

EXAMPLE #1

For projects less than one acre and no new connections to the City/County storm sewers

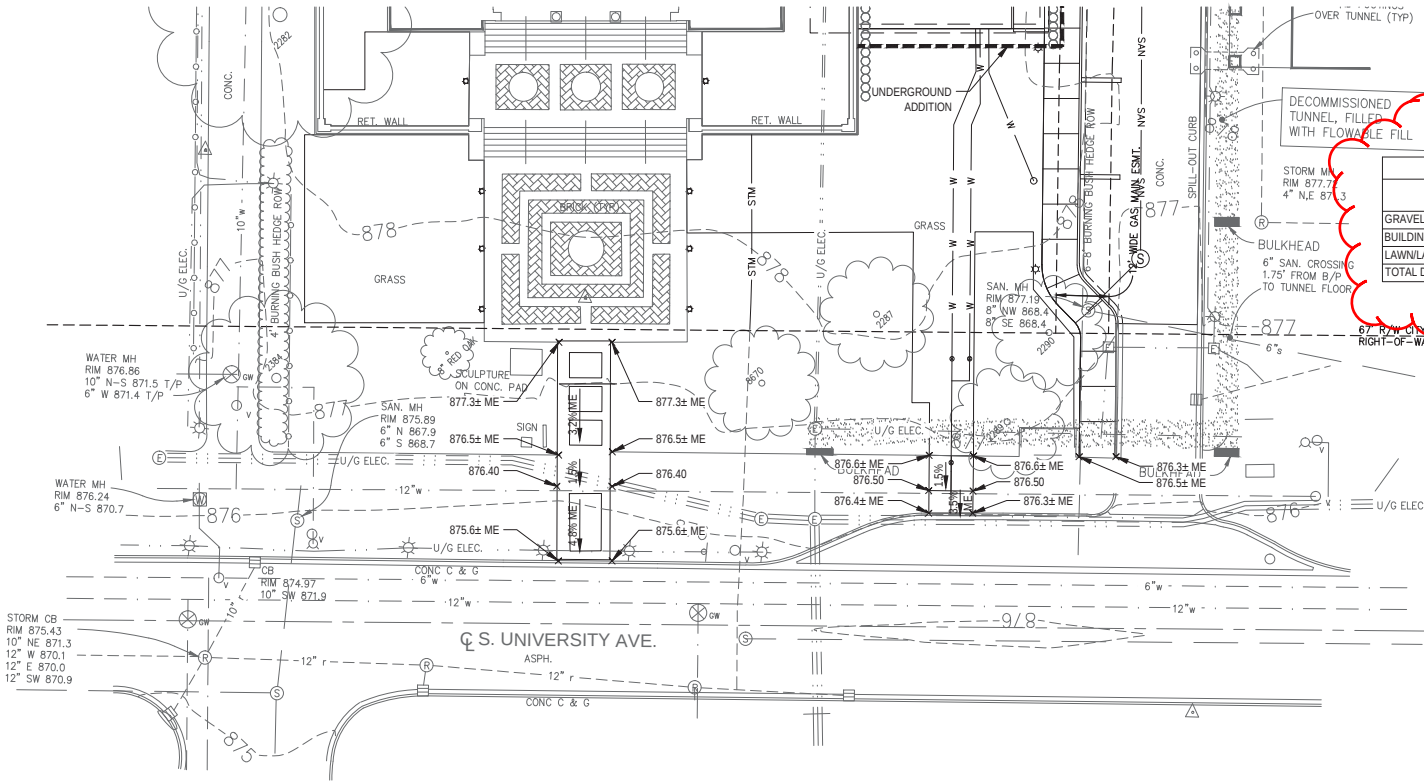
Storm Water Notes:

- 1. No new connections to city storm sewer systems are proposed.
- 2. Proposed earth disturbance is _____ SF (_____ acres).
- 3. U-M NPDES permit post-construction storm water management requirements are not applicable since the proposed earth disturbance is less than one acre.

Show chart of with change in impervious -see attached example chart. Increase in impervious must be reviewed/approved by U-M Campus Planning and project team may be directed to design additional storm water management BMPs.

Provide a list of elective storm water BMP's to be installed and quantify benefits, if feasible.

Include the language: "Construction and operation of the storm water (infiltration/detention pond) or (BMP's on the plans) is/are in compliance with the requirements of State and Federal water pollution control laws."



