

KEYNOTES:

1. CATCH BASIN INLET PROTECTION (ACF SILT SACK, OR CITY OF MINNEAPOLIS APPROVED EQUAL). SEE DETAIL ON SHEET C5.
2. LOCATION OF PROPOSED RETAINING WALL, DESIGN AND DETAILS BY OTHERS.
3. PATCH STREET TO MATCH ORIGINAL PAVEMENT SECTION AND GRADE. RESTORE CONCRETE CURB AND GUTTER.

1. Contractor must call for a pre-construction meeting 48 hours prior to any land disturbances. Call 612-673-3867. Failure to do so may result in fines, the revocation of permit and a stop work order being issued.
2. Install perimeter erosion control at the locations shown on the plans prior to the commencement of any land disturbance or construction activities.
3. Before beginning construction, install a temporary rock construction entrance at each point where vehicles exit the construction site. Use 2 inch or greater diameter rock in a layer at least 6 inches thick across the entire width of the entrance. Extend the rock entrance at least 50 feet into the construction zone using a geo-textile fabric beneath the aggregate to prevent migration of soil into the rock from below.
4. Remove all soils and sediments tracked or otherwise deposited onto public and private pavement areas. Removal shall be on a daily basis when tracking occurs and may be ordered by Minneapolis inspectors at any time if conditions warrant. Sweeping shall be maintained throughout the duration of the construction and done in a manner to prevent dust being blown to adjacent properties.
5. Install inlet protection at all public and private catch basin inlets, which receive runoff from the disturbed areas. Catch basin inserts or other approved product are required in undisturbed areas that may receive runoff from the project area. Hay bales or filter fabric wrapped grates are not allowed for inlet protection.
6. Locate soil or dirt stockpiles no less than 25 feet from any public or private roadway or drainage channel. If remaining for more than seven days, stabilize the stockpiles by mulching, vegetative cover, tarps, or other means. Control erosion from all stockpiles by placing silt barriers around the piles. Temporary stockpiles located on paved surfaces must be no less than two feet from the drainage/gutter line and shall be covered if left more than 24 hours.
7. Maintain all temporary erosion and sediment control devices in place until the contributing drainage area has been stabilized. Inspect temporary erosion and sediment control devices on a daily basis and replace deteriorated, damaged, or rotted erosion control devices immediately.
8. Temporarily or permanently stabilize all construction areas which have undergone final grading, and all areas in which grading or site building construction operations are not actively underway against erosion due to rain, wind and running water within 7-14 days. Use seed and mulch, erosion control matting, and/or sodding and staking in green space areas. An early application of gravel base on areas to be paved recommended minimizing erosion potential.
9. Remove all temporary synthetic, structural, non-biodegradable erosion and sediment control devices after the site has undergone final stabilization with permanent vegetation establishment. Final stabilization for purposes of this removal is 70% established cover over denuded area.
10. Ready mixed concrete and concrete batch plants are prohibited within the public right of way. All concrete related production, cleaning and mixing activities shall be done in the designated concrete mixing/washout locations as shown in the erosion control plan. Under no circumstance may washout water drain onto the public right of way or into any public or private storm drain conveyance.
11. Changes to approved erosion control plan must be approved by the erosion control inspector prior to implementation. Contractor to provide installation and details for all proposed alternate type devices.



elness swenson graham architects
500 washington avenue south
minneapolis minnesota 55415
p. 612.333.9550
f. 612.333.9532
www.esgarch.com

I hereby certify that this document was prepared by me or under my direct supervision and that I am a duly licensed engineer under the laws of the State of Minnesota

Signature
Mike R. Kettler
Typed or Printed Name
40425
License # Date



CONSULTING CIVIL ENGINEERS
1930 NEBBIOTT AVENUE SOUTH
BLOOMINGTON, MINNESOTA 55425
(952) 881-3344 TELEPHONE
(952) 881-1915 FAX
www.sundeck.com

Preliminary Plan - Subject to change

SITE CLEARING :

1. Perform all clearing and grubbing work in accordance with the provisions of MNDOT Standard Specification Section 2101, and the additional requirements contained herein.
2. Clearing is defined as the complete removal and disposal of all portions of natural and artificial objectionable materials, structures, trees, shrubs, bushes, windfalls, grass, sod, and other vegetation in the designated areas that exist above ground except stumps. Grubbing is defined as the excavation, removal, and disposal of all portions of natural and artificial objectionable materials, structures, trees, shrubs, bushes, windfalls, and other vegetation that exist below ground including stumps.
3. Clear and grub the construction area in advance of the grading operation.
4. **Building Areas:** Completely remove all stumps, roots 40 mm (1.5 inches) in diameter or larger, buried logs, and all other objectionable material occurring within the lines of the new building and to horizontal distance of 4.5 m (15 feet) beyond the building walls.
5. **Other Areas:** Grub all stumps, roots 40 mm (1.5 inches) in diameter or larger, buried logs, and all other objectionable material occurring within the grading limits to a depth of not less than 1 m (3.28 feet) below the existing ground surface or subgrade excavation, whichever is deeper.
6. Backfill and compact all depressions resulting from the clearing and grubbing operation with suitable material in order to make the surface conform to the original adjacent surface of the ground.
7. After the site has been cleared and prior to any cutting or filling operations, strip all topsoil and organic soils from areas to be built upon, paved, or where grades are to be changed more than 152 mm (6 inches). Strip the existing topsoil to whatever depths encountered. Prevent intermingling with underlying subsoil, or other objectionable material. Remove heavy growths of grass from areas before stripping. Where trees are to be left standing, stop topsoil stripping a sufficient distance away from the trees in order to prevent damage to the main root system.
8. Stockpile soil to be re-used in an area clear of the new construction. Remove excess soil from the site.
9. Construct stockpiles in a manner that will freely drain surface water. Maintain soil stockpiles free from debris and trash. Do not obstruct site drainage. Do not exceed a stockpile depth of 8 feet.
10. Keep the soil stockpile damp in order to prevent drying and dust.

