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June 1, 2016
Project No. 1948F

Ms. Sarah Porter, Agent
City of New Bedford Conservation Commission
New Bedford City Hall
133 William Street
New Bedford, MA 02744

RE: Response to Amended Order of Conditions Review Comments
DEP File No. SE049-0693
200 Theodore Rice Boulevard

Dear Ms. Porter:

Field Engineering Co., Inc. has received the Request for Amended Order of Conditions review comment letter dated May 27, 2016 prepared by Nitsch Engineering and has prepared the following response narrative and supporting documentation for consideration by the Commission.

1. The scope of the previously approved project, which had been submitted and approved for NSTAR, has been significantly reduced. The approved project included substantially more parking improvements, a paved material stockpile area, additional stormwater retention basins, and more stormwater quality treatment.

RESPONSE: No Response Necessary.

2. The parking lot located in the northwest corner of the site has been revised. Previously, this parking area was designed to drain to a detention basin located directly in front of the building. This detention basin has been removed. The parking lot grading has been changed so the parking lot grades to the north and stormwater either drains towards the landscape island or the newly proposed Stormceptor 450i. The applicant should provide sizing calculations for the stormceptor. This is all new pavement so all stormwater should be treated to remove 80% of Total Suspended Solids (TSS).

RESPONSE: Sizing calculations for the Stormceptor 450i are included as an Attachment to this Response Letter. As the attached calculations show, the Stormceptor 450i will provide more than 80% removal of Total Suspended Solids as recommended by your consultant.

3. The curbing in the northern parking lot should be better defined so the stormwater flow paths are apparent. As drawn on the submitted plans, it appears that curb is not proposed along the northern edge of the parking lot. Therefore, as drawn, stormwater will flow into the landscape island on the western side of the parking lot and bypass the proposed stormceptor unit. If curb is installed, the grading will need to be revised to allow stormwater to flow around the parking islands. The grading and design of this area should be revised so that water flows to the stormceptor, consistent with the drainage calculations.

RESPONSE: We have relocated the proposed Stormceptor into a grassed swale within the landscaped area between the parking lot and Theodore Rice Boulevard and have proposed paved waterways at each landscape island to ensure that the water flows into the swale and ultimately into the Stormceptor.

4. The driveway on the western side of the site was approved to drain into a landscape depression that would function as a sediment basin or forebay. There was a pipe that allowed water to flow to the site's closed drainage system and receive additional treatment. The revised design contains a depression only. The depression is less than one foot deep. There is no outlet pipe, so presumably this area is intended to either infiltrate into the ground or water will overtop during large storms. Calculations regarding the design of this area were not developed so it is unclear whether this depression can accommodate stormwater generated by the driveway up to the 100-year storm.

RESPONSE: The design of the westerly driveway has been revised to flow into a grassed swale that will overtop towards the existing drop inlet located along Theodore Rice Boulevard. The existing paved parking area currently flows into the existing drop inlet and there will be overall reduction in the amount of pavement that will flow directly to the drop inlet with the addition of the grassed island. No attenuation was assumed or included in the hydrologic calculations from this swale.

5. The existing parking lot located to the west of the existing building was previously designed with more formal parking, landscaped islands, and a closed drainage system providing water quality treatment. The revised plans show this area to be scarified and new pavement installed. There is no reduction in impervious surface or any stormwater best management practices. Therefore, there are no water quality improvements associated with this area under the new design. During the site walk, we discussed the options for providing water quality treatment in the re-paved area. We recommend water quality Best Management Practices be incorporated into this area.

RESPONSE: To address your consultant's concerns, we are proposing to remove a strip of pavement along the western side of this parking area and will replace with a 3' wide crushed stone edge drain. This edge drain will be equipped with a 6" perforated HDPE pipe which will discharge flow to the proposed swale as shown on the Revised Plan.

6. Landscape islands have been added to the parking lot located to the east of the building. These islands could restrict the movement of water to the paved waterway that discharges to basin 1. The revised design implies that curbing will not be installed at the edge of the parking area, which would create a situation where water flows directly into the basin as opposed to the forebay as originally designed. Curbing and/or grading revisions should be developed to insure that water is directed to the paved waterway and into the sediment forebay.

