice height of 5 inches or 0.417 ft

Solving for cross sectional area of orifice

A= Q/(C*2gh^(1/2))= 0.75 sqft

A=0.75 sqft

Orifice Dimensions = 1.8 ft L X0.417 ft H

100-yr Storm Calculations

Since the opening of the submerged orifice has been determined to have a cross sectional area of 0.75 sqft the flow for the 100-yr storm through the orifice can be determined based on the known amount of head which corresponds to the required volume in the pond.

Q_{or}=CA(2gh)^(1/2)

Q_{or} = 7.44 cfs

Since the raised water surface elevation is above the top of the weir it acts as a second orifice during the 100-yr storm. So the orifice equation is used again to determine the head necessary for the remaining flow to pass through

Q_{or2}=CA(2gh)^(1/2)

Q= Remainder of flow rate, Q_{100}-Q_{or} (cfs)

C= Entrance coefficient, Assumed 0.6

A= Cross sectional area (sqft)= 4(h-0.09)

h= Head; depth at outfall - centroid distance

g= gravity, 32.2 ft/sec^2

*Area is a function of height and 0.09ft is the depth of water above the top of the weir

Q_{or2}= Q_{100}-Q_{or} 3.60 cfs

h=(Q_{or2}/CA)^(1/2)/(2g) 0.39 ft

Throat centroid= 561.45-0.39= 561.06

Throat elev.= 561.06-(0.39-.09)

From these calculations, it is determined that since the 100-yr water surface is at 561.45, the throat of the opening must be at an an elevation of 560.76.

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WHITMORE MANUFACTURING
STORM WATER COLLECTION
AND TREATMENT EVALUATION
CITY OF ROCKWALL, TEXAS

HALFF
1201 NORTH BOWSER ROAD
RICHARDSON, TEXAS 75081-2275
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FAX (214) 739-0095

Revision No.	Date	Description
1	11-4-2013	As Built Revision

RECORD DRAWING SUBMITTAL
NOV. 04, 2013
This Record Drawing is based upon information provided by Hill & Wilkinson General Contractors, Halff Associates, Inc. survey dated 9-12-2013 and final visual observation, Texas Board of Professional Engineers-Firm #F-312.

B. DAVID LITTLETON — 82128
NAME — P.E. NO.
DATE — NOV.04, 2013
TBPE FIRM#F-312

Project No.:	29023
Issued:	MARCH, 2013
Drawn By:	CAD
Checked By:	DL
Scale:	AS NOTED

Sheet Title

STORM DRAINAGE CALCULATIONS

C3.03
Sheet Number

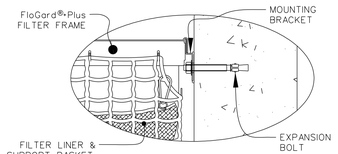
FGP-0002

SPECIFIER CHART

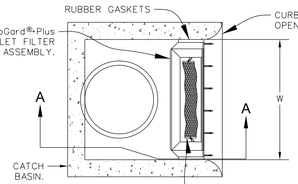
MODEL NO.	Curb Opening Width - W -	Storage Capacity - Cu. Ft. -	Filtered Flow Rate - GPM/CFS -	Bypass Flow Rate - GPM/CFS -
FGP-24CI	2.0' (24")	.95	338 / .75	2,513 / 5.6
FGP-30CI	2.5' (30")	1.20	450 / 1.00	3,008 / 6.7
FGP-36CI	3.0' (36")	1.50	563 / 1.25	3,547 / 7.9
FGP-42CI	3.5' (42")	1.80	675 / 1.50	3,951 / 8.8
FGP-48CI	4.0' (48")	2.10	768 / 1.76	4,445 / 9.9
FGP-5.0CI	5.0' (60")	2.40	900 / 2.00	5,208 / 11.6
FGP-6.0CI	6.0' (72")	3.05	1,126 / 2.51	6,196 / 13.8
FGP-7.0CI	7.0' (84")	3.65	1,350 / 3.01	7,139 / 15.9
FGP-8.0CI	8.0' (96")	4.25	1,576 / 3.51	8,082 / 18.0
FGP-10.0CI	10.0' (120")	4.85	1,800 / 4.01	9,833 / 21.9
FGP-12.0CI	12.0' (144")	6.10	2,252 / 5.02	11,764 / 26.2
FGP-14.0CI	14.0' (168")	7.30	2,700 / 6.02	13,515 / 30.1
FGP-16.0CI	16.0' (192")	8.55	3,152 / 7.02	15,446 / 34.4
FGP-18.0CI	18.0' (216")	9.45	3,490 / 7.78	17,152 / 38.2
FGP-21.0CI	21.0' (252")	10.95	4,050 / 9.02	19,891 / 44.3
FGP-28.0CI	28.0 (336")	14.60	5,400 / 12.03	26,311 / 58.6