AREA COMPARISON (TOTAL SITE)		
TYPE	EXISTING AREA (SF)	PROPOSED AREA (SF)
GRAVEL	865	0
BUILDING ROOF/PAVING	18,655	15,285
LAWN/LANDSCAPE	21,193	25,428
TOTAL DISTURBED AREA	40,713	40,713

GRADING & DRAINAGE LEGEND

- STM — STORM SEWER PIPING
- W — WATER MAIN PIPING; SEE CUL.1
- 800 — MAJOR CONTOUR LINE
- 800 — MINOR CONTOUR LINE
- 800 — EXISTING CONTOUR LINE
- 800 — SPOT ELEVATION
- 1% — GRADE

GRADING & DRAINAGE ABBREVIATIONS

- G = GUTTER
- ME = MEET EXISTING
- T/C = TOP OF CURB

Replace chart with format matching example chart below

Area Comparison (for earth disturbance)			
Type	CN	Existing Area (sf)	Proposed Area (sf)
Gravel	85	3500	0
Bldg Roof/Pavement	98	3000	3500
Lawn/Landscaping	61	6500	8000
Pervious Pavement	79.5	0	1500
Total Disturbed area		13000	13000
Total Impervious		6500	3500
Composite CN		76	73

SMITHGROUP JJR

500 GRISWOLD
SUITE 1700
DETROIT, MI 48226
313.983.3600
www.smithgroupjjr.com

3 WORKING DAYS
BEFORE YOU DIG
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(TOLL FREE)



BENCH MARK	SURVEY BOOK	REV. NO.	DESCRIPTION	DATE	DR.BY	CH.BY
		1	CD FINAL REVIEW/CITY PLAN REVIEW	10/3/13	JBW	JBW
		0	CITY PPR SUBMITTAL	8/23/13	JBW	JBW

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
UNIVERSITY OF MICHIGAN WILLIAM L. CLEMENTS LIBRARY INFRASTRUCTURE IMPROVEMENTS AND ADDITION UM PROJECT NUMBER: P00001692 RIGHT OF WAY GRADING PLAN	
SCALE HORIZ. 1"=20' VERT. 1"=2'	0 INCH 1
DRAWING NO.	CG1.1
SHEET NO.	OF

EXAMPLE #2

Greater than an acre, new connection to the City System

UNIVERSITY OF MICHIGAN

ATHLETIC DEPARTMENT OPERATIONS CENTER

PRELIMINARY SITE PLAN REVIEW

UM AEC Proj No #: P00008399;

THE UNIVERSITY OF MICHIGAN

ATHLETICS DEPARTMENT

ANN ARBOR, MI 48105

For City projects only - Title Sheet Listing type of City Review

SPALDING DEDECKER ASSOCIATES, INC.

SPALDING DEDECKER ASSOCIATES

905 SOUTH BOULEVARD EAST

ROCHESTER HILLS, MI 48307

P (248) 844 - 5400

CIVIL

- T-1C
- C001C
- C002C
- C101C
- C102C
- C103C
- C104C
- C104AC
- C104BC
- C105C
- COVER SHEET
- TOPO SURVEY
- DEMOLITION PLAN
- SITE PLAN
- UTILITY PLAN - RIGHT-OF-WAY
- PAVING PLAN - RIGHT-OF-WAY
- STORMWATER MANAGEMENT SUMMARY SHEET
- STORMWATER MANAGEMENT PLAN
- STORMWATER MANAGEMENT DETAILS
- FIRE SAFETY SITE PLAN



VICINITY PLAN

SCALE: NTS

UNIVERSITY of MICHIGAN

UM Athletic Department Operations Center

ANN ARBOR, MICHIGAN

48105

WORK SCOPE

NEW OPERATIONS BUILDING

INCLUDES ADMINISTRATION OFFICES, LAUNDRY FACILITIES, ATHLETICS GENERAL STORAGE, LOADING DOCK AND A MAINTENANCE SHOP FOR MINOR REPAIRS. THESE REPAIR FUNCTIONS MILLWORK, WELDING, PAINTING AND SMALL EQUIPMENT. THE BUILDING IS APPROXIMATELY 18,500 SF OF SPACE. THE BUILDING IS STEEL FRAMED W/ INSULATED METAL PANEL AND INSULATED MASONRY VENEER WALLS. INTERIOR FINISHES INCLUDE CMU, GYPSUM BOARD, CEILINGS ARE EXPOSED METAL DECK PAINTED.

THE UNIVERSITY OF MICHIGAN

Architecture, Engineering and Construction

University Architect's Office

326 E. Hoover Ave.

Mail Stop E

ANN ARBOR, MICHIGAN 48109-1002

NIAGARA MURANO

ARCHITECTURE

2215 COLE STREET

BIRMINGHAM, MICHIGAN 48009

TELEPHONE: 248.646.5765

FACSIMILE: 248.646.5813

Architect's Project No. - 13144.0

issue: date:

City Site Plan Review	April 28, 2014
Prelim. City Site Plan Review	March 19, 2014
Owner Review	Feb 19, 2014
DD Review	December 20, 2013
SD Review	November 27, 2013
Owner Review	October 28th 2013
Owner Review	October 28th 2013
Owner Review	October 21st 2013
Owner Review	October 9th 2013



submitted to: HFES	NO	BFS:	NO
AEC constr mgmt no.	P00008399		
building no.	-		
designed	David B		
drawn	SB, RHS & GG		
coordination checked	John K.		
checked	R Sherman approved	John K.	
um design manager			
location	UM Athletic Ops Center		
keywords	TITLE		

project:

UM Athletic Department Operations Center

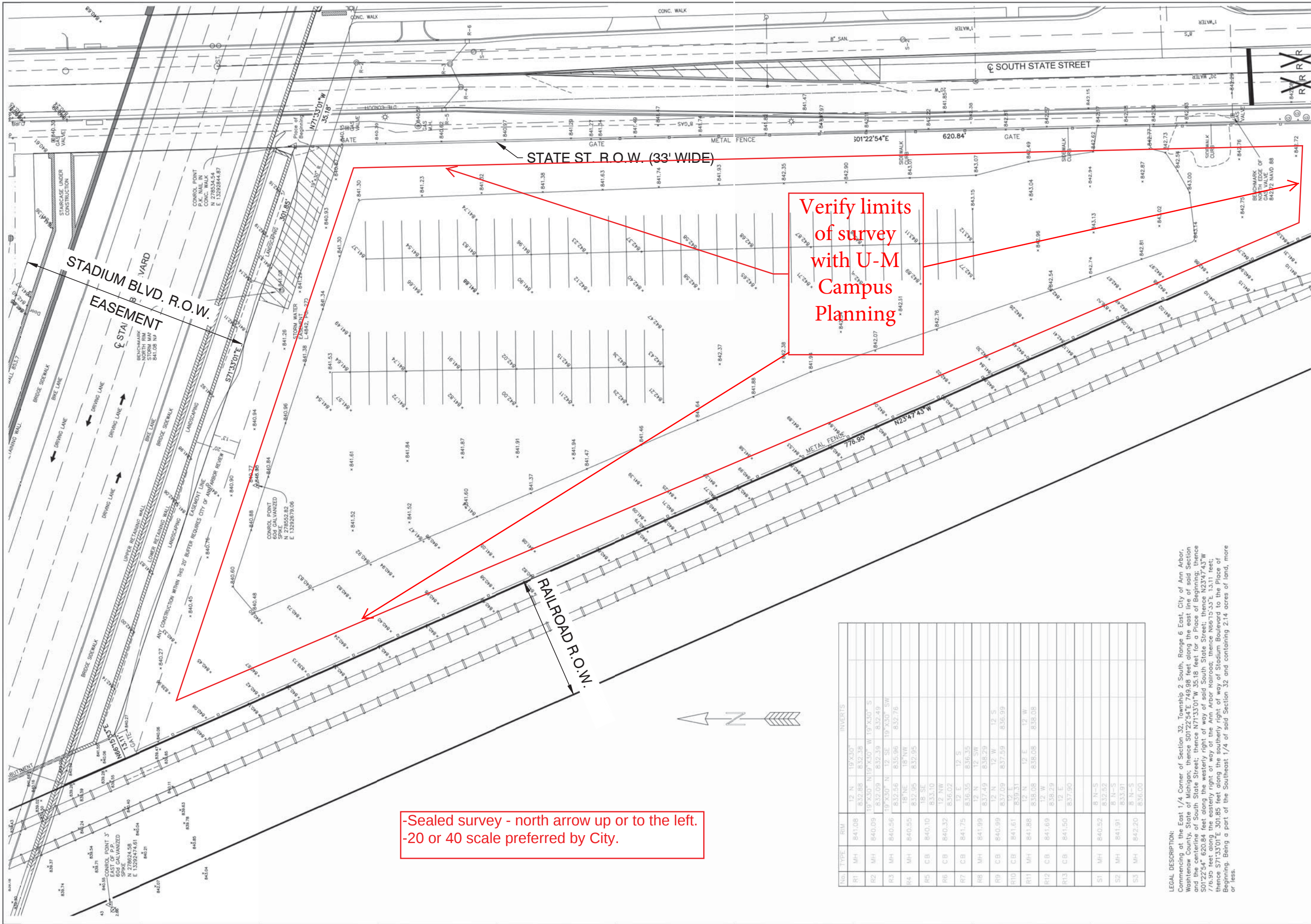
sheet title:

PRELIMINARY CITY SITE PLAN REVIEW

project number: sheet number:

UM AEC : T-1C

P00008399



-Sealed survey - north arrow up or to the left.
-20 or 40 scale preferred by City.