RESPONSE: The Revised Plans shown asphalt berm along the easterly perimeter of this parking lot and the level/overlay will be graded to direct runoff towards the proposed paved waterways into the sediment forebay. Notations are provided on the plans to break the berm around the proposed landscape islands to ensure a direct flow path to the paved waterways.

7. We recommend the applicant check the parking lot grading located near the southeast corner of the building. The proposed grading implies a low point that may create pending.

RESPONSE: Additional existing and proposed spot grades and contour revisions are shown on the Revised Plan to clarify the grading in this area.

8. The applicant should confirm the size of the pipe leading from the proposed double catch basin located in the parking area south of the building.

RESPONSE: We have reviewed the sizing of the pipe from the proposed double catch basin south of the building. Following review of the calculations, we have increased the size of this pipe to 15" to ensure that this pipe can convey up to the 25 year storm to the swale. The Revised Plan illustrates this change and pipe sizing calculations have been provided as an Attachment to this Letter.

9. The request for an Amended Order of Conditions included one sheet only. There were not any revised details submitted with the revised plans. Comparing the approved calculations with the calculations submitted with the Amended Order of Conditions request indicates that there have been some minor modifications to the outlet control structures from the detention basins. These details should be revised for consistency with the calculations to ensure they are constructed correctly.

RESPONSE: A Revised Detail Sheet showing updated information for the outlet control structures has been prepared and is attached to this Letter.

We feel that we have adequately addressed the Consultant's comments with this letter and the attached plans and documentation and look forward to discussing this exciting project with the Commission at the next Hearing on June 7. Please do not hesitate to contact me should you have any questions or require additional information.

Sincerely,

Field Engineering Co., Inc.

COMMONWEALTH OF MASSACHUSETTS
RICHARD R.
RICCIO III
CIVIL
No. 45898
REGISTERED
PROFESSIONAL ENGINEER

Richard R. Riccio III, P.E.
Project Manager

cc: Judith Nitsch Engineering (Scott Turner)
Matt O'Connor, First Highland

Attachments

1. Revised Amended OOC Site Plan (Dated 6/1/16)
2. Amended OOC Revised Details (Dated 6/1/16)
3. Stormceptor 450i Sizing Calculations
4. Pipe Sizing Calculations-Southerly Double Catch Basin

Stormceptor®

Stormceptor Design Summary

PCSWMM for Stormceptor

Project Information

Date	6/1/2016
Project Name	First Highland
Project Number	1948F
Location	200 Theodore Rice Boulevard

Designer Information

Company	Field Engineering Co. Inc.
Contact	Rich Riccio

Notes

New Front Parking Area

Drainage Area

Total Area (ac)	0.62
Imperviousness (%)	57

The Stormceptor System model STC 450i achieves the water quality objective removing 86% TSS for a Fine (organics, silts and sand) particle size distribution.

Rainfall

Name	BOSTON WSFO AP
State	MA
ID	770
Years of Records	1948 to 2005
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80

Upstream Storage

Storage (ac-ft)	Discharge (cfs)
0	0

Stormceptor Sizing Summary

Stormceptor Model	TSS Removal %
STC 450i	**86**
STC 900	91
STC 1200	91
STC 1800	92
STC 2400	94
STC 3600	94
STC 4800	95
STC 6000	96
STC 7200	96
STC 11000	98
STC 13000	98
STC 16000	98

Rinker MATERIALS™

Particle Size Distribution

Removing silt particles from runoff ensures that the majority of the pollutants, such as hydrocarbons and heavy metals that adhere to fine particles, are not discharged into our natural water courses. The table below lists the particle size distribution used to define the annual TSS removal.

Fine (organics, silts and sand)

Particle Size µm	Distribution %	Specific Gravity	Settling Velocity ft/s		Particle Size µm	Distribution %	Specific Gravity	Settling Velocity ft/s
20	20	1.3	0.0013					
60	20	1.8	0.0051					
150	20	2.2	0.0354					
400	20	2.65	0.2123					
2000	20	2.65	0.9417					

Stormceptor Design Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal.
- Only the STC 450i is adaptable to function with a catch basin inlet and/or inline pipes.
- Only the Stormceptor models STC 450i to STC 7200 may accommodate multiple inlet pipes.
- Inlet and outlet invert elevation differences are as follows:

Inlet and Outlet Pipe Invert Elevations Differences

Inlet Pipe Configuration	STC 450i	STC 900 to STC 7200	STC 11000 to STC 16000
Single inlet pipe	3 in.	1 in.	3 in.
Multiple inlet pipes	3 in.	3 in.	Only one inlet pipe.