EROSION CONTROL SCHEDULE

ITEM	INSTALLATION	INSPECTION/MAINTENANCE	REMOVAL
SILT FENCE	PRIOR TO ANY CONSTRUCTION	INSPECT AND MAINTAIN AFTER EACH RUNOFF EVENT. REMOVE SEDIMENTS AS REQUIRED.	AFTER TRIBUTARY DRAINAGE AREA HAS BEEN RESTORED
TEMP. ROCK ENTRANCE	PRIOR TO INITIAL GRADING	INSPECT REGULARLY. MAINTAIN AS REQUIRED.	WHEN SITE PAVING OPERATIONS BEGIN
INLET PROTECTION	PRIOR TO ANY CONSTRUCTION OR SAME DAY STRUCTURE IS CONSTRUCTED	INSPECT AND MAINTAIN AFTER EACH RUNOFF EVENT. REMOVE SEDIMENTS AS REQUIRED.	WHEN TRIBUTARY AREA IS PAVED
SEED AND MULCH	AFTER FINAL GRADING	INSPECT AND MAINTAIN AFTER HEAVY RAINS. RESTORE WASH-OUT AREAS IMMEDIATELY.	N/A

INLET PROTECTION SHALL BE THE "SACK" TYPE AND SHALL BE INSTALLED ON ALL EXISTING AND PROPOSED CATCH BASINS EXPOSED TO CONSTRUCTION SEDIMENT.

