

Planning Commission  
Radnor Township  
Wayne, Delaware County, Pennsylvania

Monday  
December 1, 2014  
7:00 P.M.

Agenda

***Minutes of the November 3, 2014 meeting***

**2014-D-09 (Preliminary-Final)  
Villanova University 800 E. Lancaster Ave.**

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Demolish existing Butler Annex Building of 9,600 sq. ft. and construct a new structure in same footprint with an addition of approximately 5,000 sq. ft.

Public Participation

***PLO Discussion: Steve Gabriel of Rettew Associates***

Public Participaton

*Next regular scheduled Planning Commission Tuesday, January 6, 2015*

*Radnor Township Planning Commission  
Minutes of the Meeting of November 3, 2014  
301 Iven Ave., Wayne, Pa*

Chair Julia Hurle called the meeting to order at 7 PM with the following Commission members present: Kathy Bogosian, Steve Cooper, Skip Kunda, John Lord, Regina Majercak, Doug McCone, Elizabeth Springer, and Susan Stern. Attendance included: Roger Phillips, PE, Township Engineer; Amy Kaminski, PE, Township Traffic Engineer; John Rice, Esq., Stephen Norcini, PE, Director of Public Works and Township Planner Stephen Gabriel.

*Minutes of the October 6, 2014 meeting*

Doug McCone requested that the discussion between Susan Stern and John Snyder regarding the heights of the trees in the buffer zone be added to the minutes. Susan Stern moved to approve as amended by Doug McCone. Seconded by John Lord, the motion passed.

*2014-D-02 (Preliminary)  
BMR – 145 King of Prussia Road, LP (BioMed)*

**Demolition of existing office/research buildings and redevelopment of property with proposed office buildings and associated parking**

The applicant's plan is to transform the site into an economic generator like it used to be many years ago. King of Prussia Road will be widened to four (4) lanes in the area of the buildings to comply with the SALDO. The 27 acre site was built out to comply with the Township's PLO zoning requirements. 1,801 parking spaces are required and they are supplying 1,914 on both surface and sub-surface parking.

A traffic signal is proposed at the most southern intersection closest to Lancaster Avenue. There was concern about the required off-sets for buildings at the proposed lengths. The underground parking will be supplied with the next submission. A question was posed as to whether or not there were enough entrances and exits to the underground parking considering the number of vehicles that could be there at any given time with special emphasis on emergency vehicle access.

Roger Phillips and Steve Gabriel read through their comments as presented.

Amy Kaminski is not in agreement with the proposed signal location and would prefer to see the signal located at Raider Road. The 15% transit deduction the applicant took is too high. The traffic study was comparing what 'was' or what 'would have been' had the existing building been used at full capacity. Since the building usage has been seriously depleted in recent years, it was noted that a full capacity site will generate more traffic than what the public is presently used to.

The subject of sidewalks and pedestrian connectivity was a matter of subject from both Amy Kaminski and Steve Gabriel.

Public comment –

George Broseman on behalf of Brandywine Realty Trust questioned the building lengths vs off-sets and the number of buildings on the sites. The plans for the parking garages have not been submitted and questioned if the party walls that are proposed to separate the buildings also apply to the garage space.

Due to some un-answered questions, it is possible that this plan is not in fact a by-right plan. He also disagrees with the parking calculations.

Susan Stern questioned the total number of buildings on the site and the statement that underground parking structures are supposed to take the place of eliminating surface parking.

Julia Hurle feels the buildings are too large and not the correct structures for the gateway into Radnor. Traffic circulation looks too congested. She also feels there are too many issues with this plan and traffic report as submitted to consider this plan at this time.

Kathy Bogosian moved to recommend denial of the application based on the discussion tonight and the comments raised. Seconded by John Lord, the motion passed.

*2014-D-11 (Preliminary)  
115 Strafford Avenue, LLC*

**Consolidate two lots and convert an existing nonconforming commercial building back to a single family detached dwelling, construct two new single family detached dwellings and construct four single-family semidetached homes at 120/124 Bloomingdale Avenue, Wayne, Pa**

The applicant and this plan has already appeared before the HARB (Historical Architectural Review Board) and the BoC with their plans and proposals for the site. Original drawings showed nine residences. They've reduced it down to seven. An access route for emergency purposes has been shown as requested. Overflow parking has also been added per the positive comments. The plans were detailed and the stormwater management system that would be installed on the site will reduce run-off by 68%.

Susan Stern questioned the construction of a small residential community with numerous residences consisting of different types on one lot.

Roger Phillips and Steve Gabriel read through their comments as presented.

Public comment –

Greg Pritchard mentioned that 124 Bloomingdale Ave. is an historical issue and HARB will be considering this.

Eileen Ware of Bloomingdale Ave. lives across the street and feels the residential character should be retained. She endorses the overall project.

Drew Saunders from Newman Saunders Gallery supports the project. This development would bring the family structure back to the area. He also read several neighbor's letters supporting the development.

Ken Brown, Mrs. Ware's realtor, feels this development will entice more residential development to this area.

Baron Gemmer, the next door neighbor, stated that bringing residential back into the area is good. The heights of the buildings weren't shown. The parking spaces are not drawn to code. Steep slopes need to be indicated and removed out of the building area and shouldn't be disturbed. He feels this will remove much of the build out area out of the equation and feels the plans need to be redrawn to comply with code.

Kathy Bogosian likes the plan; however, she has issues with impervious cover numbers.  
Julia Hurlle likes the plan, but they're trying to put too much onto it. She also has questions on the steep slope issues. The loop road should continue through for safety sake as per staff's suggestion.  
John Rice stated that the plan has to go back to square one if there are steep slopes involved.  
Steve Cooper likes the layout of the plan but there are issues.  
Skip Kunda would like to remove one unit to solve impervious issue.

Susan Stern moved to recommend denial based on the zoning issues raised. Seconded by Skip Kunda, the motion passed.

***2014-S-05 (Final)***  
***Minor Subdivision***  
***Boy Scouts of America / Ardrossan Farms***  
***2.2 Acre Subdivision***

**Subdivide a 2.2 acre parcel for the Boy Scouts of America**

The paperwork for this application has not yet been officially submitted to the Township. The Boy Scouts are presently in discussion with the Township and the neighbors of Lawrence Lane regarding this site. Use of this site pre-dates any zoning. Deed restricting or use restricting of the site for the Scouts is their goal. They've been leasing the site since the 1960's, now they want to be the owners. The site will continue only as a Boy Scout use. The old school building is where they have their meetings, etc. The proposed 2.2 acre parcel will extend along Darby Paoli Road towards the steel barn pulling the scouting facilities away from Lawrence Lane.

John Rice explained that the Lawrence Lane neighbors are concerned with the parents dropping off and picking up the scouts on their street as well as parking of vehicles in the area. A new walking trail is proposed along the front of the Wheeler Tract. The Township will be going forward before the end of the year for their portion of the subdivision of the Ardrossan site. Any discussion regarding the Scouts area will be dealt with after this has occurred.

Steve Norcini distributed a plan to the members which showed several parking spaces for the Wheeler Tract for both the Boy Scouts and residents utilizing the trail, etc.

As discussion moves forward, a plan will be submitted for formal subdivision application.

***Nominating Committee***

John Lord and Susan Stern will be the Nominating Committee for the 2015 officers.

Respectfully submitted,

***Suzan Jones***



3020 Columbia Avenue, Lancaster, PA 17603 • Phone: (717) 394-3721  
E-mail: rettetw@rettetw.com • Web site: rettetw.com

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Engineers  
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Architects  
Environmental  
Consultants

November 12, 2014

Mr. Stephen F. Norcini, PE  
Public Works Director  
Radnor Township  
301 Iven Avenue  
Wayne, PA 19087-5297

RE: Villanova University  
Proposed West End Zone Building – 800 Lancaster Avenue  
Preliminary/Final Land Development Submission  
**Review No. 1**  
RETTEW Project No. 101442007

Dear Steve:

We have completed our review of the above referenced plan as prepared by Associated Engineering Consultants, Inc. Our review was of the following information received on October 31, 2014:

1. Thirteen (13) plan sheets dated October 29, 2014.

**Project Overview:**

<u>Applicant:</u>	Villanova University
<u>Requested Action/Use:</u>	Preliminary/Final Land Development Submission
<u>Zoning District:</u>	PI – Planned Institutional
<u>Location and Size:</u>	The plan proposes to demolish the existing 9,600 square foot Butler Annex Building and build a new structure in the exact same footprint as well as construct a 5,000 square foot addition on the east side of the existing Jake Nevin Fieldhouse, adjacent to the Villanova Stadium.
<u>Existing Use:</u>	Athletic facility (indoor gym)
<u>Proposed Use:</u>	New athletic performance center and facility, including, but not limited to, a varsity athlete weight room, academic support areas, and team locker rooms.
<u>Parcel #:</u>	36-04-02400-10



The plan proposes to demolish the existing 9,600 square foot Butler Annex Building and build a new structure in the exact same footprint as well as construct a 5,000 square foot addition on the east side of the existing Jake Nevin Fieldhouse, adjacent to the Villanova Stadium. The entire complex will contain a new athletic performance center and facility, including, but not limited to, a varsity athlete weight room, academic support areas, and team locker rooms.

We have performed a general compliance review of the Radnor Township Comprehensive Land Use Plan pertinent to this plan, as well as a general land use consistency review of this plan. We have the following comments for your consideration:

#### **TOWNSHIP COMPREHENSIVE PLAN CONSISTENCY REVIEW**

1. Section 8 – Institutional Use mentions that one of the Recommended Actions of the Comprehensive Plan update is to “...limit expansion of institutional uses to areas within the present limits of campus areas which are zoned as Institutional Districts.” (8-5) The proposed project will take place entirely within the PI – Planned Institutional Zoning District, and an existing building footprint. The proposed use is consistent with the immediate surrounding area which includes the Jake Nevin Fieldhouse, the Pavilion, and the Villanova Stadium.
2. The proposed project features an underground detention basin for roof drain collection. This is consistent with the stormwater policy as laid out in Section 10 – Existing Land Use and Land Use Plan of the Radnor Township Comprehensive Plan Update. The plan states the intent to design Business District elements “with subsurface stormwater infiltration systems, ‘feeding’ the new landscaping and overflowing into the groundwater.” (10-22).

#### **GENERAL PLANNING REVIEW**

1. The applicant is requesting a waiver from § 255-20.B(5) of the SALDO requiring transportation impact studies for institutional developments. The applicant states that neither the student nor staff populations will increase as a result of this project. Upon review, the plan does not indicate an increase in parking spaces or change in existing traffic patterns, and the new building is intended to serve existing students, faculty, and staff.
2. Existing sheds and a trailer that currently sit in front of the Lancaster Avenue side of the existing Butler Annex are proposed to be removed. This will contribute to an improved streetscape along Lancaster Avenue in the project area.

Should you have any questions or require any additional information, please do not hesitate to contact us at any time.

Sincerely,



Stephen R. Gabriel, PP  
Township Planning Consultant

Page 3 of 3

Radnor Township

November 12, 2014

RETTEW Project No. 101442007

Preliminary/Final Land Development Submission for Proposed West End Zone Building – 800 Lancaster Avenue

copy: **Suzan Jones** ([sjones@radnor.org](mailto:sjones@radnor.org))  
Jennifer DeStefano ([jdestefano@radnor.org](mailto:jdestefano@radnor.org))  
Roger Phillips, PE ([rphillips@gfnet.com](mailto:rphillips@gfnet.com))  
Amy Kaminski, PE ([akaminski@gilmore-assoc.com](mailto:akaminski@gilmore-assoc.com))

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# Gannett Fleming

*Excellence Delivered **As Promised***

**Date:** November 20, 2014

**To:** Radnor Township Planning Commission

**From:** Roger Phillips, PE

**cc:** Stephen Norcini, P.E. – Director of Public Works  
Kevin W. Kochanski, RLA, CZO – Director of Community Development  
Peter Nelson, Esq. – Grim, Biehn, and Thatcher  
Amy B. Kaminski, P.E. – Gilmore & Associates, Inc.  
Suzan Jones – Radnor Township Engineering Department  
William Miller – Radnor Township Codes Official  
Ray Daly – Radnor Township Codes Official  
Steve Gabriel - Rettew

**RE:** Villanova University – Proposed West End Zone Building  
Villanova University – Applicant

Date Accepted: November 3, 2014

90 Day Review: February 1, 2015

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Gannett Fleming, Inc. has completed a review of the Villanova University – Proposed West End Zone Building Preliminary Plans for compliance with the Radnor Township Code. This Plan was reviewed for conformance with Zoning, Subdivision and Land Development, Stormwater Management, and other applicable codes of the Township of Radnor.

The applicant is proposing to change the existing building footprint of the Butler Annex. The existing building area of 10,773 SF is to be removed and replaced with a new building area of 16,072 SF. The total impervious coverage will increase by 5,339 SF. This project is located in the PI district of the Township.

The applicant has indicated that the following waivers will be requested from the Subdivision and Land Development Code:

- §255-20.B(5)– The applicant requests that the requirement to provide a transportation impact study be waived since neither the student or staff populations will increase as a result of this project.

It appears that the applicant is requesting consideration as a Preliminary/Final submission. Therefore, a waiver of §255-12 and §255-14 must be requested for consideration of approval in a single submission.



Plans Prepared By: Associated Engineering Consultants Incorporated

Dated: 10/29/2014

I. Zoning

1. §280-69.D – No building or permanent structure, other than a guardhouse or facility which provides controlled access to a property, shall be located less than 120 feet from the street right-of-way line. The existing building setback is 99 feet and the proposed building setback is 99 feet. This is an existing nonconformity that the applicant intends to continue.
2. §280-103 – The applicant shall provide confirmation that sufficient parking exists to provide for the net increase of building area in conformance with this section.