NOTES:

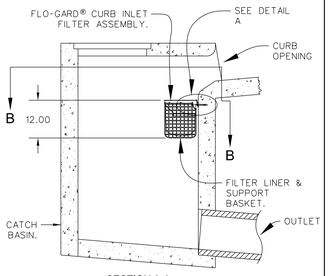
1. FloGard®+PLUS filter inserts shall be installed across the entire width of curb opening. Storage capacity and clean flow rates are based on full width installation.
2. Filter insert shall be attached to the catch basin with stainless steel expansion anchor bolts & washers (3/8" x 2-1/2" minimum length.) See detail A.
3. FloGard®+PLUS filter inserts are designed with a debris trap/energy dissipator for the retention of floatables and collected sediments .
4. Filter support frame shall be constructed from stainless steel Type 304.
5. Filter liner shall be constructed from durable polypropylene, woven, monofilament, geotextile. Filter liner shall not allow the retention of water between storm events.
6. Filter Inserts are supplied with "clip-in" filter pouches utilizing FOSSIL ROCK™ filter medium for the collection and retention of petroleum hydrocarbons (oils & greases).
7. FloGard®+PLUS filter inserts and FOSSIL ROCK™ filter medium pouches must be maintained in accordance with manufacturer recommendations.
8. FloGard +PLUS filter inserts are available in standard lengths of 24", 30",35", 42" & 48" and may be installed in various length combinations (end to end) to fit length of noted catch basin.
9. Clean flow rates are "calculated" based on liner flow rate of 140 gallons per minute per square foot of material, a factor of .50 has been applied to allow for anticipated sediment & debris loading. An additional safety factor of between .25 & .50 may be applied to allow for site specific sediment loading.
10. Storage capacity reflects maximum solids collection prior to impending "initial" filtering bypass. The "ultimate" high-flow bypass will not become impeded due to maximum solids loading.



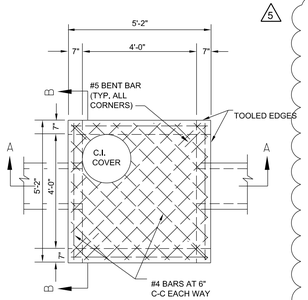
DETAIL A
MOUNTING BRACKET & EXPANSION BOLTS SEE NOTE 2
SCALE 6/1



SECTION B-B
TOP VIEW
SCALE 1/1



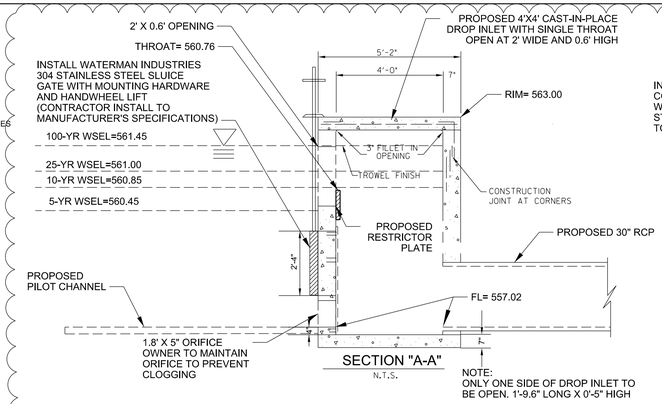
SECTION A-A
SIDE VIEW
SCALE 1/1



PLAN OF TOP SLAB
N.T.S.

DROP INLET 4' SQUARE

5

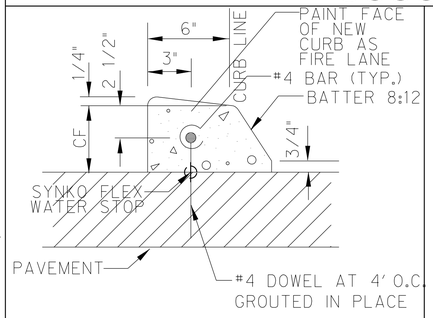


SECTION "A-A"
N.T.S.

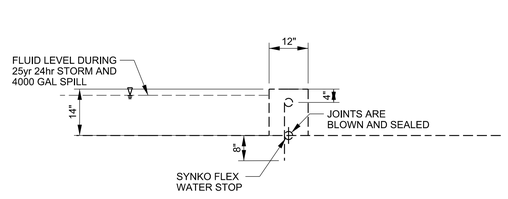
SECTION "B-B"
N.T.S.