PDR
JANUARY 28, 2013

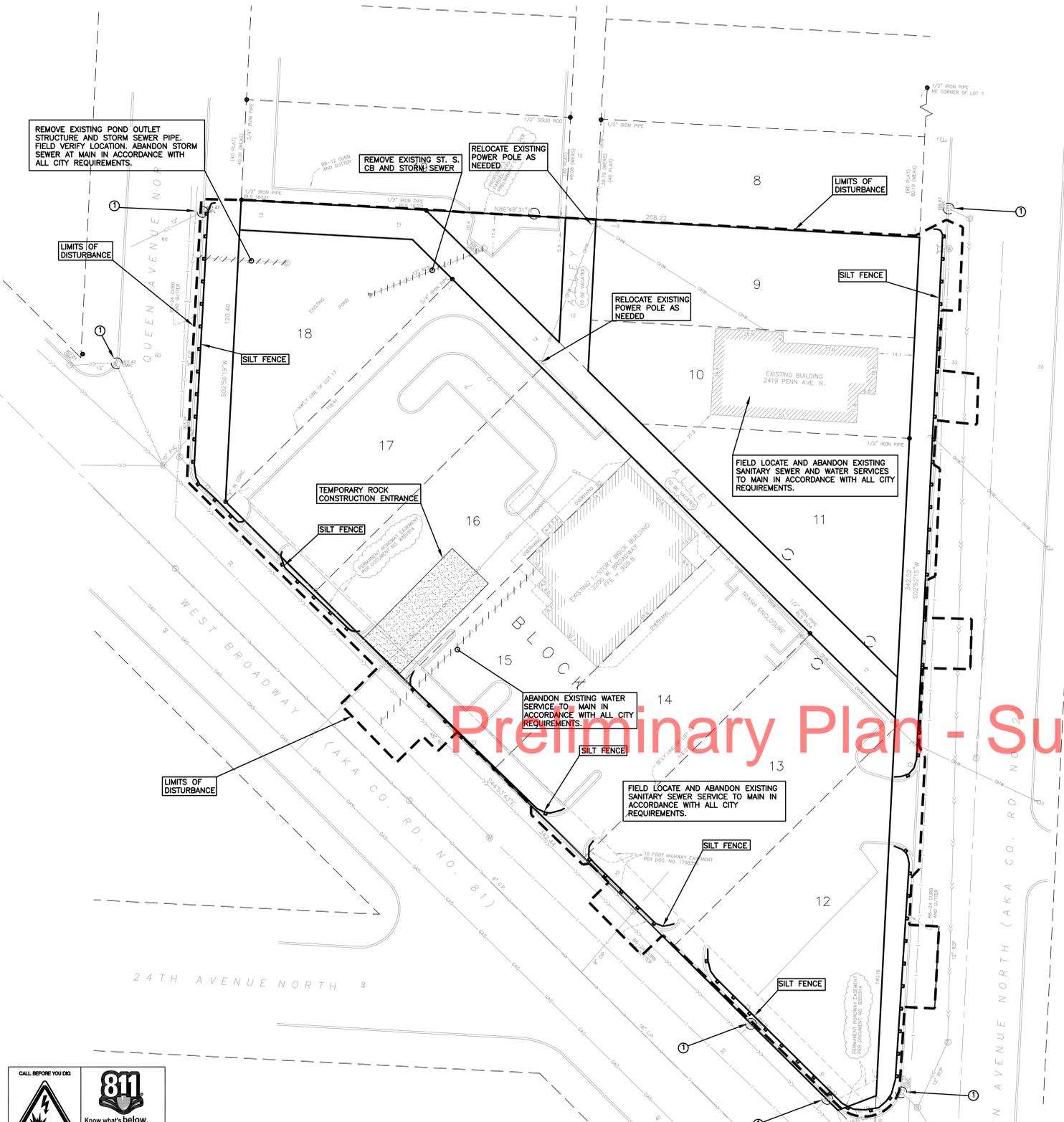
ORIGINAL ISSUE: 01/28/2013

REVISIONS
No. Description Date

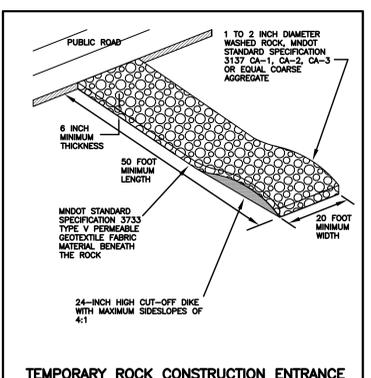
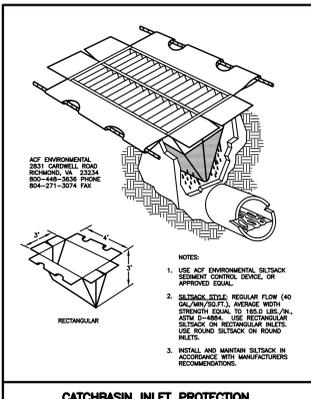
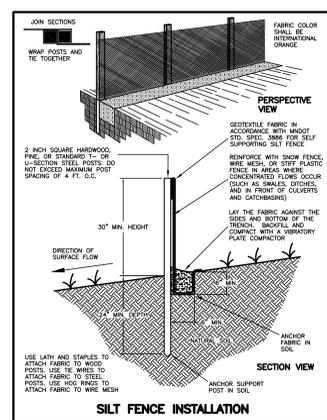
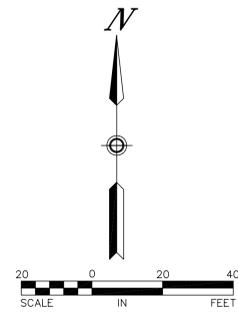
212902
PROJECT NUMBER
MT MK
DRAWN BY CHECKED BY
WEST BROADWAY FLATS

DEMOLITION AND EROSION CONTROL PLAN

C1.0



The subsurface utility information shown on this plan is utility Quality Level 0. This quality level was determined according to the guidelines of O/AZCE 58-02, entitled "Standard Guidelines for the Collection and Deposition of Existing Subsurface Utility Data."





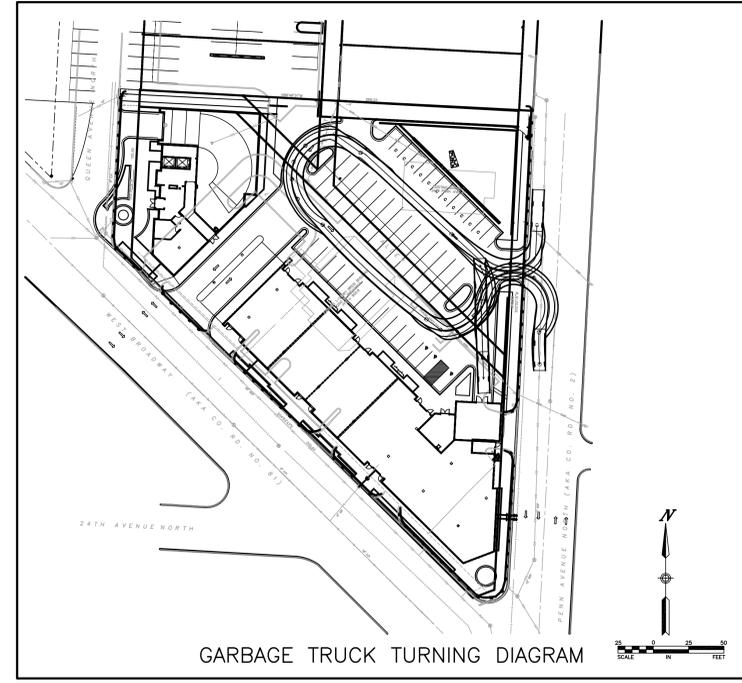
elness swenson graham architects
 500 Washington Avenue South
 Minneapolis, Minnesota 55415
 P. 612.333.9550
 F. 612.333.9532
 www.esgarch.com