RM		INVERTS	
R1	MH	12 N	19'X30"
R2	MH	12 N	19'X30"
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R99	MH	12 N	19'X30"
R100	MH	12 N	19'X30"

LEGAL DESCRIPTION:
Commencing at the East 1/4 Corner of Section 32, Township 2 South, Range 6 East, City of Ann Arbor, Washtenaw County, State of Michigan; thence S01°22'54"E 749.98 feet along the east line of said Section and the centerline of South State Street; thence N71°33'01"W 35.18 feet for a Place of Beginning, thence S01°22'54" 620.84 feet along the westerly right of way of said South State Street; thence N23°47'43"W 776.95 feet along the easterly right of way of the Ann Arbor Railroad; thence N66°13'33"E 111.11 feet, thence S71°33'01"E 301.85 feet along the easterly right of way of Stadium Boulevard to the face of the Building, Being a part of the Southeast 1/4 of said Section 32 and containing 2.14 acres of land, more or less.



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THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED BY THE SURVEYOR AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO WARRANTIES AS TO THE ACCURACY OF THE INFORMATION SHOWN. THE SURVEYOR IS NOT RESPONSIBLE FOR ANY DAMAGE TO OR DESTRUCTION OF ANY UTILITY OR STRUCTURE CAUSED BY ANY PERSON OR ENTITY. THE SURVEYOR IS NOT RESPONSIBLE FOR ANY DAMAGE TO OR DESTRUCTION OF ANY UTILITY OR STRUCTURE CAUSED BY ANY PERSON OR ENTITY.

SECTION CORNER
FOUND IRON PIPE
FOUND IRON ROD
SET IRON PIPE
SET MAG NAIL
FOUND MAG NAIL
CONTROL POINT
MEASURED DIMENSION
RECORDED DIMENSION
SURFACE FLOW

WATER MANHOLE
FIRE HYDRANT
GATE VALVE
BEEHIVE CATCH BASIN
CURB CATCH BASIN
STORM MANHOLE
CULVERT / END SECTION
SANITARY MANHOLE
LIGHT POLE
UTILITY POLE
TELEPHONE RISER
GAS MAIN RISER

ELECTRIC LINE
GAS MAIN
WATER MAIN
STORM LINE
SANITARY LINE
CABLE TV LINE
PHONE LINE
CHAIN LINK FENCE
WOOD FENCE
BARBED WIRE FENCE

CLIENT: UNIVERSITY OF MICHIGAN
RED LOT PARKING AREA
TOPOGRAPHICAL SURVEY
S. STATE ST. @ STADIUM BLVD.
SECTION 32, T2S, R6E,
CITY OF ANN ARBOR
MICHIGAN
Arbor Land Consultants, Inc.
Professional Land Surveyors
2936 Madrona Ct.
Ann Arbor, MI 48103
Tel 1-734-669-2960
Fax 1-734-669-2961
DATE: 11-25-2011
REVISION: 10-03-2013
JOB NO. 10912/03613/11313
SHEET 8 OF 8
SCALE 1 INCH = 20 FEET

THE UNIVERSITY OF MICHIGAN

Architecture, Engineering and Construction
University Architect's Office
326 E. Hoover Ave.
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Architect's Project No. - 13144.0

Spalding DeDecker Associates, Inc.



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(800) 598-1600

SDA Project No. - NP13033

issue: date:

City Site Plan Review	April 28, 2014
Prelim. City Site Plan Review	April 25, 2014
Prelim. City Site Plan Review	March 19, 2014
Owner Review - City Submitted	February 19, 2014
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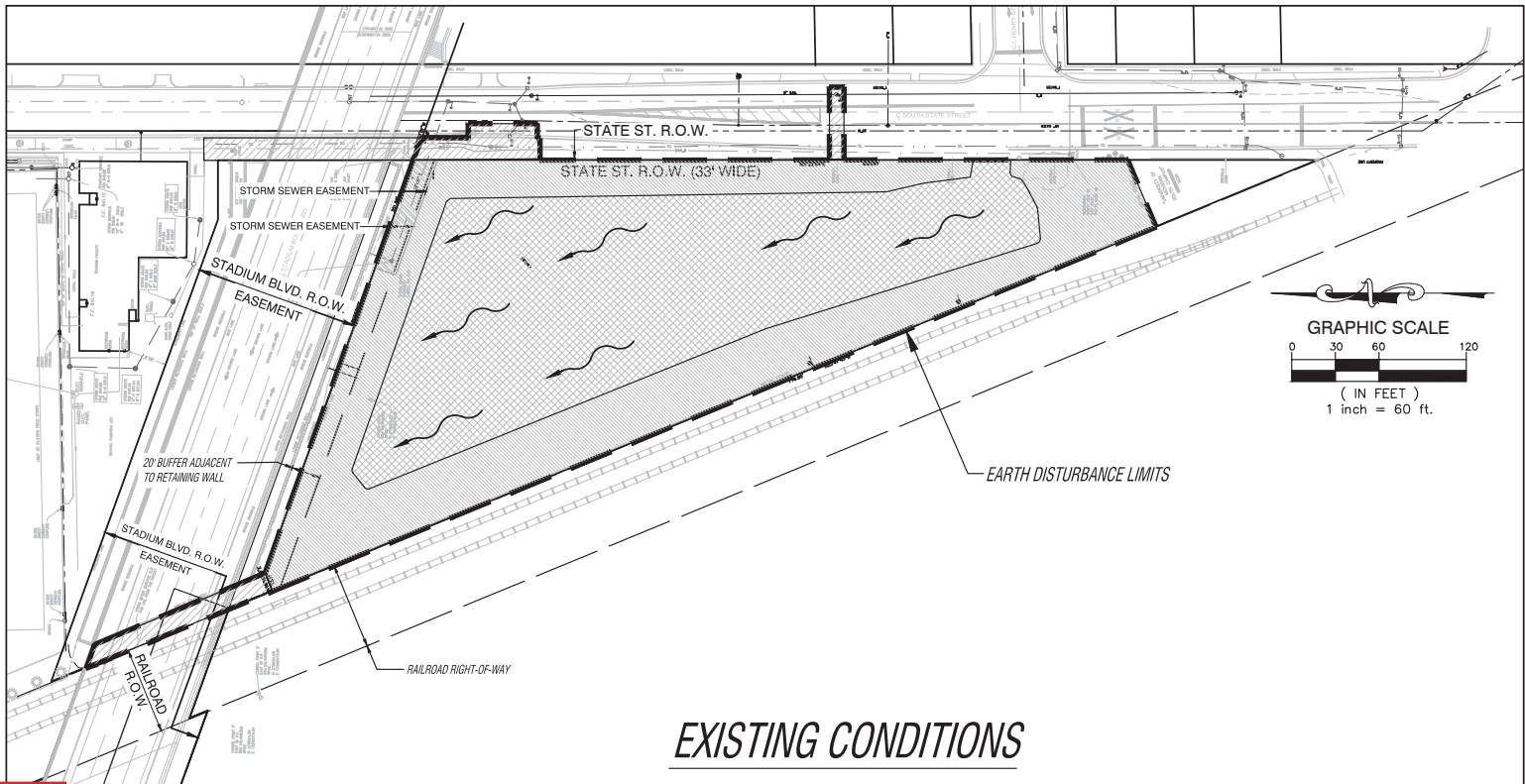
submitted to: HFES	NO	BFS:	NO
AEC constr mgmt no.	P00008399		
building no.	-		
designed	T. Sovel		
drawn	J. Ensley		
coordination checked	T. Sovel		
checked	T. Sovel approved	T. Sovel	
um design manager			
location	UM Athletics Ops Center		
keywords			

project:
UM Athletics
Department Operations
Center

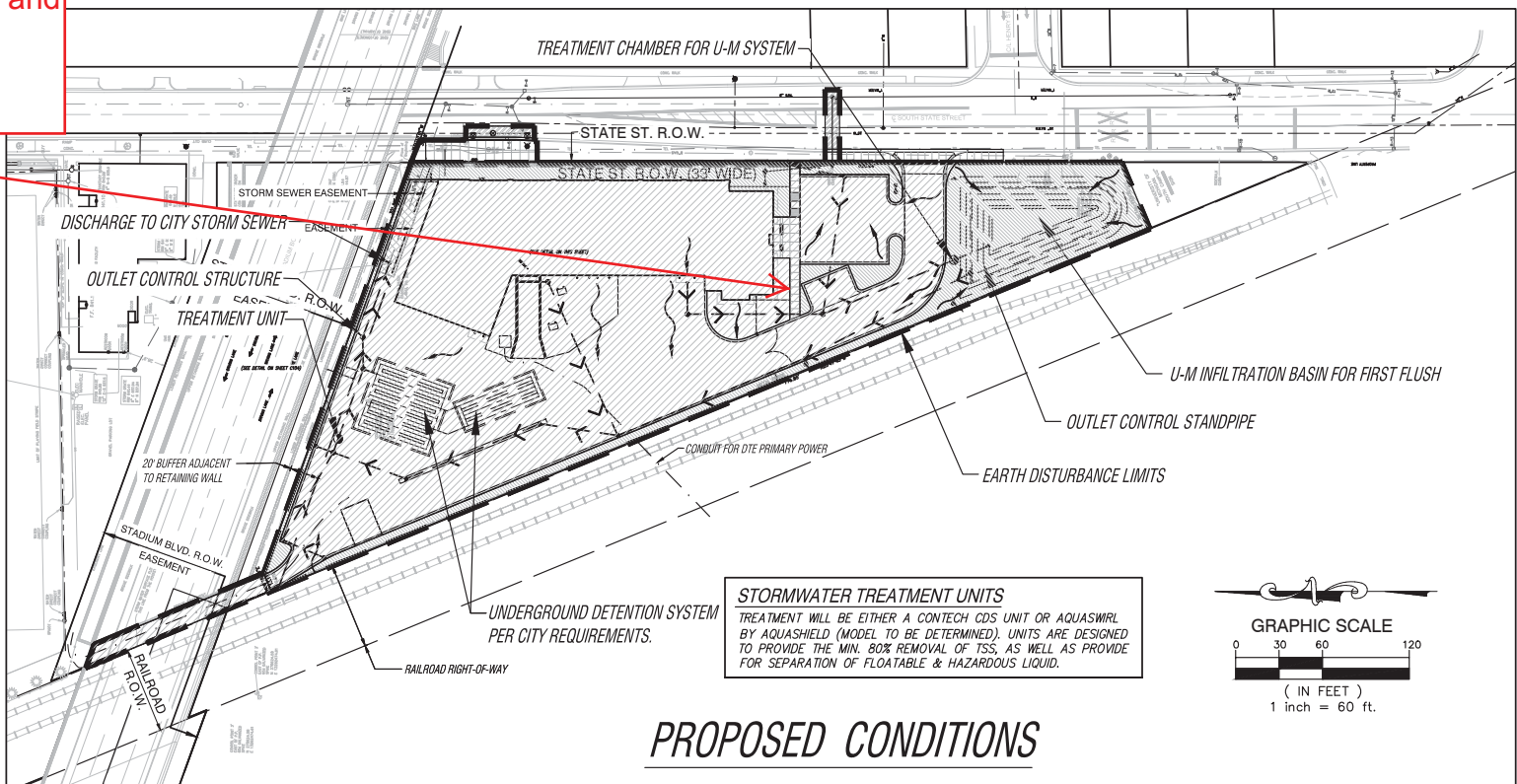
sheet title:
Storm Water
Management Plan
Summary Sheet