II. Subdivision and Land Development

1. §255-43.1.B(2) – For all nonresidential subdivision and/or land developments, the amount of land to be dedicated for park and recreation area shall be 2,500 square feet per 4,000 square feet of building area.
2. §255-43.1.E(2) – The fee for nonresidential subdivisions or land developments shall be \$3,307 per 4,000 square feet of building area. Since the additional square footage of building area is 5,339 square feet, the fee is lieu of would be \$4,414.

III. Stormwater

1. The Applicant must demonstrate with calculations and/or supporting documentation that the existing stormwater management facilities (Basin "A" and Basin "B") are capable of managing the area of redevelopment occurring within those drainage areas with respect to the rate control and volume requirements of the current Ordinance. Only the area of redevelopment is subject to the current Ordinance and not the entire drainage area.
2. The Drainage and Impervious Area Ratios to Infiltration Area requirements set forth from PA BMP Manual (Dec. 2006) is not met. Maximum ratio of drainage area to infiltration area is 8:1 and maximum ratio of impervious area to infiltration area is 5:1.
3. Infiltration tests have not been completed or submitted at this time. Percolation tests must be provided to indicate that the stormwater facility will be able to drain within 96 hours. Final design and sizing of the stormwater facility should be based on the results of the percolation tests.

***Gannett Fleming***

4. A general note shall be added to the plans indicating that a grading plan and erosion sediment and control plans will be **submitted and approved** prior to issuing any building permits. Any revisions to the size or location of the individual structures or other features will be addressed at that time, and a final approval of the stormwater management plan will be required as part of the Grading Permit process.

IV. General

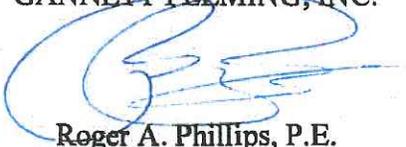
1. The applicant is proposing to remove the existing sanitary sewer and replace it under the proposed building. Details must be provided on how the sanitary sewer will be constructed under the proposed building. A profile view of the proposed sanitary sewer must also be provided.
2. The proposed sanitary sewer appears to be located 4 feet from the proposed gas line. This must be revised to provide 10 feet of horizontal separation.

Should the Planning Commission consider recommending approval of this project, we suggest that the recommendation be conditioned on requiring the applicant to satisfactorily address the above comments.

If you have any questions or require any additional information, please contact me.

Very truly yours,

GANNETT FLEMING, INC.



Roger A. Phillips, P.E.  
Senior Project Manager



**GILMORE & ASSOCIATES, INC.**  
ENGINEERING & CONSULTING SERVICES

**MEMORANDUM**

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**Date:** November 12, 2014

**To:** Steve Norcini, P.E.

**From:** Amy Kaminski, P.E., PTOE.  
Department Manager of Transportation  
Gilmore & Associates, Inc.

**cc:** Roger Phillips, P.E., Gannett Fleming, Inc.  
Steve Gabriel, P.P, Rettew  
Damon Drummond, P.E., PTOE

**Reference:** VU Butler Annex- 800 Lancaster Avenue  
Radnor Township, Delaware County  
Preliminary/Final Land Development Plan Review –Transportation

**Project No.:** 14-08006

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Pursuant to your request, Gilmore & Associates, Inc. has reviewed the above-referenced project for Preliminary/Final Land Development Plan Approval and offers the following comments for consideration:

I. SUBMISSION

- A. Villanova University Proposed West End Zone Building, Preliminary/Final Land Development Plan, 13 sheets, dated October 29, 2014; prepared for Villanova University, prepared by Associated Engineering Consultants Inc.
- B. Villanova University West End Zone Building Stormwater Management Report, dated October 29, 2014, prepared by Associated Engineering Consultants Inc., prepared for Villanova University

II. PROJECT DESCRIPTION

The applicant intends to demolish the existing 9,600 s.f. Butler Annex Building and construct an addition on the eastside of the existing Jake Nevin Fieldhouse, adjacent to the Villanova Stadium. The proposed redevelopment will be approximately 5,000 s.f. and will be utilized as a varsity athlete weight room, team locker rooms, academic support areas, and space for coaches and staff to meet with athletes.

III. WAIVERS REQUESTED

§255.20.B(5)(c)[1][e]: The applicant is requesting a waiver from providing a transportation impact study required of all institutional developments; there is no net increase in student or

BUILDING ON A FOUNDATION OF EXCELLENCE

65 E. Butler Avenue | Suite 100 | New Britain, PA 18901  
Phone: 215-345-4330 | Fax: 215-345-8606

staff population as a result of this project.

IV. REVIEW COMMENTS

We have no comments regarding this project.

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# pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHEAST REGIONAL OFFICE

October 23, 2014

Villanova University  
800 Lancaster Avenue  
Villanova, PA 19085

Re: Planning Waiver  
West End Zone Building Addition  
DEP Code No. 1-09917-619-X  
Buckingham Township  
Delaware County

Ladies and Gentlemen:

This letter is in reference to your application for Sewage Facilities Planning Modules for the expansion of the locker room and training facility at the West End Zone athletic building. The project is located on the northeast corner of the intersection of Lancaster and North Ithan Avenues in Radnor Township, Delaware County.

This project does not meet the definition of a subdivision under the Pennsylvania Sewage Facilities Act. Therefore, no planning modules are required to be submitted to the Department of Environmental Protection (DEP).

If you have any questions or concerns, please contact Ms. Stefanie Rittenhouse at 484.250.5186.

Sincerely,

Keith Dudley, P.E.  
Environmental Engineer Manager  
Municipal Planning and Finance Section  
Clean Water

cc: Delaware County Planning Department  
Delaware County Conservation District  
Mr. Zienkowski - Radnor Township  
RHM  
Mr. Fulton - Springfield Township  
Upper Darby Township  
DCJA  
DELCORA  
Mr. Ponert - City of Philadelphia Water Department  
Planning Section  
Re 30 (GJE14CLW)296-5



**ELAINE P. SCHAEFER**  
*President*

**JAMES C. HIGGINS**  
*Vice-President*

**WILLIAM A. SPINGLER**

**DONALD E. CURLEY**

**JOHN FISHER**

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**RADNOR TOWNSHIP**  
301 IVEN AVENUE  
WAYNE, PENNSYLVANIA 19087-5297

Phone (610) 688-5600  
Fax (610) 971-0450  
www.radnor.com

**ROBERT A. ZIENKOWSKI**  
*Township Manager*  
*Township Secretary*

**JOHN B. RICE, ESQ.**  
*Solicitor*

**JOHN E. OSBORNE**  
*Treasurer*

November 4, 2014

Steven Hildebrand  
Villanova University  
800 Lancaster Avenue  
Villanova, PA 19085

**RE: Land Development Application #2014-D-09 Preliminary/Final Plan  
Submission  
West End Zone Building – Villanova University**

Dear Mr. Hildebrand:

In accordance with Section 255-18 of the Subdivision of Land Code of the Township of Radnor, we have reviewed your preliminary/final plan application to application to demolish and construct the West End Zone Building at the abovementioned location, and have found it complete. Therefore, I have accepted the application for preliminary plan for review by the Township Staff, Shade Tree Commission, Planning Commission, and Board of Commissioners.

These plans are available for public viewing in the Engineering Department. These plans will be reviewed by the Planning Commission at their meeting on **Monday, December 1, 2014**. Subsequent to the Planning Commission meeting, your plan will be reviewed by the Board of Commissioners. You or your representative should plan to attend all scheduled meetings.

If the Planning Commission takes action, your plan will then be reviewed by the Board of Commissioners at a future meeting. These dates will be provided to you once it is placed on the agenda.

Sincerely,

**Roger Phillips, P.E.**  
Township Engineer

Cc: Associated Engineering Consultants, Inc.



Associated Consultants Incorporated

485 Devon Park Drive Suite 113 Wayne Pennsylvania 19087 tel 610 688 3980 fax 610 688 4566

## TRANSMITTAL

**To:** Sue Jones **From:** Brenden Dorley  
**Company:** Radnor Township **Date:** 10/30/14  
**Address:** 301 Iven Avenue **Project Name:** VU – West End Zone Bldg  
**City, State, Zip:** Wayne, PA 19087 **Project Number:** 0300.014  
**Phone:** 610-688-5600 **Re:** Prelim./Final Plan Submission

- For Your Review & Comment  For Your Information & Record  
 For Your Use  As Requested

If enclosures are not as noted, please notify us at once.

Quantity	Date	Description
25	10/29/14	Complete Sets of Site Plans (C0.0, C0.1, C0.2, C1.1, C1.2, C1.3, C2.1, C2.2, C3.0, C3.1, C3.2, C3.3, C3.4)
15	10/29/14	Complete Sets of Site Plans (11x17)
1		Prelim./Final Plan Application
1		\$1,550 Application Fee
1		\$10,000 Escrow Fee
1		DCPC Application
1		\$1,375 DCPC Application Fee
2	10/29/14	Stormwater Management Calculations
1		CD with PDF's of all submission items

Comments:

cc: Jim Matthews - VU

RADNOR TOWNSHIP  
301 IVEN AVE  
WAYNE PA 19087  
P) 610 688-5600  
F) 610 971-0450  
WWW.RADNOR.COM

SUBDIVISION LAND DEVELOPMENT

Location of Property 800 Lancaster Avenue, Villanova

Zoning District PI Application No. \_\_\_\_\_  
(Twp. Use)

Fee \$1,550 Ward No. 7-1 Is property in HARB District No

Applicant: (Choose one) Owner \_\_\_\_\_ Equitable Owner X

Name Villanova University

Address 800 Lancaster Avenue, Villanova, PA 19085

Telephone (610) 519-4589 Fax (610) 519-6903 Cell (610) 348-5349

Email steven.hildebrand@villanova.edu

Designer: (Choose one) Engineer X Surveyor \_\_\_\_\_

Name Associated Engineering Consultants, Inc.

Address 485 Devon Park Drive, Suite 113, Wayne, PA 19087

Telephone (610) 688-3980 Fax (610) 688-4566

Email kmcmamuels@aeceng.net

Area of property 225 acres Area of disturbance 0.7 acres

Number of proposed buildings 1 Proposed use of property Institutional

Number of proposed lots 0

Plan Status: Sketch Plan \_\_\_\_\_ Preliminary X Final X Revised \_\_\_\_\_  
Are there any requirements of Chapter 255 (SALDO) that are not in compliance with?

Are there any requirements of Chapter 255 (SALDO) not being adhered to?  
Explain the reason for noncompliance.

No.

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Are there any infringements of Chapter 280 (Zoning), and if so what and why?

No.

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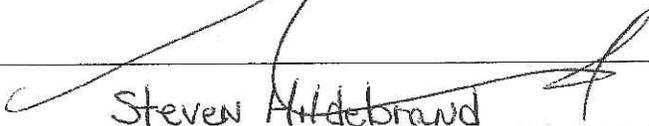
Individual/Corporation/Partnership Name  
Villanova University

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I do hereby certify that I am the owner, equitable owner or authorized representative of the property which is the subject of this application.

Signature

Print Name

  
Steven Hildebrand  
Director of Engineering Construction

By filing this application, you are hereby granting permission to Township officials to visit the site for review purposes.

NOTE: All requirements of Chapter 255 (Subdivision of Lane) of the Code of the Township of Radnor must be complied with whether or not indicated in this application.

**DELAWARE COUNTY PLANNING COMMISSION**

**APPLICATION FOR ACT 247 REVIEW**

**Incomplete applications will be returned and will not be considered "received" until all required information is provided.**

Please type or print legibly

**DEVELOPER/APPLICANT**

Name Villanova University E-mail steven.hildebrand@villanova.edu

Address 800 Lancaster Avenue, Villanova, PA 19085 Phone (610) 519-4589

Name of Development West End Zone Building

Municipality Radnor Township

**ARCHITECT, ENGINEER, OR SURVEYOR**

Name of Firm Associated Engineering Consultants, Inc. Phone (610) 688-3980

Address 485 Devon Park Drive, Suite 113, Wayne, PA 19087

Contact Karen McManuels E-mail kmcmanuels@aeceng.net

Type of Review	Plan Status	Utilities		Environmental Characteristics
		Existing	Proposed	
<input type="checkbox"/> Zoning Change	<input type="checkbox"/> Sketch	<input checked="" type="checkbox"/> Public Sewerage	<input checked="" type="checkbox"/> Public Sewerage	
<input checked="" type="checkbox"/> Land Development	<input checked="" type="checkbox"/> Preliminary	<input type="checkbox"/> Private Sewerage	<input type="checkbox"/> Private Sewerage	<input type="checkbox"/> Wetlands
<input type="checkbox"/> Subdivision	<input checked="" type="checkbox"/> Final	<input checked="" type="checkbox"/> Public Water	<input checked="" type="checkbox"/> Public Water	<input type="checkbox"/> Floodplain
<input type="checkbox"/> PRD	<input type="checkbox"/> Tentative	<input type="checkbox"/> Private Water	<input type="checkbox"/> Private Water	<input type="checkbox"/> Steep Slopes

Zoning District PI - Planned Institutional

Tax Map # 36 / 24 / 033

Tax Folio # 36 / 04 / 02400 / 10

**STATEMENT OF INTENT**

WRITING "SEE ATTACHED PLAN" IS NOT ACCEPTABLE.

**Existing and/or Proposed Use of Site/Buildings:**

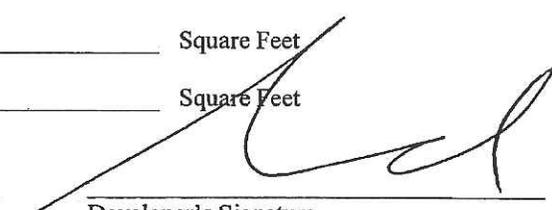
The proposed West End Zone Building will expand the facilities for Villanova University's athletics programs.