I hereby certify that this document was prepared by me or under my direct supervision and that I am a duly licensed engineer under the laws of the State of Minnesota

Signature
 Mike R. Kettler
 Title or Printed Name
 43425
 License # Date



CONSULTING CIVIL ENGINEERS
 1930 NEBBITT AVENUE SOUTH
 BLOOMINGTON, MINNESOTA 55407
 (952) 881-3344 TELEPHONE
 (952) 881-1915 FAX
 www.sunde.com



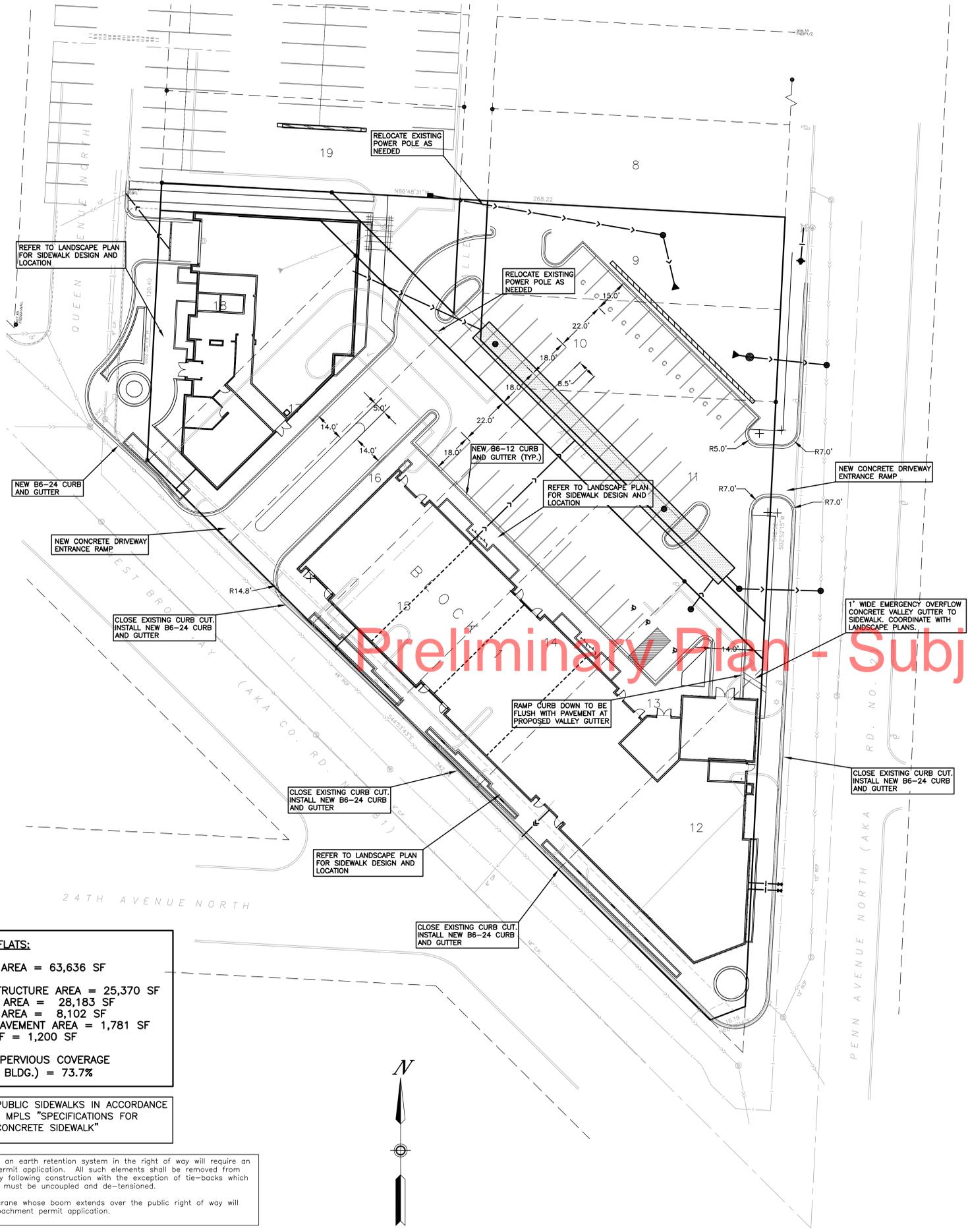
GARBAGE TRUCK TURNING DIAGRAM



The subsurface utility information shown on this plan is utility quality level 0. This quality level was determined according to the guidelines of C/A/SEE 58-02, entitled "Standard Guidelines for the Collection and Deposition of Existing Subsurface Utility Data."