NOTE: 100-YR WATER SURFACE ELEVATION 561.45
OUTLET ELEVATION 562.51
WSE IS 1.06' BELOW OVERFLOW

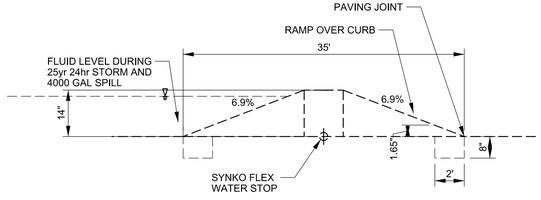
OUTFALL STRUCTURE DETAIL
N.T.S.



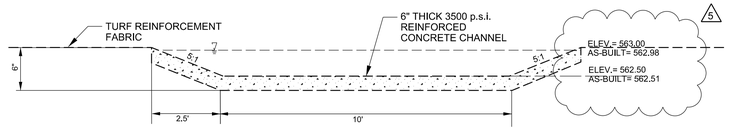
DOWELED CURB
N.T.S.



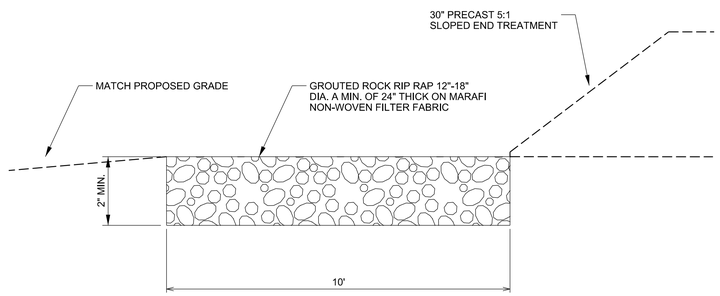
TYPICAL CONTAINMENT DIKE DETAIL
N.T.S.



CONTAINMENT DIKE RAMP DETAIL
N.T.S.



POSITIVE OVERFLOW
N.T.S.



GROUTED ROCK RIP-RAP
N.T.S.

THIS IS NOT A STORM WATER POLLUTION PREVENTION PLAN. THE CONTRACTOR MUST PREPARE ALL RELEVANT DOCUMENTS INCLUDING HIS OPERATION SPECIFIC INFORMATION PER THE TCEQ TPDES PERMIT NO. TXR150000, INCLUDING ALL DOCUMENTATION & CERTIFICATIONS AS REQUIRED BY THE PERMIT.

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Revision No.	Date	Description
1	3-6-2013	Revised as shown
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3	11-4-2013	As Built Revision

RECORD DRAWING SUBMITTAL
NOV. 04, 2013
This Record Drawing is based upon information provided by Hill & Wilkinson General Contractors, Halff Associates, Inc. survey dated 9-12-2013 and final visual observation, Texas Board of Professional Engineers-Firm #F-312.

R. DAVID LITTLETON — 83128
NAME — P.E. NO.
DATE — NOV.04, 2013
TBPE FIRM#F-312

Project No.:	29023
Issued:	JUNE, 2013
Drawn By:	CAD
Checked By:	DL
Scale:	AS NOTED
Sheet Title	DETAILS

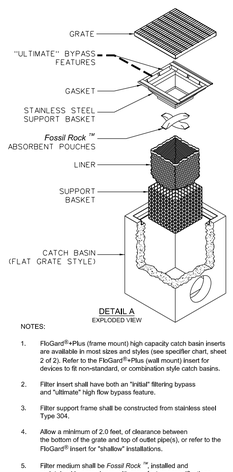
C3.04
Sheet Number

TITLE
FloGard®+PLUS
CATCH BASIN FILTER INSERT
(Curb Inlet Style)

KriStar Enterprises, Inc.
360 Sutton Place, Santa Rosa, CA 95407
Ph: 800.579.8819, Fax: 707.524.8186, www.kristar.com

DRAWING NO.	REV	ECO	DATE	SHEET
FGP-0002	D	0059 JPR 12/30/08	JPR 11/3/06	1 OF 1

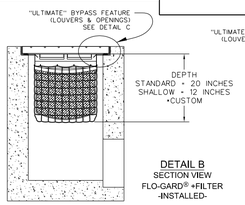
FGP-0001



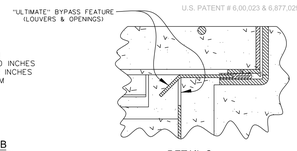
DETAIL A
EXPLODED VIEW

FLOGARD+PLUS® FILTER
-INSTALLED INTO CATCH BASIN-

U.S. PATENT # 6,00,023 & 6,877,029



DETAIL B
SECTION VIEW
FLO-GARD® +FILTER
-INSTALLED-



DETAIL C
"ULTIMATE"
BYPASS FEATURES

* MANY OTHER STANDARD & CUSTOM SIZES & DEPTHS AVAILABLE UPON REQUEST.