Neither the student nor staff populations will increase as a result of this project.

Total Site Area	225	Acres
Size of All Existing Buildings	1,274,565	Square Feet
Size of All Proposed Buildings	16,072	Square Feet
Size of Buildings to be Demolished	10,733	Square Feet

Steven Hildebrand

Print Developer's Name



Developer's Signature

**MUNICIPAL SECTION**

ALL APPLICATIONS AND THEIR CONTENT ARE A MUNICIPAL RESPONSIBILITY.

Local Planning Commission Regular Meeting 12/1/14

Local Governing Body Regular Meeting

Municipal request for DCPD staff comments prior to DCPC meeting, to meet municipal meeting date:

Actual Date Needed

IMPORTANT: If previously submitted, show assigned DCPD File # 34-1522-77-83-90-92-93-94-96-97-98-99-00-01-02-06

Township Engineer Roger Phillips

Print Name and Title of Designated Municipal Official

Phone Number



Official's Signature

11-4-14  
Date

**FOR DCPD USE ONLY**

Review Fee: Check # Amount \$ Date Received

Applications with original signatures must be submitted to DCPD.

# VILLANOVA UNIVERSITY

## PROPOSED WEST END ZONE BUILDING

### PRELIM./FINAL LAND DEVELOPMENT SUBMISSION

800 LANCASTER AVENUE  
 VILLANOVA, PENNSYLVANIA 19085  
 RADNOR TOWNSHIP, DELAWARE COUNTY

Associated Engineering Consultants Incorporated  
 488 Devon Park Drive Suite 113 Wayne Pennsylvania 19387 Tel: 610 668 3880 Fax: 610 668 4566  
 www.aecinc.com

Civil | Structural | HVAC | Plumbing | Electrical | Fire Protection



PROJECT

VILLANOVA UNIVERSITY  
 PROPOSED WEST END ZONE BUILDING  
 800 EAST LANCASTER AVENUE  
 VILLANOVA, PENNSYLVANIA 19085  
 RADNOR TOWNSHIP, DELAWARE COUNTY

DATE: 10/29/14 REVISION: PRELIM./FINAL APPROVAL

SHEET TITLE

COVER SHEET

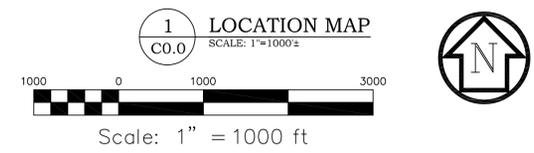
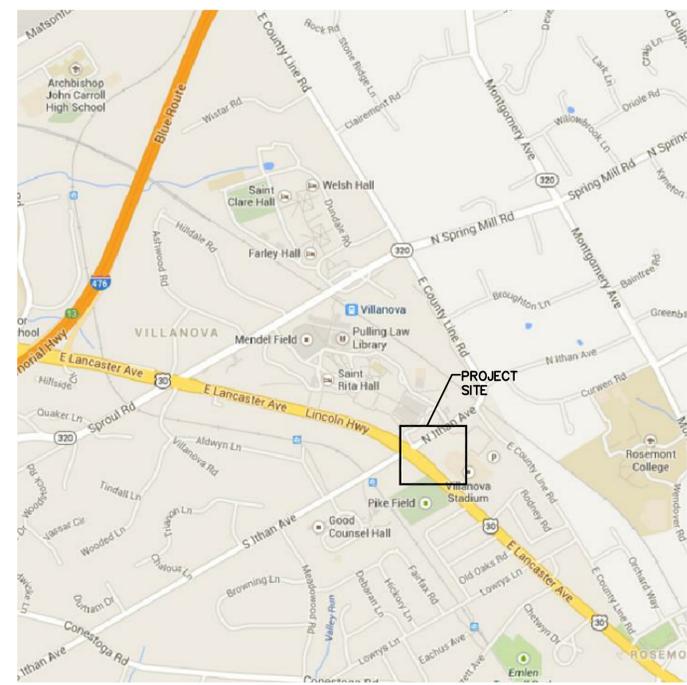
DRAWN BY: BJD  
 CHECKED BY: KRM

SHEET NO.

C0.0

SHEET NO. 1 OF 13

PROJECT NO. 0300.014  
 DATE: OCTOBER 29, 2014

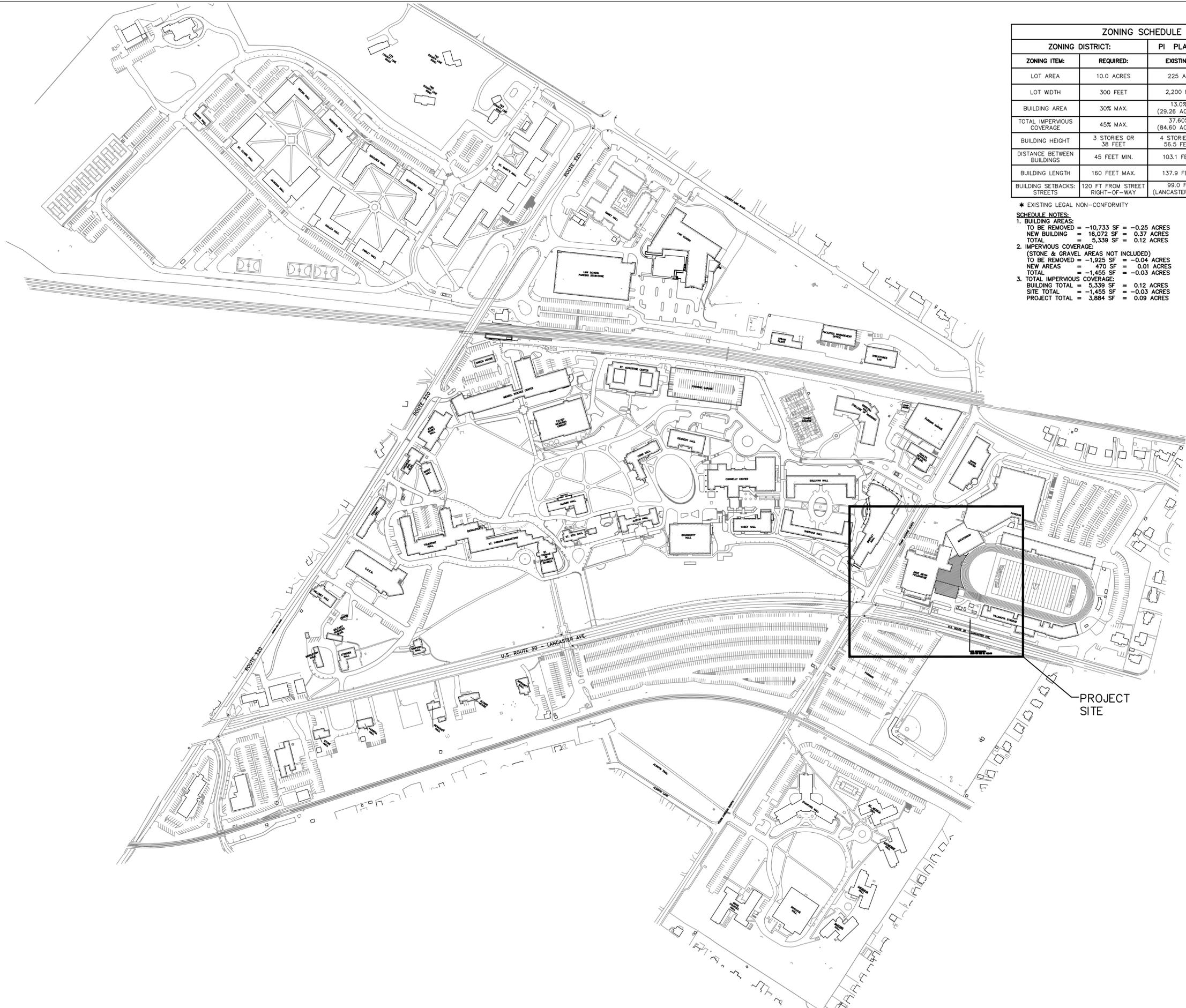


CIVIL DRAWING SCHEDULE		DATE	ISSUE
DRAWING NUMBER	DRAWING TITLE	10/29/14	PRELIM./FINAL APPROVAL
C0.0	COVER SHEET		
C0.1	OVERALL CAMPUS PLAN		
C0.2	ATHLETICS CAMPUS PLAN		
C1.1	EXISTING CONDITIONS & DEMOLITION PLAN		
C1.2	EXISTING UTILITIES DEMOLITION PLAN		
C1.3	SOIL EROSION CONTROL PLAN		
C2.1	SITE DEVELOPMENT PLAN		
C2.2	SITE UTILITIES PLAN		
C3.0	SOIL EROSION CONTROL NOTES AND GENERAL NOTES		
C3.1	SOIL EROSION CONTROL SECTIONS AND DETAILS		
C3.2	SITE SECTIONS AND DETAILS		
C3.3	STORMWATER SECTIONS AND DETAILS		
C3.4	UTILITY SECTIONS AND DETAILS		

**WAIVER REQUESTED:**  
 THE FOLLOWING WAIVER IS BEING REQUESTED BY THE APPLICANT:  
 1. FROM SECTION 255-20.B(5) OF THE SALDO CODE REGARDING TRANSPORTATION IMPACT STUDIES. THE APPLICANT REQUESTS THAT THE REQUIREMENT TO PROVIDE A TRANSPORTATION IMPACT STUDY BE WAIVED SINCE NEITHER THE STUDENT NOR STAFF POPULATIONS WILL INCREASE AS A RESULT OF THIS PROJECT.

- PROPERTY NOTES:**
- SITE OWNER: VILLANOVA UNIVERSITY
  - SITE ADDRESS: 800 LANCASTER AVENUE VILLANOVA, PA 19085
  - CONTACT INFORMATION: JIM MATTHEWS, PROJECT MANAGER (610) 519-4425
  - SITE TAX MAP INFORMATION: PORTION OF TAX MAP #36-24-033 PORTION OF PARCEL #36-04-02400-10

Commonwealth of Pennsylvania SS  
 County of \_\_\_\_\_  
 On this, the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me, the undersigned office, personally appeared \_\_\_\_\_ who being duly sworn according to law, deposes and says that he is the owner or equitable owner of the property shown on this plan, that the land development plan thereof was made at his direction and that he acknowledges the same to be his act and plan and desires the same to be recorded as such according to law.  
 Witness my hand and seal the day and date above written.  
 \_\_\_\_\_  
 (Signature of Individual)  
 \_\_\_\_\_  
 Notary Public or other Officer  
 My Commission expires \_\_\_\_\_



ZONING SCHEDULE			
ZONING DISTRICT:		PI PLANNED INSTITUTIONAL	
ZONING ITEM:	REQUIRED:	EXISTING:	PROPOSED:
LOT AREA	10.0 ACRES	225 AC	NO CHANGE
LOT WIDTH	300 FEET	2,200 FT	NO CHANGE
BUILDING AREA	30% MAX.	13.0% (29.26 ACRES)	13.06% (29.38 ACRES) [1]
TOTAL IMPERVIOUS COVERAGE	45% MAX.	37.60% (84.60 ACRES)	37.64% (84.69 ACRES) [3]
BUILDING HEIGHT	3 STORIES OR 38 FEET	4 STORIES / 56.5 FEET	3 STORIES / 38 FEET MAX.
DISTANCE BETWEEN BUILDINGS	45 FEET MIN.	103.1 FEET	NO CHANGE
BUILDING LENGTH	160 FEET MAX.	137.9 FEET	100 FEET MAX.
BUILDING SETBACKS: STREETS	120 FT FROM STREET RIGHT-OF-WAY	99.0 FT * (LANCASTER AVE)	NO CHANGE

\* EXISTING LEGAL NON-CONFORMITY

**SCHEDULE NOTES:**

1. BUILDING AREAS:  
 TO BE REMOVED = -10,733 SF = -0.25 ACRES  
 NEW BUILDING = 16,072 SF = 0.37 ACRES  
 TOTAL = 5,339 SF = 0.12 ACRES

2. IMPERVIOUS COVERAGE:  
 (STONE & GRAVEL AREAS NOT INCLUDED)  
 TO BE REMOVED = -1,925 SF = -0.04 ACRES  
 NEW AREAS = 470 SF = 0.01 ACRES  
 TOTAL = -1,455 SF = -0.03 ACRES

3. TOTAL IMPERVIOUS COVERAGE:  
 BUILDING TOTAL = 5,339 SF = 0.12 ACRES  
 SITE TOTAL = -1,455 SF = -0.03 ACRES  
 PROJECT TOTAL = 3,884 SF = 0.09 ACRES

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PROJECT

**VILLANOVA UNIVERSITY**  
 PROPOSED WEST END ZONE BUILDING  
 800 EAST LANCASTER AVENUE  
 VILLANOVA, PENNSYLVANIA 19085  
 RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

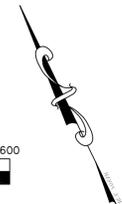
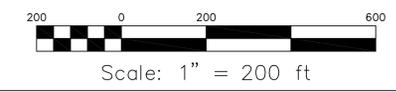
SHEET TITLE  
**OVERALL CAMPUS PLAN**