project number: sheet number:
UM AEC :
P00008399

C104C

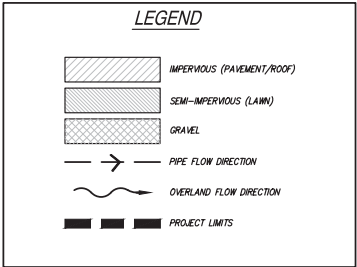


EXISTING CONDITIONS



PROPOSED CONDITIONS

STORMWATER TREATMENT UNITS
TREATMENT WILL BE EITHER A CONTECH CDS UNIT OR AQUASHIELD BY AQUASHIELD (MODEL TO BE DETERMINED). UNITS ARE DESIGNED TO PROVIDE THE MIN. 80% REMOVAL OF TSS, AS WELL AS PROVIDE FOR SEPARATION OF FLOATABLE & HAZARDOUS LIQUID.



- Storm water sheet.
- Show drainage patterns of proposed and existing conditions with different hatching based on imperviousness. (See Campus Planning level of detail provided on U-M property)
- Provide narrative summarizing storm water as noted below.

STORM WATER NARRATIVE:

1. EXISTING CONDITIONS STORM WATER SUMMARY (SEE SHEET C104BC FOR SUPPORTING CALCULATIONS):
EXISTING DRAINAGE IS OVERLAND IN A NORTH AND WEST DIRECTION TOWARDS THE NORTHWEST CORNER OF THE SITE. THE DRAINAGE FLOWS INTO THE RAILROAD DRAINAGE DITCH AND TO THE NORTH, WITH ULTIMATE DISCHARGE TO THE ALLEN CREEK DRAIN.

COVER TYPE	AREA (AC)	C	CN
GRAVEL PARKING	1.12	.85	85
OPEN SPACE (LAWN)	.88	.25	81
TOTAL	2.00	.59	78

EXISTING RUNOFF VOLUME = 1,884 CF
EXISTING PEAK RUNOFF RATE = 0.384 CFS
(VOLUME AND RATE SHOWN FOR 2 YR, 24-HR STORM PER U-M CALCS PROVIDED ON SHEET C104BC)