SPECIFIER CHART

MODEL NO. STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data in these columns is the same for both STANDARD & SHALLOW versions)			STANDARD DEPTH -20 Inches-		MODEL NO. SHALLOW DEPTH	SHALLOW DEPTH -12 Inches-	
	INLET ID Inside Dimension (inch x inch)	GRATE OD Outside Dimension (inch x inch)	TOTAL BYPASS CAPACITY (cu. ft. / sec.)	SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)		SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-12F	12 X 12	12 X 14	2.8	0.3	0.4	FGP-12F8	.15	.25
FGP-1530F	15 X 30	15 X 35	6.9	2.3	1.6	FGP-1530F8	1.3	.9
FGP-16F	16 X 16	16 X 19	4.7	0.8	0.7	FGP-16F8	.45	.4
FGP-1624F	16 X 24	16 X 26	5.0	1.5	1.2	FGP-1624F8	.85	.7
FGP-18F	18 X 18	18 X 20	4.7	0.8	0.7	FGP-18F8	.45	.4
FGP-1820F	16 X 19	18 X 21	5.9	2.1	1.4	FGP-1820F8	1.2	.8
FGP-1824F	16 X 22	18 X 24	5.0	1.5	1.2	FGP-1824F8	.85	.7
FGP-1836F	18 X 36	18 X 40	6.9	2.3	1.6	FGP-1836F8	1.3	.9
FGP-2024F	18 X 22	20 X 24	5.9	1.2	1.0	FGP-2024F8	.7	.55
FGP-21F	22 X 22	22 X 24	6.1	2.2	1.5	FGP-21F8	1.25	.85
FGP-2142F	21 X 40	24 X 40	9.1	4.3	2.4	FGP-2142F8	2.45	1.35
FGP-2148F	19 X 46	22 X 48	9.8	4.7	2.6	FGP-2148F8	2.7	1.5
FGP-24F	24 X 24	24 X 27	6.1	2.2	1.5	FGP-24F8	1.25	.85
FGP-2430F	24 X 30	26 X 30	7.0	2.8	1.8	FGP-2430F8	1.6	1.05
FGP-2436F	24 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8	1.95	1.15
FGP-2448F	24 X 48	26 X 48	9.3	4.4	2.4	FGP-2448F8	2.5	1.35
FGP-28F	28 X 28	32 X 32	6.3	2.2	1.5	FGP-28F8	1.25	.85
FGP-2440F	24 X 36	28 X 40	8.3	4.2	2.3	FGP-2440F8	2.4	1.3
FGP-30F	30 X 30	30 X 34	8.1	3.6	2.0	FGP-30F8	2.05	1.15
FGP-36F	36 X 36	36 X 40	9.1	4.6	2.4	FGP-36F8	2.65	1.35
FGP-3648F	36 X 48	40 X 48	11.5	6.8	3.2	FGP-3648F8	3.9	1.85
FGP-48F	48 X 48	48 X 54	13.2	9.5	3.9	FGP-48F8	5.45	2.25
FGP-SD24F	24 X 24	28 X 28	6.1	2.2	1.5	FGP-SD24F8	1.25	.85

NOTES:

1. FloGard®+Plus (frame mount) high capacity catch basin inserts are available in most sizes and styles (see specifier chart, sheet 2 of 2). Refer to the FloGard®+Plus (wall mount) insert for devices to fit non-standard, or combination style catch basins.
2. Filter insert shall have both an "initial" filtering bypass and "ultimate" high flow bypass feature.
3. Filter support frame shall be constructed from stainless steel Type 304.
4. Allow a minimum of 2.0 feet, of clearance between the bottom of the grate and top of outlet pipe(s), or refer to the FloGard® insert for "shallow" installations.
5. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
6. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.
7. Filtered flow rrate includes a safety factor of two.

TITLE
FloGard®+PLUS
CATCH BASIN FILTER INSERT
(Flat Grated Inlet Style)

KriStar Enterprises, Inc.
360 Sutton Place, Santa Rosa, CA 95407
Ph: 800.579.8819, Fax: 707.524.8186, www.kristar.com

DRAWING NO.	REV	ECO	DATE	SHEET
FGP-0001	E	0098 JPR 12-7-11	JPR 11/3/06	1 OF 2

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DRAWING NO.	REV	ECO	DATE	SHEET
FGP-0001	E	0098 JPR 12-7-11	JPR 11/3/06	2 OF 2