SITE NOTES:

- Existing boundary, location, topographic, and utility information shown on this plan is from a field survey by E.G. Rud and Sons, Inc. dated 9/17/12.
- Detectable warnings are required on all public and private ramps. Place the detectable warnings at the back of curb. The ADA required truncated dome area shall be 24 inches minimum in the direction of travel and shall extend the full width (4" wide typ.) of the curb ramp. The only acceptable texture for "detectable warnings" is truncated domes. All detectable warning surface installations shall be at minimum of least as non skid as the surrounding pedestrian surfaces. Detectable warnings are to consist of raised truncated domes with a diameter of nominal 0.9", a height of nominal 0.2" and a center-to-center spacing of nominal 2.35". The truncated dome area shall contrast visually with the adjacent walking surface. Use dark grey when the adjacent sidewalk is a light grey cement color. Use light grey when the adjacent sidewalk is a dark color. Install truncated domes and all related surfaces according to the manufacturers specifications. Install Armor-Tile (www.armor-tile.com) Cast In Place Truncated Dome Detectable Warning Surface Tile, or approved equal. Refer to ADA sections 4.7.7 and 4.29.2 for additional information.
- All materials required for this work shall be new material conforming to the requirements for class, kind, grade, size, quality, and other details specified herein or as shown on the Plans. Do not use recycled or salvaged aggregate, asphaltic pavement, crushed concrete, or scrap shingles. Unless otherwise indicated, the Contractor shall furnish all required materials.
- All dimensions are to face of curb (where applicable), edge of pavement, or exterior face of building, unless otherwise indicated.
- All curb radii shall be three (3) feet minimum unless otherwise noted.
- Install and make operational all irrigation before commencing with landscaping.
- White surface markings (letters and symbols) shall be in conformance with the Standard Alphabets for Highway Signs and Pavement Markings, FHWA (HTO-20).
- Install and maintain access roads throughout all stages of construction. Temporary access roads must be approved by the Fire Department before construction starts.
- Fire extinguishers must be on-site and available throughout the construction site during all stages of construction.
- Smoking is prohibited at the construction site except for approved areas designated by the Fire Department. "NO SMOKING" signs must be provided by the Contractor.
- All cutting and welding must meet the requirements of Article 49 of the Uniform Fire Code.
- Storage and handling of flammable liquids shall meet the requirements of Article 79 of the Uniform Fire Code.
- Do not block access to building, fire hydrants, or other fire appliances with construction materials.
- Provide fire lane signage as required by the Fire Department.
- Design and maintain fire apparatus access roads throughout construction to support the imposed loads of fire apparatus in all weather driving conditions. Minimum 7-ton road design required. Pursuant to 1997 Uniform Fire Code Section 922.2.2.2.
- B612 CONCRETE CURB AND GUTTER IS PROPOSED FOR ALL PRIVATE PROPERTY.
- Provide traffic control devices and signage in accordance with the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD), including the Field Manual for Temporary Traffic Control Zone Layouts dated April 1995, the Minnesota Standard Signs Manuals Parts I, II, and III and the appropriate Material Specifications, and MNDOT Standard Specification Section 1710. All signs must be reflectorized.
- Provide Advance and Construction Zone Signage including, but not limited to, signs for lane closures, low shoulder, uneven lanes, and fresh oil (other items as applicable). The number and location of these signs will be determined by the Contractors operations.
- Portland cement concrete for curb and gutter and sidewalk shall be 3900 psi minimum 28 days compressive strength with 5.0% air entraining. Concrete aggregates shall be free of organic impurities, chert, shale, or other deleterious substances.
- Construct all private property concrete sidewalks in accordance with MNDOT Specification 2521. All concrete sidewalks shall be as indicated on the plans, but not less than 4" thick with 6 inch x 6 inch - #10/#10 wire wove wire mesh reinforcing.
- Prefabricated expansion joints using 0.5" thickness shall be placed at each end of curb radius, at intersections, and approximately every 200 feet.
- Contraction joints shall be spaced at 10 foot intervals in the curb and gutter.
- For exterior concrete slabs, unless otherwise indicated, provide expansion joints at 30 foot intervals and at locations where the concrete surrounds or adjoins any existing fixed objects such as walls, walls, curbing, steps, driveways, building foundations and other rigid structures. Divide exterior slabs into square panels of uniform size generally containing not more than 36 square feet of area.
- Construct 2" taper at the free end of all concrete curb and gutter sections.
- Construct all door threshold heights to within 0.5" of finished floor elevation.
- Provide temporary street signs and addresses during construction.
- Unless otherwise indicated, install signage 18 inches behind the back of curb or back of walkway.