2. PROPOSED CONDITIONS STORM WATER SUMMARY (SEE SHEET C104BC FOR SUPPORTING CALCULATIONS):
PROPOSED EARTH DISTURBANCE IS 9385.4 SF (2.13 ACRES). THIS INCLUDES DISTURBED AREAS OUTSIDE THE PROPERTY LIMITS THAT DO NOT CONTRIBUTE TO THE DRAINAGE SYSTEM. DISTURBED AREA CONTRIBUTING TO THE DRAINAGE SYSTEM IS 87,120 SF (2.00 ACRES).
A NEW CONNECTION TO THE CITY STORM WATER SYSTEM IS PROPOSED. PROPOSED STORM DRAINAGE WILL BE DIRECTED INTO THE CITY'S STORM SEWER SYSTEM LOCATED IN THE NORTHEAST CORNER OF THE SITE BY CONNECTION TO THE EXISTING CITY STORM MANHOLE. IN ACCORDANCE WITH U-M REQUIREMENTS, THE INCREASED VOLUME FOR 2 YEAR 24 HOUR STORM CALCULATED PER U-M NPDES PERMIT REQUIREMENTS WILL BE DISCHARGED THROUGH AND RETAINED IN AN INFILTRATION SYSTEM AT THE SOUTH END OF THE SITE. THE INCREASED RUNOFF VOLUME RESULTING FROM SITE DEVELOPMENT FOR THE 2 YEAR 24 HOUR STORM EVENT 65,381 CUBIC FEET, WHICH EXCEEDS THE CITY'S FF REQUIREMENT OF 2,504 CF, WITH CITY FF REQUIREMENTS ACCOMMODATED WITHIN THE INFILTRATION SYSTEM, THE CITY'S DETENTION REQUIREMENTS WILL BE A TWO-STAGE SYSTEM, ACCOMMODATING THE BANKFULL AND DETENTION VOLUME REQUIREMENTS (LESS THE VOLUME ACCOMMODATED WITHIN THE INFILTRATION SYSTEM). THE PROPOSED STORM SYSTEM IS ROUTED THROUGH A TREATMENT UNIT AT THE NORTH END OF THE SITE PRIOR TO ENTERING THE UNDERGROUND DETENTION PIPING AND ULTIMATELY DISCHARGING INTO THE CITY STORM SEWER SYSTEM.

COVER TYPE	AREA (AC)	C	CN
PAVING/ROOF	1.57	.85	98
OPEN SPACE (LAWN)	.43	.25	81
TOTAL	2.00	.80	90

PROPOSED RUNOFF VOLUME = 9,075 CFS
PROPOSED PEAK RUNOFF RATE = 0 CFS (BASED ON SOIL TESTING, THE FIRST FLUSH VOLUME WILL INFILTRATE WITH NO DISCHARGE)
(VOLUME AND RATE SHOWN FOR 2 YR, 24-HR STORM PER U-M CALCS PROVIDED ON SHEET C104BC)

3. CHANNEL PROTECTION
U-M NPDES PERMIT
REQUIRED: 5,581 CF OF RETENTION REQUIRED FOR FIRST FLUSH VOLUME (DIFFERENCE BETWEEN EXISTING AND PROPOSED RUNOFF VOLUMES NOTED ABOVE)
PROVIDED: 9,808 CF WILL BE PROVIDED WITHIN INFILTRATION BASIN AT THE SOUTH END OF THE SITE
CITY OF ANN ARBOR
REQUIRED:
300 YR DETENTION = 21,088 CF (SUBTRACT 9,808 CF OF RETENTION PROVIDED) = 11,280 CF
BANKFULL FLOOD VOLUME = 13,988 CF (SUBTRACT 9,808 CF OF RETENTION PROVIDED) = 4,180 CF
FIRST FLUSH (FF) VOLUME = 2,504 CF (SUBTRACT 9,808 CF OF RETENTION PROVIDED) = NO FURTHER REQUIREMENTS
PEAK RUNOFF RATE = 0.30 CFS (0.13 CFS/ACRE FOR 4 ACRES)
PROVIDED:
RETENTION = 9,808 CF WILL BE PROVIDED WITHIN INFILTRATION BASIN ON THE SOUTH END OF THE SITE
DETENTION = 13,930 CF WILL BE PROVIDED WITHIN DETENTION PIPING ON THE NORTH END OF THE SITE
4. MINIMUM TREATMENT VOLUME STANDARD - TSS REMOVAL
THERMAL/QUALITY TREATMENT IS DESIGNED TO REMOVE 80 PER CENT OF THIS TOTAL SUSPENDED SOLIDS (AS COMPARED TO UNCONTROLLED RUNOFF) FOR 90 PERCENT ANNUAL NON-EXCESSIVE STORMS.
REQUIRED: QUALITY TREATMENT FOR 2,504 CF OF WATER WITH 15 MINUTE TIME OF CONCENTRATION AND PEAK DISCHARGE OF 0.30 CFS (THIS DOES NOT INCLUDE THE SEPARATE U-M SYSTEM, WHICH PROVIDES TREATMENT AND INFILTRATION FOR 9,808 CF OF WATER).
PROVIDED: TWO STORMWATER TREATMENT UNITS ARE PROPOSED AND WILL BE OTHER CONTECH CDS UNIT OR AQUASHIELD BY AQUASHIELD (MODEL TO BE DETERMINED). THE UNITS WILL BE SIZED TO MEET THE REMOVAL AND PEAK DISCHARGE FLOW CRITERIA.
THE PROJECT WILL BE DESIGNED TO MEET THE U-M POST CONSTRUCTION NPDES PERMIT AND CITY STORM WATER REQUIREMENTS.