DRAWN BY: BJD  
 CHECKED BY: KRM

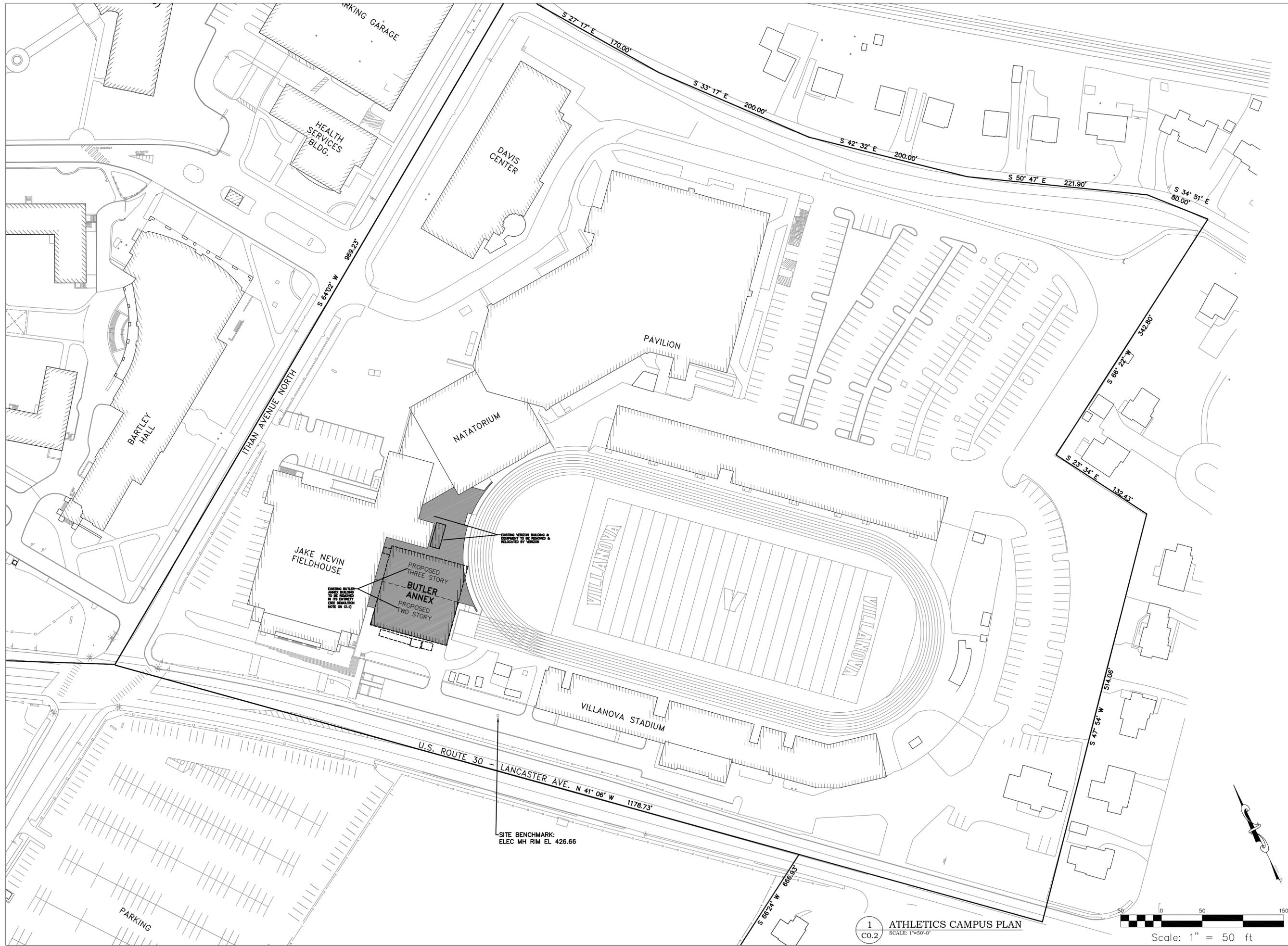
SHEET NO.  
**C0.1**

SHEET NO. 2 OF 13  
 PROJECT NO. 0300.014  
 DATE: OCTOBER 29, 2014

**1 OVERALL CAMPUS PLAN**  
 SCALE: 1"=200'-0"



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SEAL

DAVID C. BRANDT  
 REGISTERED PROFESSIONAL ENGINEER  
 27452-E  
 PENNSYLVANIA

PROJECT

**VILLANOVA UNIVERSITY**  
 PROPOSED WEST END ZONE BUILDING  
 800 EAST LANCASTER AVENUE  
 VILLANOVA, PENNSYLVANIA 19085  
 RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE

**ATHLETICS CAMPUS PLAN**

DRAWN BY: BJD  
 CHECKED BY: KRM

SHEET NO.

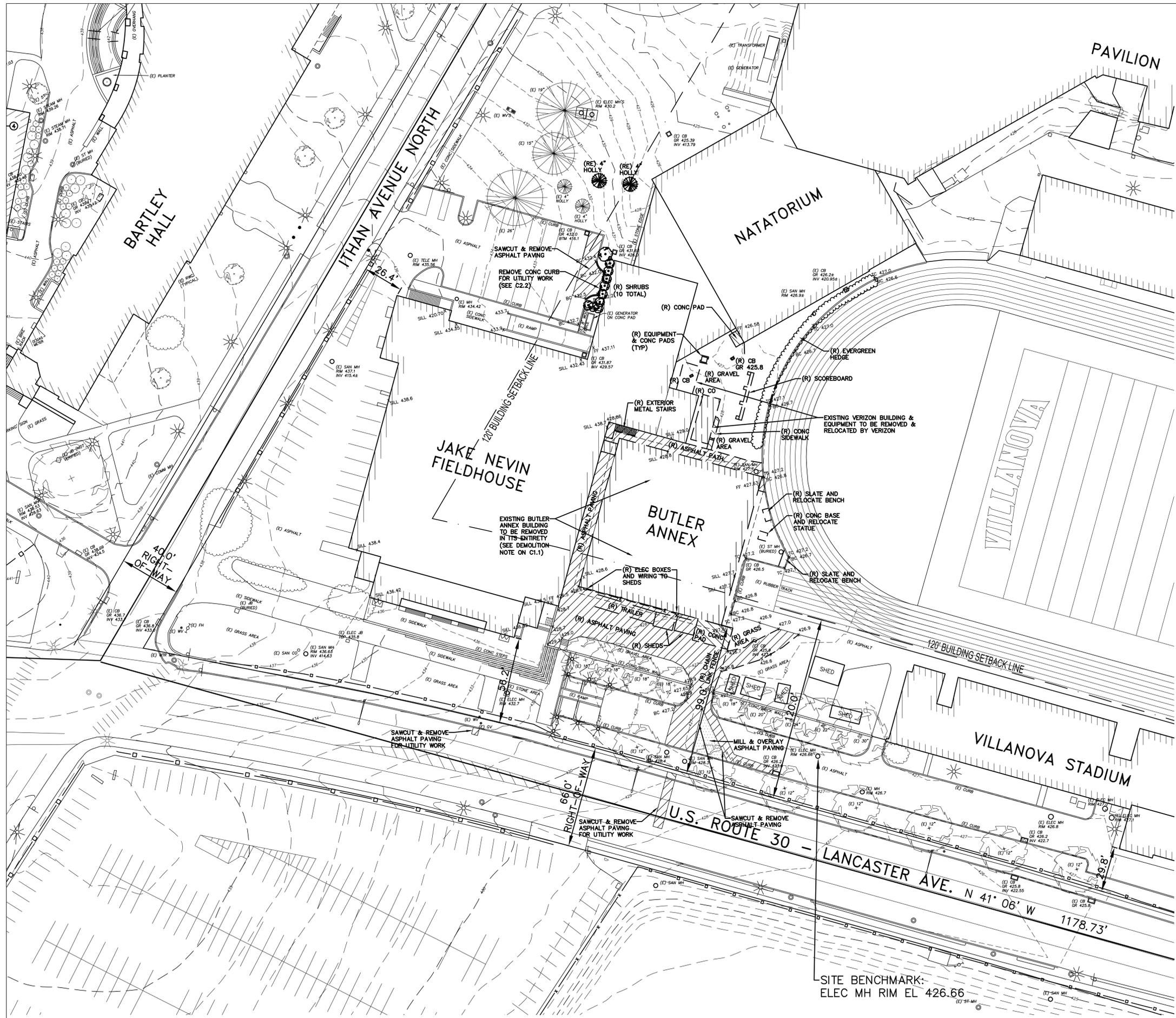
**C0.2**

SHEET NO. 3 OF 13

PROJECT NO. 0300.014  
 DATE: OCTOBER 29, 2014

**1** ATHLETICS CAMPUS PLAN  
 SCALE: 1"=50'-0"

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**LEGEND**

EXISTING TO REMAIN	EXISTING TO BE DEMOLISHED
GRADE LINE	-142-
SPOT ELEVATION	x 142.0
CATCH BASIN & INLET MANHOLE	○
CLEAN OUT OR VALVE	○
UTILITY POLE	○
LIGHT POLES: -GOTHIC	✱
-SHOEBOX	□
FIRE HYDRANT	⊕
SIGNAGE	⊕
BUILDING FOOTPRINT	▨
ASPHALT PAVING & CURBING	▨
CONCRETE	▨
SCARIFY	▨
TREES AND SHRUBS	○

**ABBREVIATIONS**

(E)	EXISTING TO REMAIN
(R)	EXISTING TO BE RELOCATED
(R)	REMOVE EXISTING
(RE)	RELOCATE EXISTING
(N)	NEW
(NL)	NEW LOCATION OF EXISTING

**TREE AND SHRUB REMOVAL NOTES:**

- TWO 4" HOLLY TREES LOCATED ALONG THE ITHACA AVENUE SIDE OF THE BUILDING ARE PROPOSED TO BE REMOVED AND REPLANTED.
- TEN SHRUBS ALONG THE ITHACA AVENUE SIDE OF THE BUILDING AND AN EVERGREEN HEDGE ALONG THE TRACK ARE PROPOSED TO BE REMOVED.
- NO TREES GREATER THAN 6" CALIPER ARE PROPOSED TO BE REMOVED FOR THIS PROJECT.

**SEAL**

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 RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

**SHEET TITLE**  
**EXISTING CONDITIONS & DEMOLITION PLAN**

DRAWN BY: BJD  
 CHECKED BY: KRM

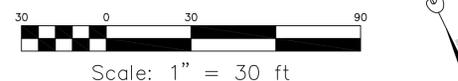
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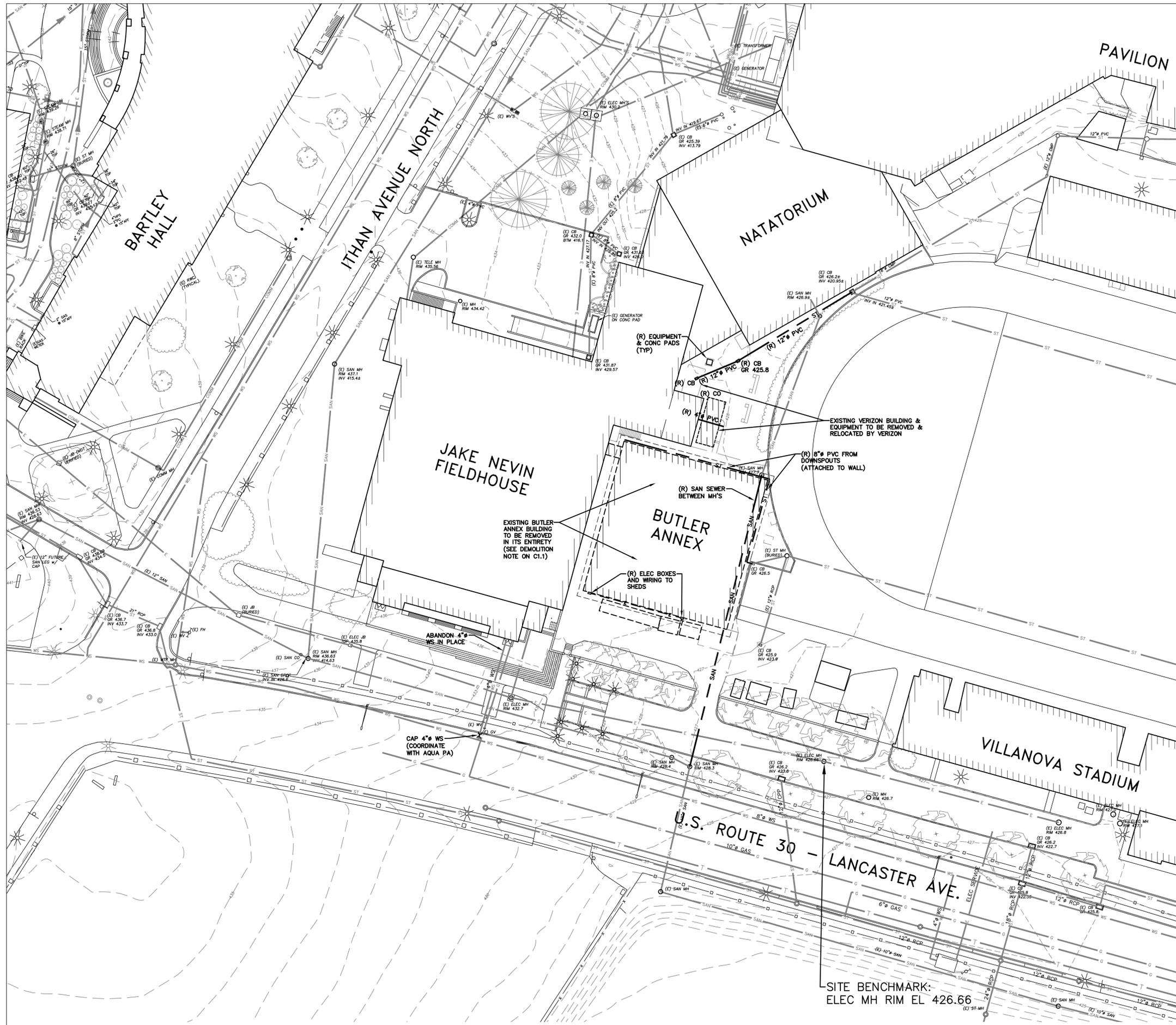
**C1.1**

SHEET NO. 4 OF 13

PROJECT NO. 0300.014  
 DATE: OCTOBER 29, 2014

**1**  
**C1.1**  
**EXISTING CONDITIONS & DEMOLITION PLAN**  
 SCALE: 1"=30'-0"





**LEGEND**

	EXISTING TO REMAIN	EXISTING TO BE DEMOLISHED
STORM SEWER	ST	ST
SANITARY SEWER	SAN	SAN
WATER SERVICE	WS	WS
STEAM	S	S
COMMUNICATIONS	COMM	COMM
ELECTRIC SERVICE	E	E
GAS SERVICE	G	G
CHILLED WATER SUPPLY	CHWS	CHWS
CHILLED WATER RETURN	CHWR	CHWR
CATCH BASIN & INLET MANHOLE	□	□
CLEAN OUT OR VALVE	○	○
UTILITY POLE	○	○
LIGHT POLE	⊗	⊗
FIRE HYDRANT	⊗	⊗

**ABBREVIATIONS**

(E)	EXISTING TO REMAIN
(ER)	EXISTING TO BE RELOCATED
(R)	REMOVE EXISTING
(RE)	RELOCATE EXISTING
(N)	NEW
(NL)	NEW LOCATION OF EXISTING



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PROJECT



PROJECT

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RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE

**EXISTING UTILITIES DEMOLITION PLAN**

DRAWN BY: BJD  
CHECKED BY: KRM

SHEET NO.