- Design estimates are based on stable site conditions only, after construction is completed.
- Design estimates assume that the storm drain is not submerged during zero flows. For submerged applications, please contact your local Stormceptor representative.
- Design estimates may be modified for specific spills controls. Please contact your local Stormceptor representative for further assistance.
- For pricing inquiries or assistance, please contact Rinker Materials 1 (800) 909-7763 www.rinkerstormceptor.com

FIELD ENGINEERING CO. INC. MATTAPOISETT, MA

RUN-OFF COEFFICIENT CALCULATIONS

Client:	FIRST HIGHLAND	Job No.	1948F
Project:	BUILDING IMPROVEMENTS	Date	5/31/2016
Location:	200 THEODORE RICE BLVD	Design by:	RRR

Runoff coefficient (C) factor:

Impervious areas (Roofs and paved areas)	0.90
Pervious areas (landscaped;lawn areas)	0.40
Pervious areas (undisturbed;wooded)	0.30

AREA NO.	LAWN AREA (ac.)	WOODED AREA (ac.)	IMPERV. AREA (ac.)	TOTAL AREA (ac.)	COMPOSITE FACTOR "C"
DCB-1	0.170	0.00	1.010	1.18	0.83

FIELD ENGINEERING CO., INC. MATTAPOISETT, MA

STORM DRAINAGE DESIGN DATA
Rational Method Q=CIA
Design Storm 25 YEAR

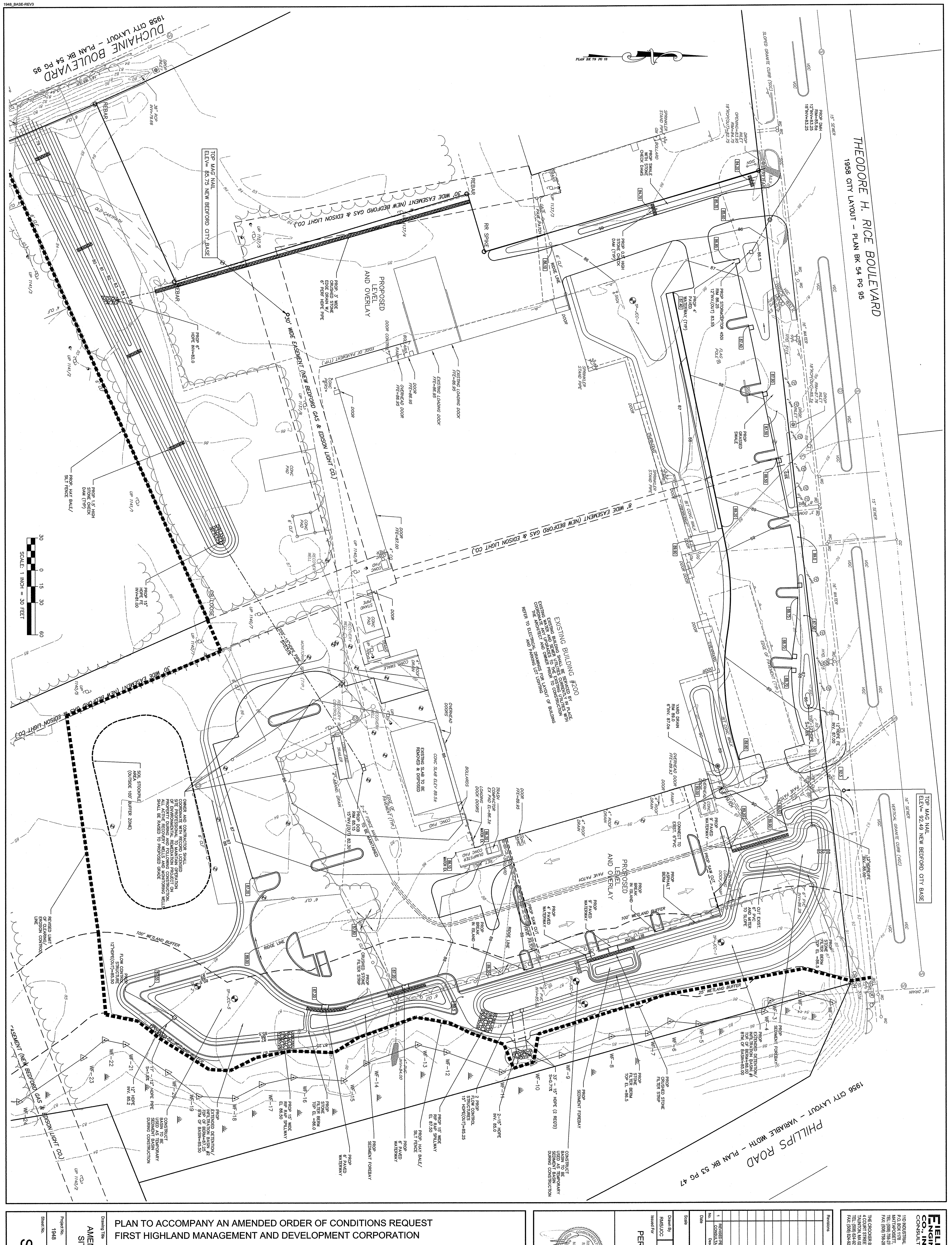
Client: First Highland
Project: Building Improvements
Location: 200 Theodore Rice