Preliminary Plan - Subject to change

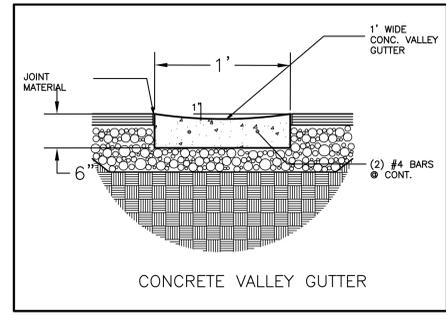
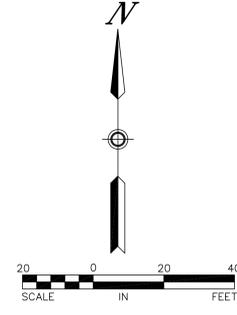
BROADWAY FLATS:
 TOTAL SITE AREA = 63,636 SF
 BUILDING STRUCTURE AREA = 25,370 SF
 IMPERVIOUS AREA = 28,183 SF
 LANDSCAPE AREA = 8,102 SF
 PERVIOUS PAVEMENT AREA = 1,781 SF
 GREEN ROOF = 1,200 SF
 PERCENT IMPERVIOUS COVERAGE (EXCLUDING BLDG.) = 73.7%

CONSTRUCT PUBLIC SIDEWALKS IN ACCORDANCE WITH CITY OF MPLS "SPECIFICATIONS FOR MONOLITHIC CONCRETE SIDEWALK"

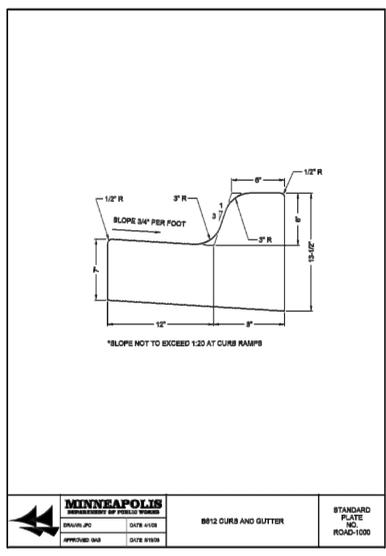
Any elements of an earth retention system in the right of way will require an encroachment permit application. All such elements shall be removed from the right-of-way following construction with the exception of tie-backs which may remain but must be uncoupled and de-tensioned.

A construction crane whose boom extends over the public right of way will require an encroachment permit application.

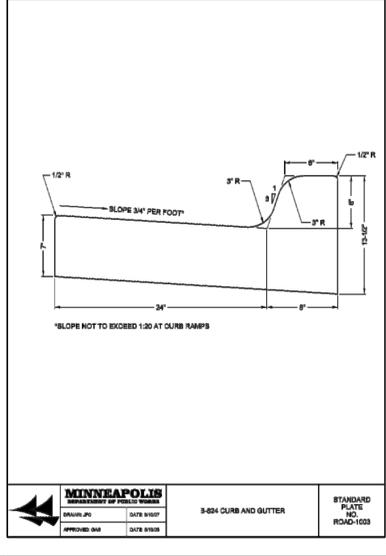
No construction, demolition or commercial power maintenance equipment shall be operated within the city between the hours of 6:00pm and 7:00am on weekdays or during any hours on Saturdays, Sundays and state and federal holidays, except under permit. Contact Environmental Services at 612-673-3867 for permit information.



CONCRETE VALLEY GUTTER



B612 CURB AND GUTTER



B-624 CURB AND GUTTER

PDR
 JANUARY 28, 2013

ORIGINAL ISSUE: 01/28/2013

REVISIONS

No.	Description	Date

212902
 PROJECT NUMBER

MT MK
 DRAWN BY CHECKED BY
 WEST BROADWAY FLATS

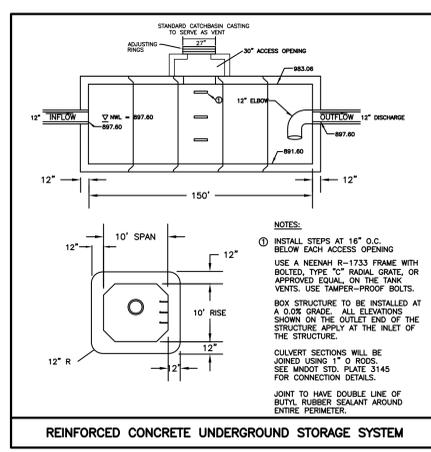
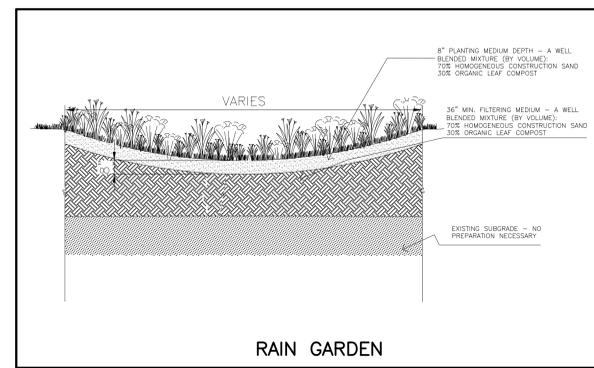
SITE PLAN
C2.0



The subsurface utility information shown on this plan is utility quality level D. This quality level was determined according to the guidelines of C.O. Rice, Inc., written "Standard Guidelines for the Collection and Deposition of Existing Subsurface Utility Data".