**C1.2**

SHEET NO. 5 OF 13

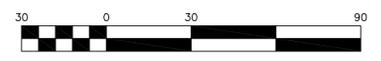
PROJECT NO. 0300.014  
DATE: OCTOBER 29, 2014

**NOTE:**  
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

Serial Number: 20141320513

**CALL BEFORE YOU DIG!**  
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE--STOP CALL Pennsylvania One Call System, Inc. 1-800-242-1776

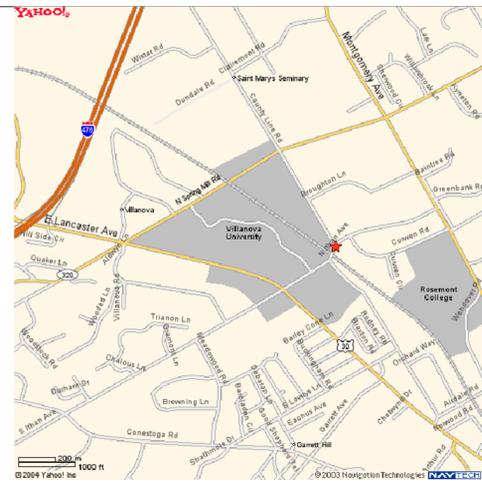
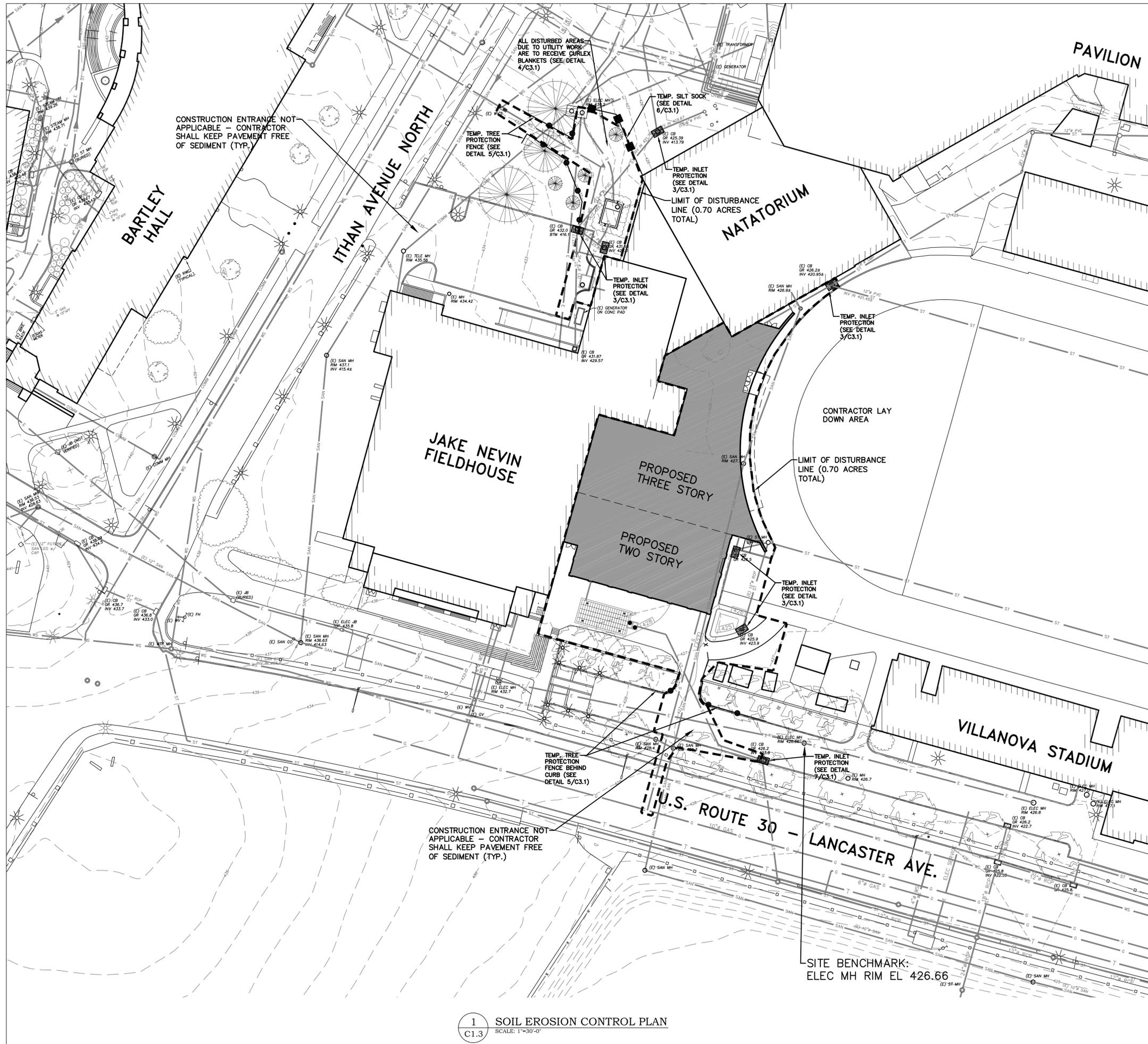
**NOTE:**  
AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED SHALL NOTIFY THE PA ONE CALL SYSTEM INC. AT 1-800-242-1776 FOR BURIED UTILITIES LOCATIONS.



Scale: 1" = 30 ft



**1**  
EXISTING UTILITIES DEMOLITION PLAN  
SCALE: 1"=30'-0"



**A**  
C1.3 **LOCATION MAP**  
SCALE: 1" = 1500'

**SOIL DATA:**  
 Mo - MADE LAND, SCHIST AND GNEISS MATERIALS:  
 SLOPE RANGE: 0 TO 8%  
 DEPTH TO BEDROCK: 40" - 72"  
 DEPTH TO SEASONAL WATER TABLE: 60"  
 PERMEABILITY: MODERATE  
 HYDROLOGIC SOIL GROUP: C

**SOIL LIMITATIONS:**  
**MADE LAND:**  
 SOMEWHAT LIMITED FOR COMMERCIAL BUILDINGS  
 REASONS: SHRINK-SWELL

SOMEWHAT LIMITED FOR SHALLOW EXCAVATIONS  
 REASONS: DEPTH TO SATURATED ZONE

**SOIL LIMITATION RESOLUTIONS:**  
**RESOLUTIONS:**  
 SHRINK-SWELL - THE PROPOSED BUILDING ADDITION WILL BE CONSTRUCTED WITHIN AN AREA OF THE PROPERTY THAT HAS PREVIOUSLY BEEN DEVELOPED. NEW EXCAVATIONS WILL NOT BE ANY DEEPER THAN EXCAVATIONS THAT HAVE ALREADY BEEN DONE IN THIS PART OF THE PROPERTY.

DEPTH TO SATURATION ZONE - PUMPS ARE TO BE UTILIZED AS NEEDED TO REMOVE EXCESS WATER FROM EXCAVATION AREAS. PUMPS ARE TO DISCHARGE TO EXISTING VEGETATED AREAS. SEE DETAIL ON C3.1.

Serial Number: 20141320513

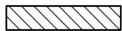
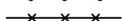
**CALL BEFORE YOU DIG!**  
 PENNSYLVANIA LAW REQUIRES  
 3 WORKING DAYS NOTICE FOR  
 CONSTRUCTION PHASE AND 10 WORKING  
 DAYS IN DESIGN STAGE-STOP CALL  
 Pennsylvania One Call System, Inc.  
 1-800-242-1776



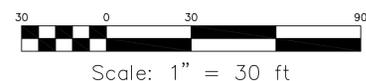
**NOTE:**  
 AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED SHALL NOTIFY THE PA ONE CALL SYSTEM, INC. AT 1-800-242-1776 FOR BURIED UTILITIES LOCATIONS.

**WATERSHED NOTE:**  
 THE PROJECT IS LOCATED IN THE ITHACA CREEK WATERSHED, WHICH HAS A CHAPTER 93 RECEIVING WATER CLASSIFICATION OF CWF/MF.

**TEMP. CONSTRUCTION LEGEND**

	LIMIT OF DISTURBANCE BOUNDARY LINE (0.70 ACRES TOTAL)
	AREAS TO RECEIVE CURLEX BLANKETS (SEE DETAIL 4/C3.1)
	TEMPORARY SILT SOCK (SEE DETAIL 6/C3.1)
	TEMPORARY TREE PROTECTION FENCE (SEE DETAIL 5/C3.1)
	TEMPORARY CONSTRUCTION FENCE TO BE 6'-0" HIGH CHAIN LINK FENCE (MOUNTED ON REMOVABLE PRECAST CONCRETE BASE - UNLESS NOTED OTHERWISE)
	TEMPORARY INLET PROTECTION (SEE DETAILS 3&7/C3.1)

**NOTE:**  
 ANY OFF-SITE WASTE AREA MUST HAVE AN E&S PLAN REVIEWED AND APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT PRIOR TO BEING ACTIVATED.

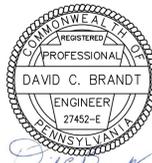


**1**  
C1.3 **SOIL EROSION CONTROL PLAN**  
SCALE: 1"=30'-0"

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PROJECT

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 RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE

**SOIL EROSION CONTROL PLAN**

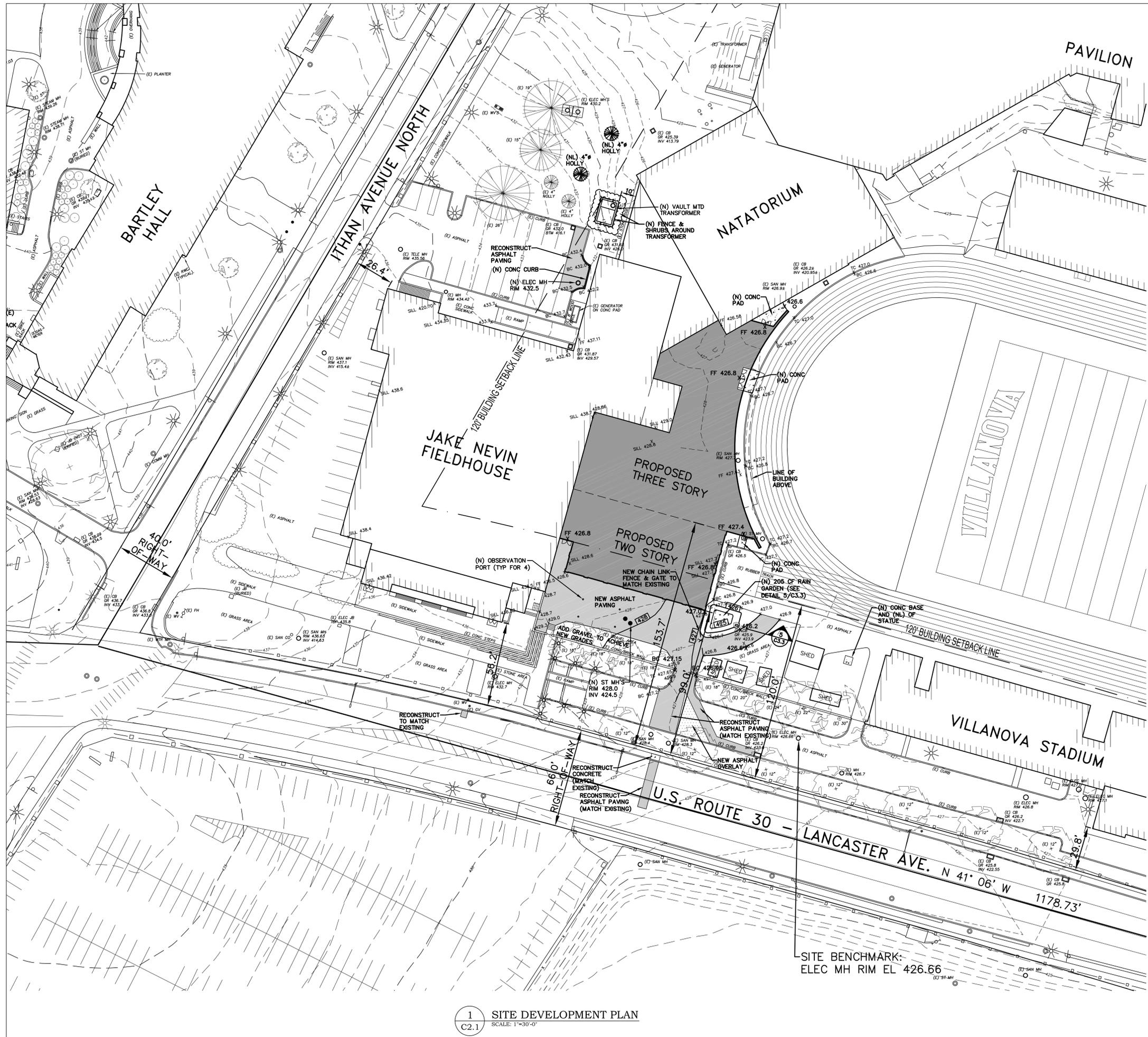
DRAWN BY: BJD  
 CHECKED BY: KRM

SHEET NO.