Storm water narrative

REFER TO SHEETS C104AC AND C104BC FOR
SYSTEM LAYOUT, DETAILS AND CALCULATIONS

THE UNIVERSITY OF MICHIGAN

Architecture, Engineering and Construction
University Architect's Office
326 E. Hoover Ave.
Mail Stop E
ANN ARBOR, MICHIGAN 48109-1002

NIAGARA
MURANO
ARCHITECTURE
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SDA Project No. - NP13033

issue: date:

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submitted to: HFES NO BFS: NO
AEC constr mgmt no. P00008399
building no. -

designed T. Sovel
drawn J. Ensley
coordination checked T. Sovel
checked T. Sovel approved T. Sovel
um design manager
location UM Athletics Ops Center
keywords

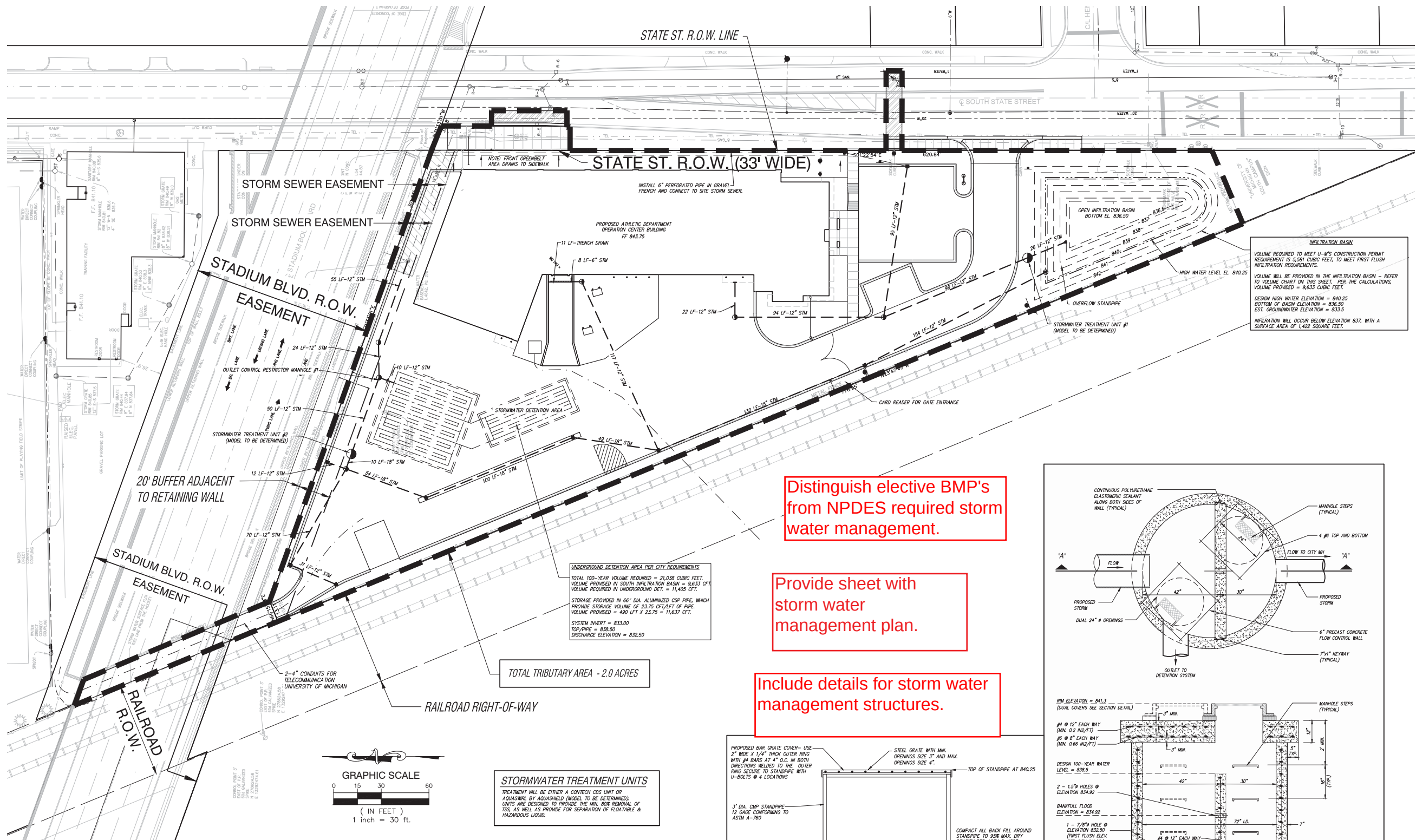
project:
UM Athletics
Department Operations
Center

sheet title:
Storm Water
Management Plan

project number: sheet number:

UM AEC :
P00008399

C104AC



Distinguish elective BMP's from NPDES required storm water management.

Provide sheet with storm water management plan.

Include details for storm water management structures.