BENCHMARK: City of Minneapolis BM 653 located at center line of Penn Ave. N. and centerline of 26th Ave. N. Elevation = 910.85 feet (NGVD 29).

- KEYNOTES:**
- 1 - CATCH BASIN INLET PROTECTION (ACF SILT SACK, OR CITY OF MINNEAPOLIS APPROVED EQUAL). SEE DETAIL ON SHEET C5.
 - 2 - LOCATION OF PROPOSED RETAINING WALL. DESIGN AND DETAILS BY OTHERS.
 - 3 - PATCH STREET TO MATCH ORIGINAL PAVEMENT SECTION AND GRADE. RESTORE CONCRETE CURB AND GUTTER.



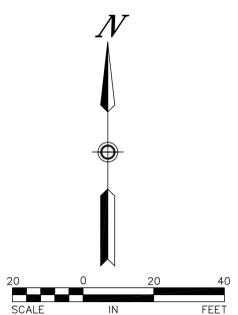
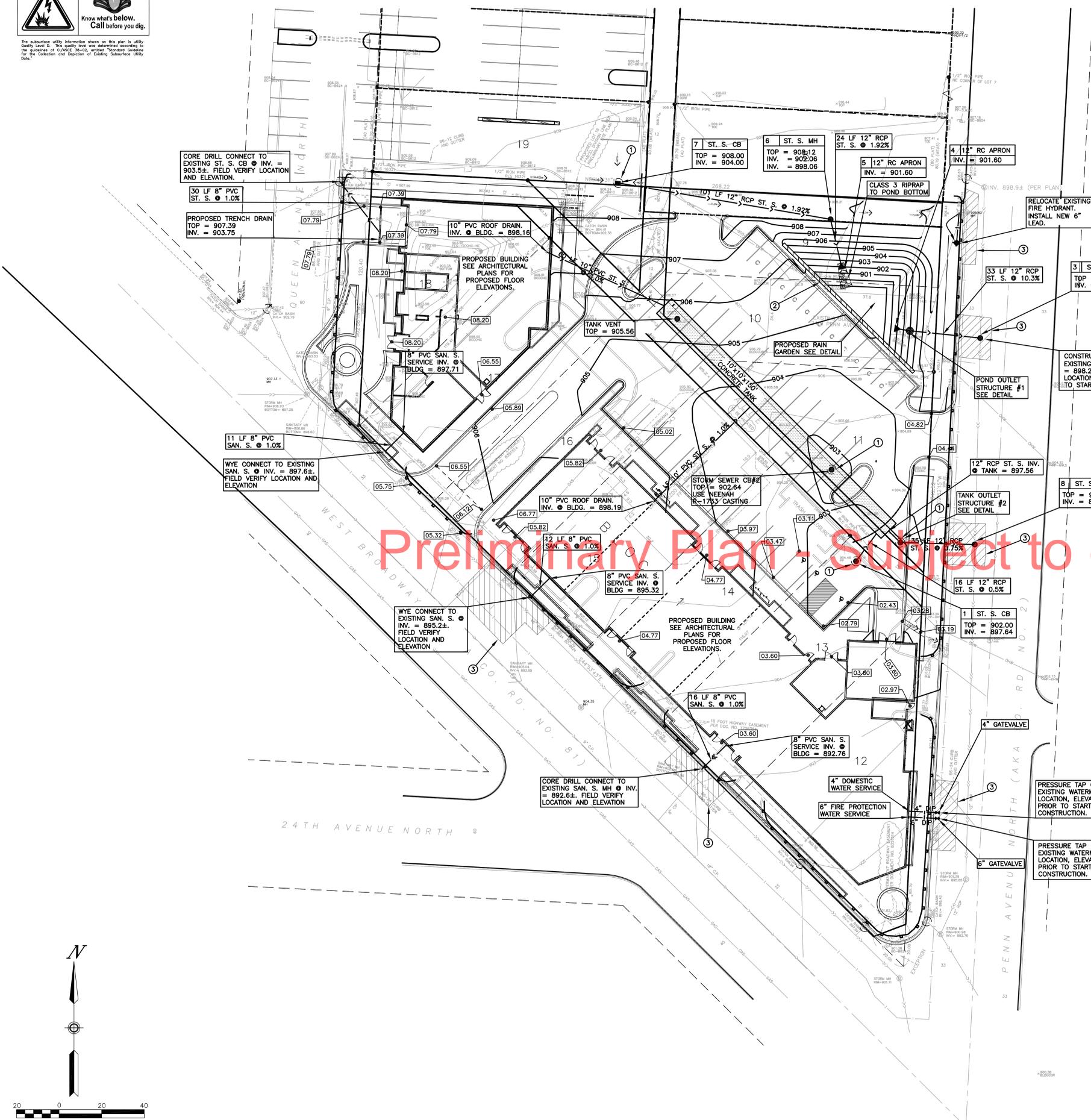
eslens swenson graham architects
500 washington avenue south
minneapolis minnesota 55415
p. 612.339.5308
f. 612.339.5382
www.esgarch.com

I hereby certify that this document was prepared by me or under my direct supervision and that I am a duly licensed engineer under the laws of the State of Minnesota.