**C1.3**

SHEET NO. 6 OF 13

PROJECT NO. 0300.014  
 DATE: OCTOBER 29, 2014



**LEGEND**

	EXISTING TO REMAIN	PROPOSED
GRADE LINE	-142-	142
SPOT ELEVATION	x 142.0	x 142.0
CATCH BASIN & INLET	⊙	●
MANHOLE	○	●
CLEAN OUT OR VALVE	○	●
UTILITY POLE	⊙	●
LIGHT POLES:		
-GOTHIC	⊙	●
-SHOEBOX	⊙	●
-GLOBE	⊙	●
FIRE HYDRANT	⊙	●
SIGNAGE	⊙	●
BUILDING FOOTPRINT	[Hatched Box]	[Solid Box]
ASPHALT PAVING	[Dotted Box]	[Solid Box]
ASPHALT OVERLAY	[Dotted Box]	[Solid Box]
CONCRETE	[Dotted Box]	[Solid Box]
TREES AND SHRUBS	[Tree Symbols]	[Tree Symbols]

**ABBREVIATIONS**

(E)	EXISTING TO REMAIN
(ER)	EXISTING TO BE RELOCATED
(R)	REMOVE EXISTING
(RE)	RELOCATE EXISTING
(N)	NEW
(NL)	NEW LOCATION OF EXISTING

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**PROJECT**

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DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

**SHEET TITLE**

**SITE DEVELOPMENT PLAN**

**DRAWN BY:** BJD  
**CHECKED BY:** KRM

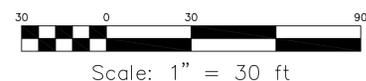
**SHEET NO.**

**C2.1**

SHEET NO. 7 OF 13

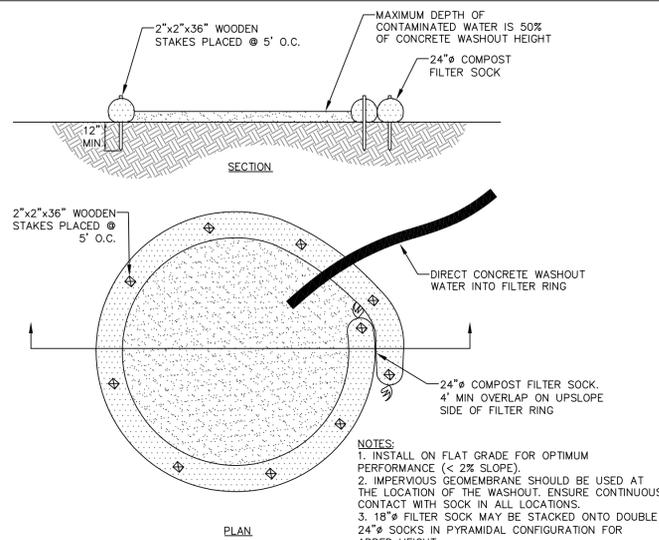
**PROJECT NO.** 0300.014  
**DATE:** OCTOBER 29, 2014

**1 SITE DEVELOPMENT PLAN**  
 SCALE: 1"=30'-0"

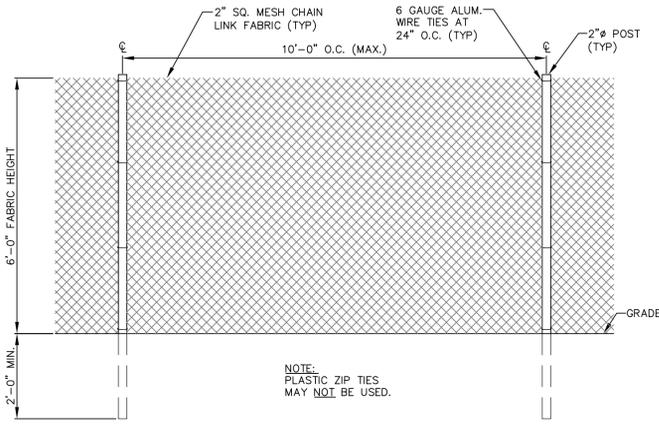








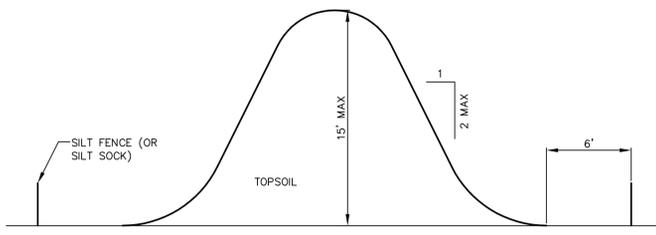
**1 CONCRETE WASHOUT DETAIL**  
SCALE: NOT TO SCALE



**5 TREE PROTECTION BARRIER FENCING DETAIL**  
SCALE: 1/2" = 1'-0"

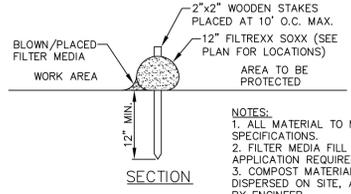
(LOCATION SHOWN THUS ON PLAN)

**NOTES:**  
1. PROTECTION BARRIERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE WORK AT THE SITE.  
2. ADDITIONAL WARNING SIGNS SHOULD ALSO BE PLACED ON THE FENCING AND IN APPROPRIATE AREAS NEAR THE WORK ZONE.  
3. TREE PROTECTION FENCE SHALL BE INSPECTED BY THE OWNER OR CONTRACTOR AT THE END OF EVERY DAY FOR THE DURATION OF THE PROJECT. THE FENCE SHALL BE REPAIRED WHERE NECESSARY.



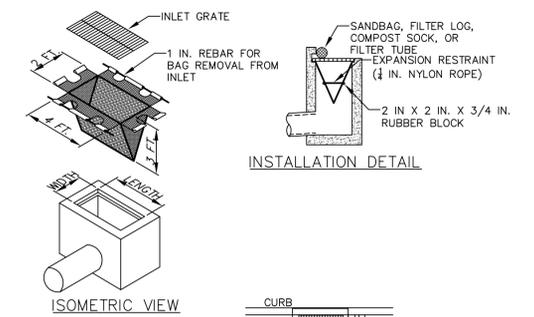
**2 TYPICAL SOIL STOCKPILE CROSS SECTION**  
SCALE: NOT TO SCALE

**NOTES:**  
1. SILT FENCE OR SILT SOCK MUST COMPLETELY ENCLOSE STOCKPILES.  
2. TOPSOIL SHALL NOT BE REMOVED FROM THE DEVELOPMENT SITE OR USED AS FILL.  
3. TOPSOIL SHALL BE REMOVED FROM THE AREAS OF CONSTRUCTION AND STORED SEPARATELY.  
4. THE TOPSOIL SHALL BE STABILIZED TO MINIMIZE EROSION DURING STORAGE.  
5. UPON COMPLETION OF CONSTRUCTION, THE TOPSOIL SHALL BE UNIFORMLY REDISTRIBUTED ON THE SITE.



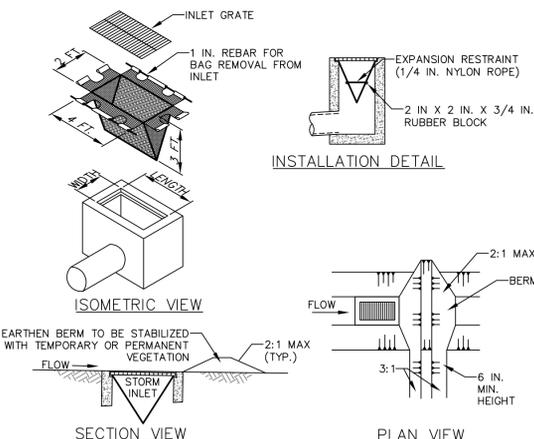
**6 SILT SOCK DETAIL**  
SCALE: NOT TO SCALE

**SILT SOCK NOTES:**  
1. The Silt Sock is to be laid on top of the ground along the down-slope areas and along side-slope areas as required to prevent or reduce erosion.  
2. The Silt Sock can either be lapped or butted at the ends to create a continuous line of defense.  
3. Socks placed on earthen slopes should be anchored with stakes driven through the center of the sock at intervals recommended by the manufacturer. Where socks are placed on paved surfaces, heavy concrete blocks should be used immediately down slope of the socks to help hold the sock in place.  
4. Traffic shall not be permitted to cross Silt Sock. If the Silt Sock is deformed due to being driven over or dragged, then it is to be re-contoured by hand if applicable. If not, the silt sock shall be repaired (see repair notes below).  
5. If the Silt Sock rolls due to hydraulic force, then it is to be repositioned and staked.  
6. If the Silt Sock loses ground contact, then fill in the depressions and back-grout with chips from damaged section.  
7. If sediment accumulates to half of the sock height, then remove the sediment by hand. It may be necessary to install a second row of sock positioned on top of or up slope of the original sock.  
8. If holes, rips or tears develop in the sock, then small holes or narrow rips shorter than 12 inches may be stitched closed using plastic zip ties. Tears longer than 12 inches require the sock to be replaced. Repairs or replacement shall occur within 24 hours of inspection.  
9. If a pinch or localized diameter reduction of more than half of the original diameter develops in the sock, then a new section of sock is to be installed upslope of the damaged section.  
10. Silt Socks shall be inspected weekly and after each runoff event.  
11. Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.  
12. Silt Socks shall be removed upon stabilization of the area tributary to the sock.  
13. LOCATION SHOWN THUS ON PLAN C1.3.



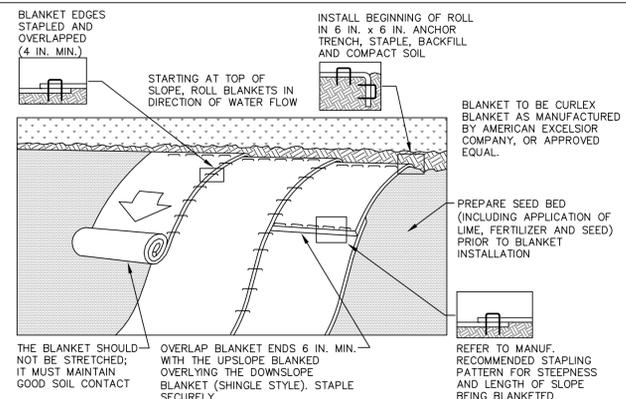
**3 TYPE 'C' INLET - FILTER BAG PROTECTION DETAIL**  
SCALE: NOT TO SCALE

**NOTES:**  
MAXIMUM DRAINAGE AREA = 1/2 ACRE.  
INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.  
ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.  
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.



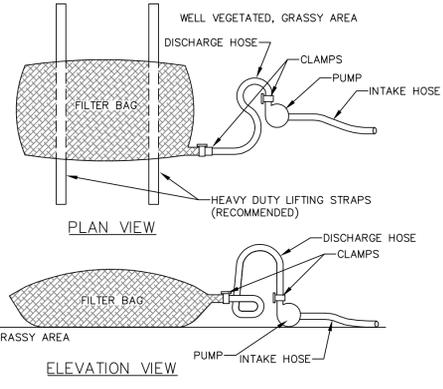
**7 TYPE 'M' INLET - FILTER BAG PROTECTION DETAIL**  
SCALE: NOT TO SCALE

**NOTES:**  
MAXIMUM DRAINAGE AREA = 1/2 ACRE.  
INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.  
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.  
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.  
INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.  
DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.



**4 EROSION CONTROL BLANKET INSTALLATION DETAIL**  
SCALE: NOT TO SCALE

**NOTES:**  
SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.  
PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.  
SLOPE SURFACE SHALL BE FREE OF ROCKS, CLOUDS, STICKS, AND GRASS.  
BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.  
THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.  
BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.  
LOCATION SHOWN THUS ON PLAN C1.3.