Job No: 1948
Date: 5/31/2016
Cal By: R. Riccio

NOTE: Data entry columns headed by double asterisk. **

From MH	Inv. Elev.	To MH	Inv. Elev.	Length (ft)	Slope (%)	Area Inc. (ac.)	Area Total (ac.)	Runoff Inc. "C"	Coef. Ave. "C"	Int. (in/hr) "I"	Inlet Time (min)	Pipe Time (min)	Total Time (min)	Flow Inc. (cfs)	Flow Total (cfs)	Pipe Dia. (in)	"n"	Slope (ft/ft)	Flow Full (cfs)	Vel. Full (ft/s)
**	**	**	**	**		**		**		**	**					**	**			
DCB-1	82.30	SWALE	81.00	255	0.51%	1.18	1.18	0.83	0.83	5.5	6.00	0.96	6.00	5.39	5.39	15	0.011	0.0051	5.42	4.42
**	**	**	**	**		**		**		**	**					**	**			

1948_BASE-REV3



PLAN TO ACCOMPANY AN AMENDED ORDER OF CONDITIONS REQUEST
FIRST HIGHLAND MANAGEMENT AND DEVELOPMENT CORPORATION

200 THEODORE H. RICE BOULEVARD
NEW BEDFORD, MASSACHUSETTS

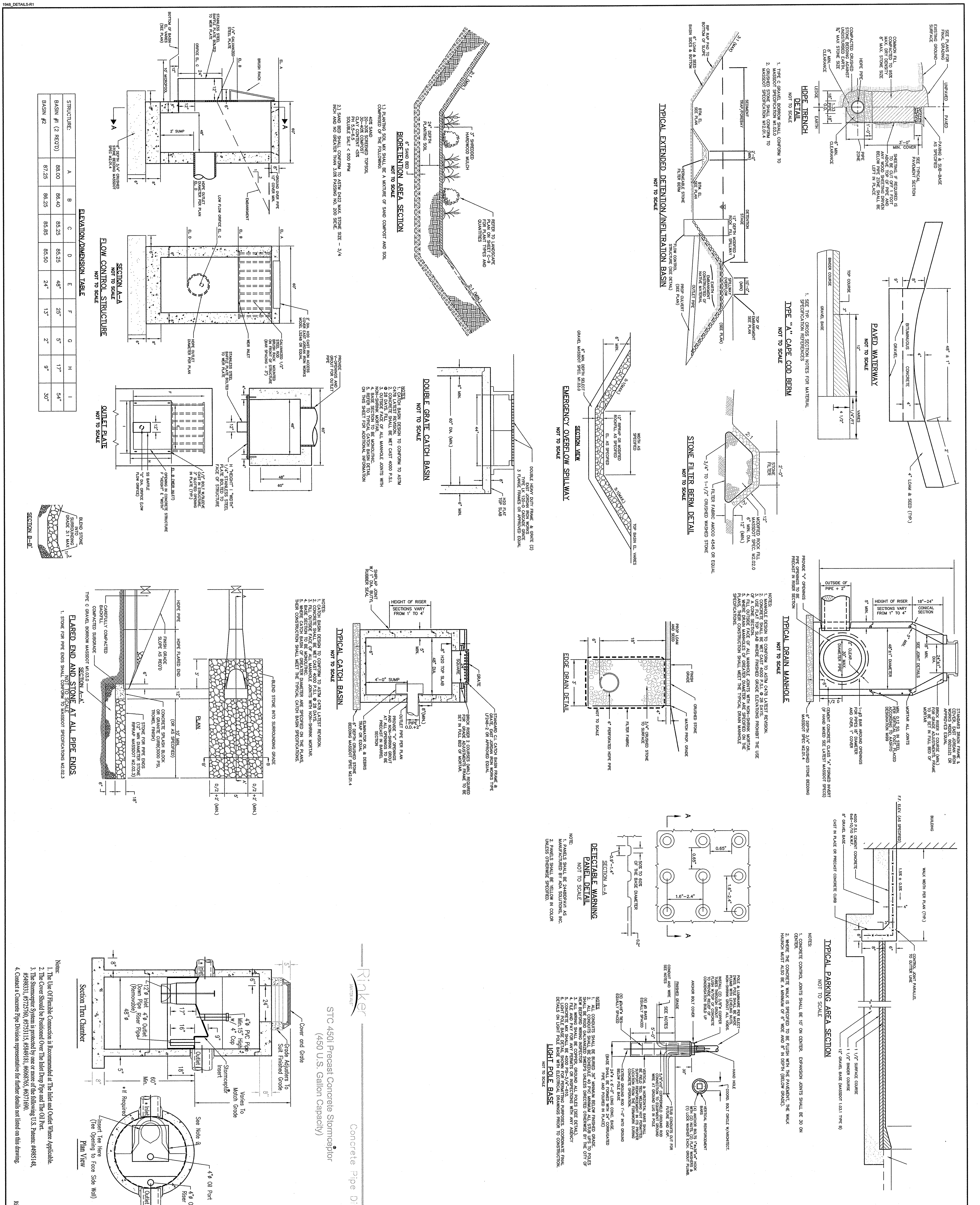
Drawing Title	AMENDED OOC SITE PLAN
Project No.	1948