**8 PUMPED WATER FILTER BAG DETAIL**  
SCALE: NOT TO SCALE

**NOTES:**  
LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.  
BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5% FOR SLOPES EXCEEDING 5% CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.  
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.  
THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.  
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.  
FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

Associated Engineering Consultants Incorporated  
488 Devon Park Drive Suite 113 Wayne Pennsylvania 19087 Tel: 610 668 3880 Fax: 610 668 4566  
www.aecinc.net

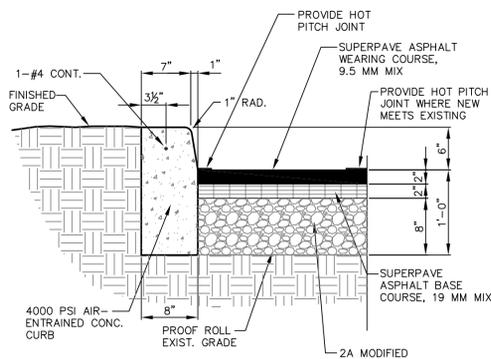
Professional Seal: DAVID C. BRANDT, ENGINEER, 27452-E, PENNSYLVANIA

PROJECT: VILLANOVA UNIVERSITY, PROPOSED WEST END ZONE BUILDING, 800 EAST LANCASTER AVENUE, VILLANOVA, PENNSYLVANIA 19085, RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE: SOIL EROSION CONTROL SECTIONS AND DETAILS  
DRAWN BY: BJD  
CHECKED BY: KRM  
SHEET NO. C3.1  
SHEET NO. 10 OF 13  
PROJECT NO. 0300.014  
DATE: OCTOBER 29, 2014

**NOTE:**  
SEE C3.0 FOR EROSION & SEDIMENTATION CONTROL NOTES, CONSTRUCTION SEQUENCE AND PROJECT GENERAL NOTES.



**1 TYPICAL ROADWAY CONSTRUCTION DETAIL**  
SCALE: 1" = 1'-0"

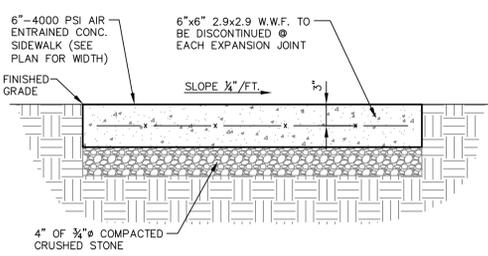
- NOTES:**
1. PROVIDE 1/2" EXPANSION JOINT THRU CURB @ 20'-0" O.C. w/ 1/2" PREM. FILLER IN JOINT. STOP REIN. ON EACH SIDE OF JOINT.
  2. WEARING COURSE TO BE 2" MIN. SUPERPAVE ASPHALT MIXTURE DESIGN, HMA WEARING COURSE, PG 64-22, 3.0 TO 10.0 MILLION ESALS, 9.5 MM MIXTURE, SRL-E.
  3. BASE COURSE TO BE 2" MIN. SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BINDER COURSE, PG 64-22, 3.0 TO 10.0 MILLION ESALS, 19 MM MIXTURE.
  4. ASPHALT TO BE DELIVERED & INSTALLED AS PER PENNDOT REQUIREMENTS.
  5. LOCATION SHOWN THUS ON PLANS.

**2 TYPICAL ASPHALT OVERLAY DETAIL**  
SCALE: 1/2" = 1'-0"

- NOTES:**
1. SCARIFY 1 1/2" MIN. OFF EXISTING PAVEMENT.
  2. OLD WEARING SURFACE TO NEW WEARING SURFACE MUST BE SEALED 100% WITH HOT ASPHALT.
  3. LOCATION SHOWN THUS ON PLANS.

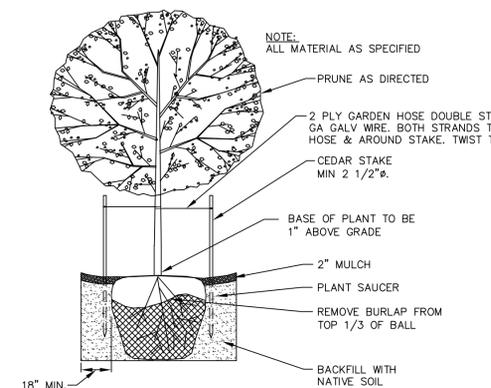
**3 TYPICAL PAVEMENT RECONSTRUCTION DETAIL**  
SCALE: NOT TO SCALE

- NOTE:**  
NEW PAVEMENT THICKNESSES TO MATCH EXISTING.

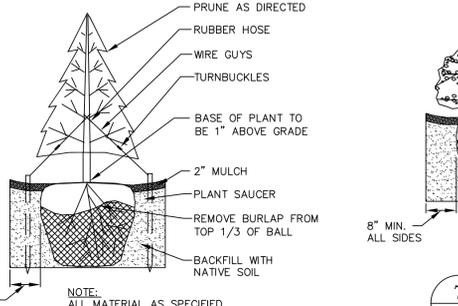


**4 SIDEWALK CONSTRUCTION DETAIL**  
SCALE: 1" = 1'-0"

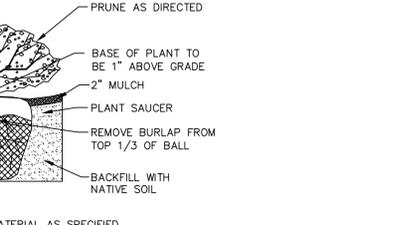
- NOTES:**
1. ALL SIDEWALKS TO BE SCORED EVERY 5'-0" & 1/2" PREM. FILLER EXPANSION JOINTS TO OCCUR @ 20'-0" O.C.



**5 TYPICAL DECIDUOUS TREE PLANTING DETAIL**  
SCALE: NOT TO SCALE



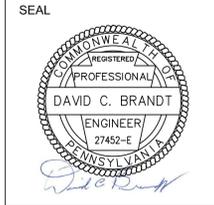
**6 TYPICAL EVERGREEN TREE PLANTING DETAIL**  
SCALE: NOT TO SCALE



**7 TYPICAL SHRUB PLANTING DETAIL**  
SCALE: NOT TO SCALE

**GENERAL NOTES:**

1. Provide trees and shrubs as shown and specified. The work includes:
  - a. Soil preparation.
  - b. Trees and shrubs.
  - c. Mulch and planting accessories.
2. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock." A plant shall be dimensioned as it stands in its natural position.
3. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants indicated by two measurements so that only a maximum of 25% are of the minimum size indicated and 75% are of the maximum size indicated.
4. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
5. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.
6. Warrant planting material (except annuals) to remain alive and be in healthy, vigorous condition for a period of 1 year after completion and acceptance of entire project.
7. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Owner's Representative, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at Contractor's expense. Warrant all replacement plants for 1 year after installation.
8. Plants: Provide plants typical of their species or variety, with normal, densely-developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, distiguring knots, sun scald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestations. All plants shall have a fully developed form without voids and open spaces. Plants held in storage will be rejected if they show signs of growth during storage.
9. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock." Cracked or mushroomed balls are not acceptable.
10. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated in the plant list. The caliper of the trees, measured 12" from the root ball for trees 4" Caliper and up, and 6" from the base for those up to 4" Caliper, shall not be less than the minimum size designated in the plant list.
11. Shrubs shall meet the requirements for spread and height indicated in the plant list.
  - a. The measurements for height shall be taken from the ground level to the height of the top of the plant and not the longest branch.
  - b. Single stemmed or thin plants will not be accepted.
  - c. Side branches shall be generous, well-twigged, and the plant as a whole well-bush-d to the ground.
  - d. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.
12. Do not cut the leader of evergreen tree species.
13. Planting mix for shrub beds shall be sandy loam with added material to create a light and airy well-drained growing medium. Acceptable additives include Canadian peat moss, sphagnum moss, vermiculite, perlite, coarse sand, porous aggregates such as expanded slate, topsoil or decomposed bark humus, and composted leaf mold. Recommended composition: 10% fine sand; 10% coarse sand (.05 millimeter to .1 millimeter builder's sand); 30% topsoil; 25% clay; 25% organic matter (peat moss, bark humus, and/or leaf mold). The pH shall be between 5.5 and 6.8. If necessary, the Contractor may adjust pH by adding aluminum sulfate or agricultural ground limestone.
  - a. Planting mixture is to be mixed off-site, analyzed and approved prior to delivery.
14. Topsoil: Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well-drained erable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials, with acidity range of between pH 6.0 and 6.5.
  - a. Provide topsoil free of substances harmful to the plants that will be grown in the soil.
  - b. If necessary, the Contractor may adjust pH by adding aluminum sulfate or agricultural ground limestone. After the addition of the additive, a sample of the mixture shall again be analyzed to determine that its incorporation has corrected the pH to meet the specification. The contractor shall furnish a one cubic foot sample of the corrected topsoil to the Landscape Architect at least two weeks prior to the anticipated use of the topsoil.
15. Wood Mulch: 6 month old well rotted double shredded native hardwood bark mulch not larger than 4" in length and 1/2" in width, free of woodchips and sawdust.
16. Fertilizer:
  - a. Plant Fertilizer Type "A": Commercial type, containing 5% nitrogen, 10% phosphoric acid, and 5% potash by weight, 1/4 of nitrogen in the form of nitrates, 1/4 in the form of ammonia salt, and 1/2 in form of organic nitrogen.
  - b. Plant Fertilizer Type "B": Approved acid-base fertilizer. Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.
  - c. Starter fertilizer containing 20% nitrogen, 26% phosphoric acid, and 6% potash by weight, or similar approved composition.
17. Anti-Desiccant: Protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration, such as "Wilt-Pruf" manufactured by Nursery Products Specialties, Co., Croton Falls, New York. Mixed and applied in accordance with manufacturer's instructions.
18. Water: Free of substances harmful to plant and seed growth. Hoses or other methods of transportation furnished by Contractor unless agreed to by Owner.
19. Stakes for Staking tree: Hardwood, 2"x2"x8'-0" long.
20. Staking and Guying Hose: webbed flexible type, i.e. as available from C.A.M.B. GUARDS, part #92-113, from Keslick & Son, M/A Products (610)998-5353, or ARBOR-TAPE from NEPTCO (John Caprio) (800)354-5445 Ext. 298.
21. Examine finish surfaces, grades, topsoil quality, and depth. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.
22. Locate plants as indicated or as approved in the field after staking by the Contractor. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.
23. Excavate plant pits as noted on the details, except for plants specifically indicated to be planted in planters. Provide shrub pits at least 8" greater than the diameter of the root system and 18" greater for the tree. Depth of pit shall accommodate the root system. Provide undisturbed subgrade to hold root ball at nursery grade as shown on the drawings. If excavated materials are suitable for reuse on site, place at a location as directed by the Owner's Representative. If unsuitable or not able to be used, remove excavated materials from the site.
24. Provide pre-mixed planting mixture for use around the balls and roots of the plants consisting of planting topsoil and 1/2 lb. plant fertilizer Type "A" for each cu. yd. of mixture.
25. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 1"-2" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture. Do not use frozen or muddy mixtures for backfilling.
26. After balled and burlapped plants are set, muddle planting soil mixture around bases of balls and fill all voids.
  - a. Remove all burlap, ropes, and wires from the tops of balls.
27. Mulching: Mulch tree and shrub beds with required mulching material 2" deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.
28. Guying and staking:
  - a. When high winds or other conditions that may effect tree survival or appearance occur, the Owner's Representative may require immediate staking or guying.
  - b. Stake and guy the deciduous trees which are over 3" caliper.
29. Pruning:
  - a. Prune branches of deciduous trees, after planting, to balance the loss of roots and preserve the natural character appropriate to the particular plant requirements. In general, remove 1/4 to 1/3 of the leaf bearing buds. Remove or cut back broken, damaged, and unsymmetrical growth of new wood. Do not cut leader.
  - b. Prune evergreens only to remove broken or damaged branches.
30. Maintain planting for a period of at least 60 days after completion of planting operations or until all plants are sufficiently recovered from transplanting and in a healthy growing condition acceptable to the Owner's Representative.
31. Maintenance shall include pruning, cultivating, weeding, watering, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
  - a. Re-set settled plants to proper grade and position.
  - b. Tighten and repair guy wires and stakes as required.
  - c. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
  - d. Water tree and shrubs within the first 24 hours of initial planting, and not less than twice per week until acceptance at the end of the maintenance period.
32. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soils, debris, and equipment. Repair damage resulting from planting operations.



PROJECT

**VILLANOVA UNIVERSITY**  
PROPOSED WEST END ZONE BUILDING  
800 EAST LANCASTER AVENUE  
VILLANOVA, PENNSYLVANIA 19085  
RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE  
**SITE SECTIONS AND DETAILS**

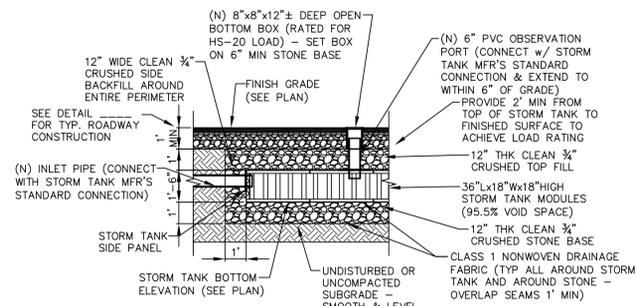
DRAWN BY: BJD  
CHECKED BY: KRM

SHEET NO.

**C3.2**

SHEET NO. 11 OF 13

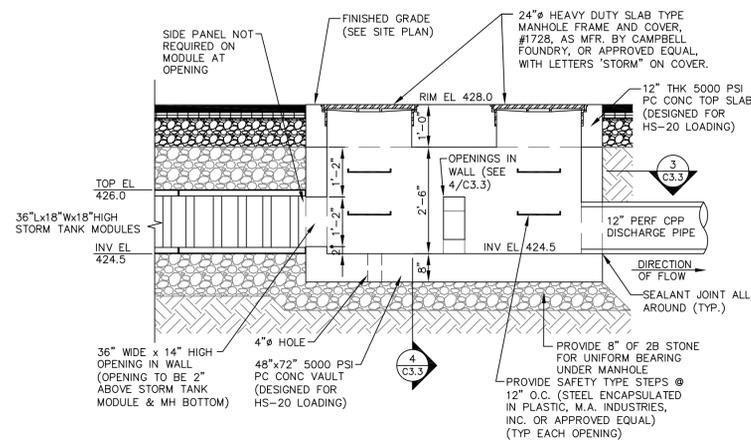
PROJECT NO. 0300.014  
DATE: OCTOBER 29, 2014



**1 STORM TANK SECTION - VEHICULAR TRAFFIC AREA**

C3.3 SCALE: 1/4"=1'-0"

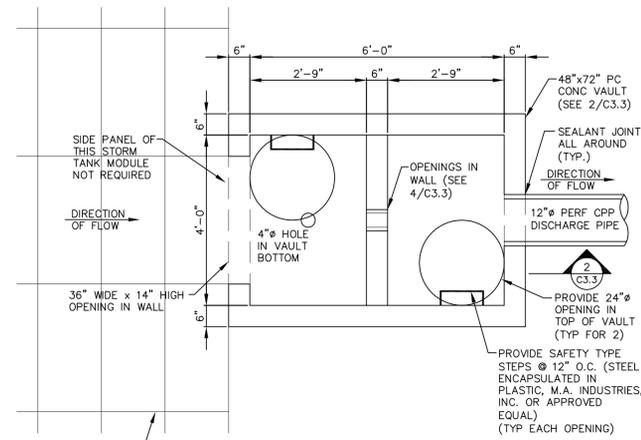
NOTES:  
1. STORM TANK TO BE BY BRENTWOOD INDUSTRIES, INC., (610) 236-1100, READING, PA, OR APPROVED EQUAL.  
2. INSTALL STORM TANK SYSTEM IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.



**2 OUTLET STRUCTURE SIDE ELEVATION**

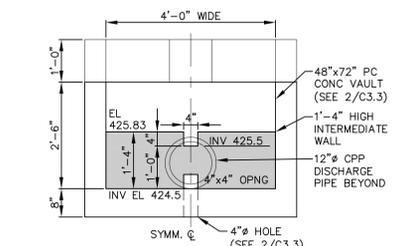
C3.3 SCALE: 1/2"=1'-0"

NOTES:  
1. SEE DETAIL 1 FOR STORM TANK INFORMATION.



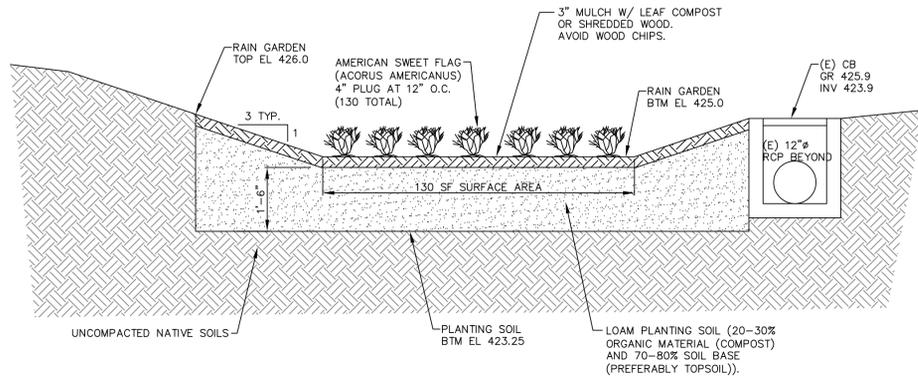
**3 OUTLET STRUCTURE TOP VIEW**

C3.3 SCALE: 1/2"=1'-0"



**4 OUTLET STRUCTURE DETAIL**

C3.3 SCALE: 1/2"=1'-0"



**5 RAIN GARDEN SECTION**

C3.3 SCALE: 1/2"=1'-0"



PROJECT  
**VILLANOVA UNIVERSITY**  
PROPOSED WEST END ZONE BUILDING  
800 EAST LANCASTER AVENUE  
VILLANOVA, PENNSYLVANIA 19085  
RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE  
**STORMWATER SECTIONS AND DETAILS**

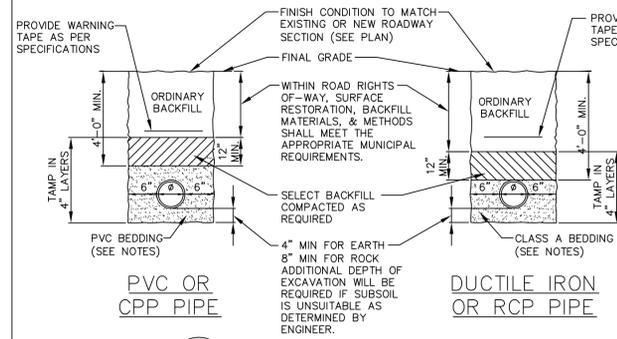
DRAWN BY: BJD  
CHECKED BY: KRM

SHEET NO.

**C3.3**

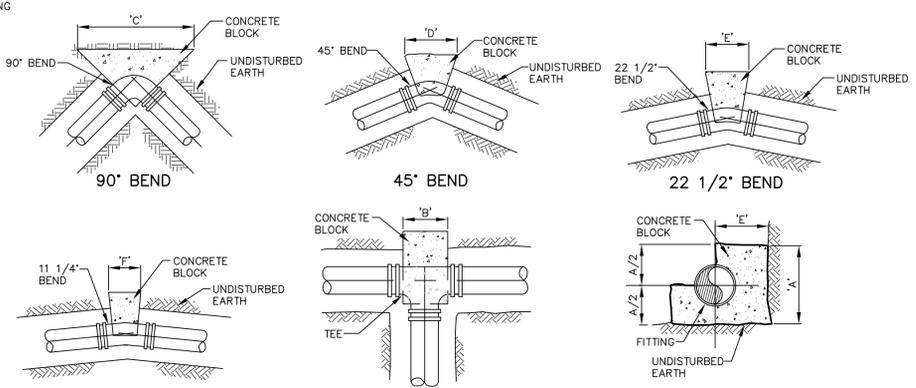
SHEET NO. 12 OF 13

PROJECT NO. 0300.014  
DATE: OCTOBER 29, 2014



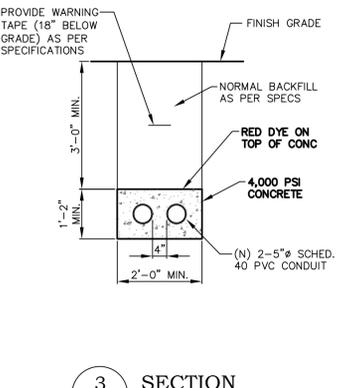
**1 TYPICAL TRENCH DETAILS**  
SCALE: NOT TO SCALE

- NOTES:
1. ALL BACKFILL MATERIAL IS SUBJECT TO AUTHORITY APPROVAL.
  2. CLASS A BEDDING: APPROVED NATIVE SOIL, COARSE SAND, GRAVEL, OR CRUSHED STONE, HAVING A MAXIMUM STONE SIZE OF 1/2 INCH.
  3. SELECT BACKFILL: CLEAN DRY EARTH WITH A MAXIMUM STONE SIZE OF 2 INCHES.
  4. ORDINARY BACKFILL: CLEAN DRY EARTH WITH A MAXIMUM STONE SIZE OF 6 INCHES.
  5. PVC BEDDING SHALL BE PENNDOT 2A MODIFIED STONE FOR TRENCHES ABOVE THE GROUNDWATER TABLE AND PENNDOT 2B STONE FOR TRENCHES BELOW THE WATER TABLE.

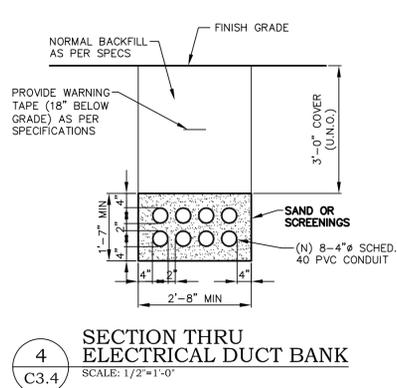


**2 THRUST BLOCKING SYSTEM**  
SCALE: NOT TO SCALE

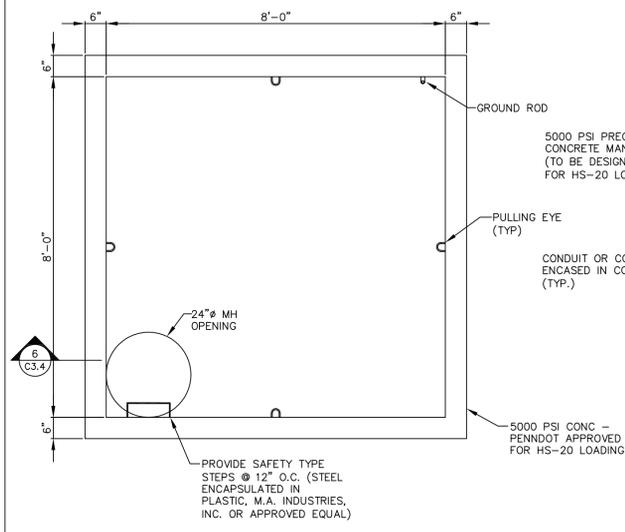
PIPE SIZE	REACTION BACKING DIMENSION					
	A	B	C	D	E	F
6"	1'-3"	2'-2"	3'-4"	1'-10"	1'-0"	1'-0"
4"	1'-0"	2'-0"	3'-2"	1'-8"	1'-0"	1'-0"
3"	1'-0"	2'-0"	3'-0"	1'-6"	1'-0"	1'-0"



**3 SECTION**  
SCALE: 1/2" = 1'-0"

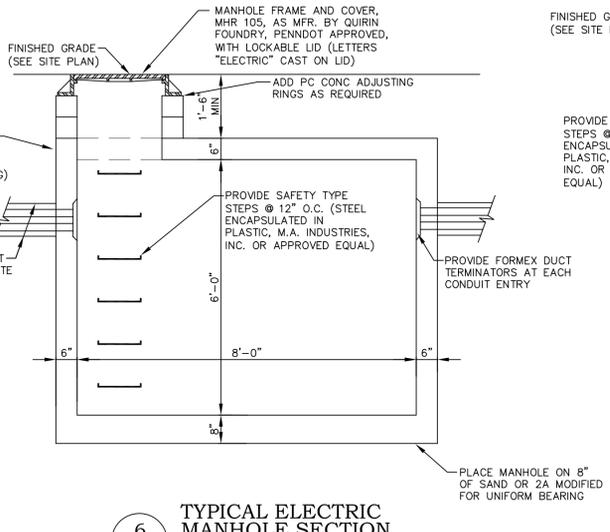


**4 SECTION THRU ELECTRICAL DUCT BANK**  
SCALE: 1/2" = 1'-0"

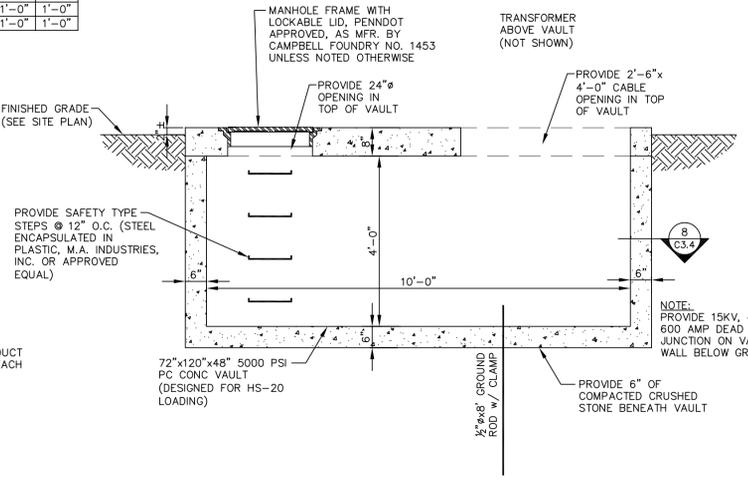


**5 TYPICAL ELECTRIC MANHOLE PLAN DETAIL**  
SCALE: 1/2" = 1'-0"

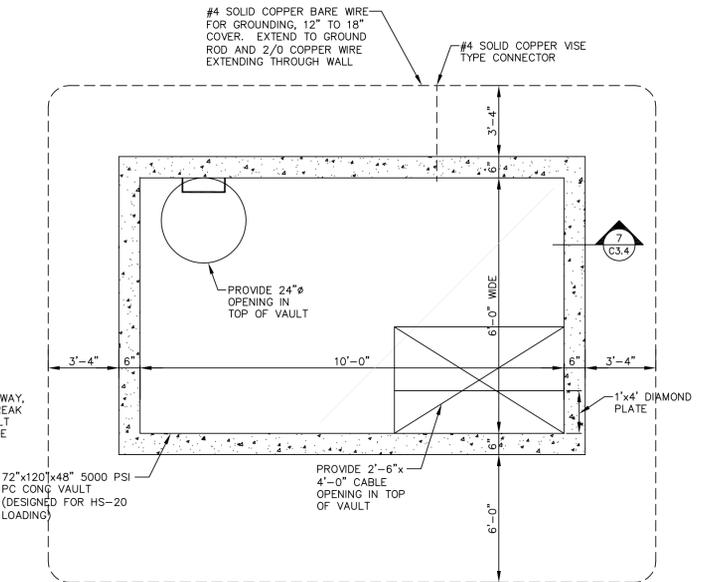
SUBMIT SHOP DRAWINGS FOR APPROVAL



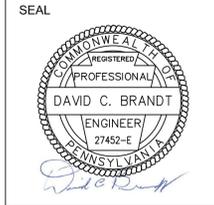
**6 TYPICAL ELECTRIC MANHOLE SECTION**  
SCALE: 1/2" = 1'-0"



**7 VAULT MOUNTED TRANSFORMER SIDE ELEVATION**  
SCALE: 1/2" = 1'-0"



**8 VAULT MOUNTED TRANSFORMER TOP VIEW**  
SCALE: 1/2" = 1'-0"



PROJECT

**VILLANOVA UNIVERSITY**  
PROPOSED WEST END ZONE BUILDING  
800 EAST LANCASTER AVENUE  
VILLANOVA, PENNSYLVANIA 19085  
RADNOR TOWNSHIP, DELAWARE COUNTY

DATE	REVISION
10/29/14	PRELIM/FINAL APPROVAL

SHEET TITLE

**SITE UTILITIES SECTIONS AND DETAILS**

DRAWN BY: BJD  
CHECKED BY: KRM

SHEET NO.

**C3.4**

SHEET NO. 13 OF 13

PROJECT NO. 0300.014  
DATE: OCTOBER 29, 2014