Sheet	1 OF 2
Sheet No.	SP-1

Scale	1"=30'
Date	5/4/16
Issued For	PERMITTING
Drawn By	RMB/JCC
Designed By	JCC
Checked By	RRR

No.	Description	Date	Apprvd.
1	REVISED PER CONCOM CONSULTANT REVIEW	6/1/16	RRR

FIELD ENGINEERING CO., INC.
CONSULTING ENGINEERS

1948_DETAILS-R1



ELEVATION/DIMENSION TABLE

STRUCTURE:	A	B	C	D	E	F	G	H	I
BASIN #1 (2 REQ'D)	88.00	86.40	85.25	85.25	48"	25"	5"	17"	54"
BASIN #2	87.25	86.25	85.85	85.50	24"	13"	2"	9"	30"

PLAN TO ACCOMPANY AN AMENDED ORDER OF CONDITIONS REQUEST
FIRST HIGHLAND MANAGEMENT AND DEVELOPMENT CORPORATION

200 THEODORE H. RICE BOULEVARD
NEW BEDFORD, MASSACHUSETTS

Drawing Title: AMENDED OOC SITE DETAILS

Project No.: 1948
Sheet: 2 OF 2
Sheet No.: D-1

Date: 6/1/16
Scale: NO SCALE
Drawn By: RMS/JCC
Designed By: JCC
Checked By: RBR
Issued For: PERMITTING

FIELD ENGINEERING CO., INC.
CONSULTING ENGINEERS