Signature: _____
 Mike R. Kettler
 Typed or Printed Name
 40425
 License # Date



Preliminary Plan - Subject to change



PDR
JANUARY 28, 2013

ORIGINAL ISSUE: 01/28/2013

REVISIONS

No.	Description	Date

212902
PROJECT NUMBER
MT MK
DRAWN BY CHECKED BY
WEST BROADWAY FLATS

GRADING, DRAINAGE & UTILITY PLAN
C3.0



elness swenson graham architects
500 Washington Avenue South
Minneapolis, Minnesota 55415
P. 612.339.5508
F. 612.339.5382
www.esgarch.com

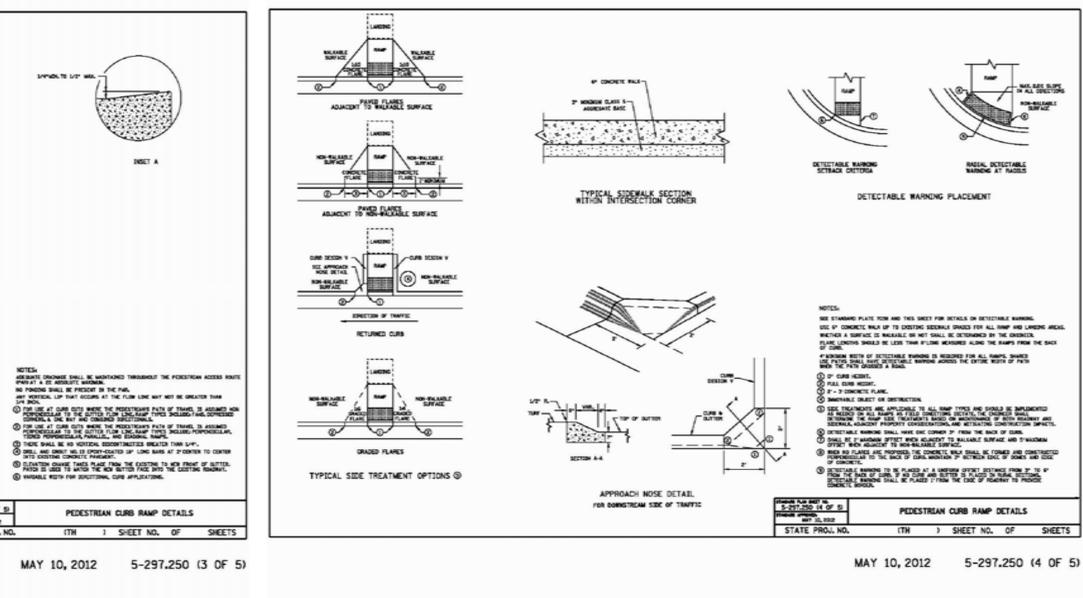
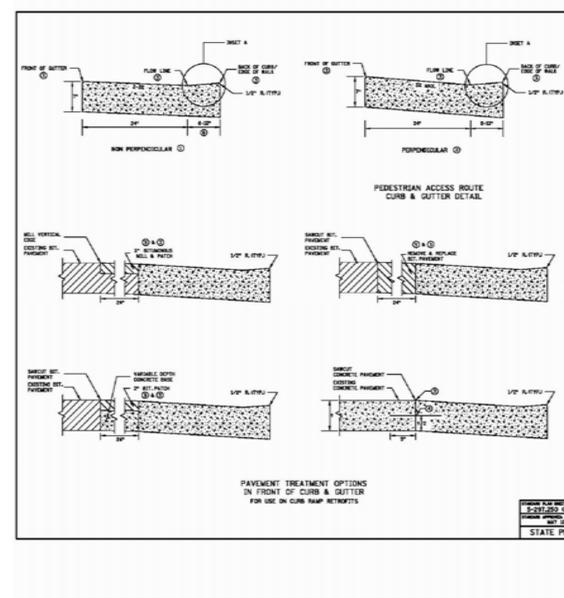
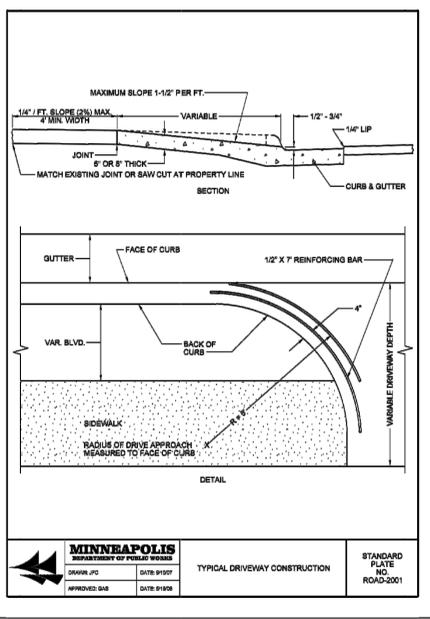
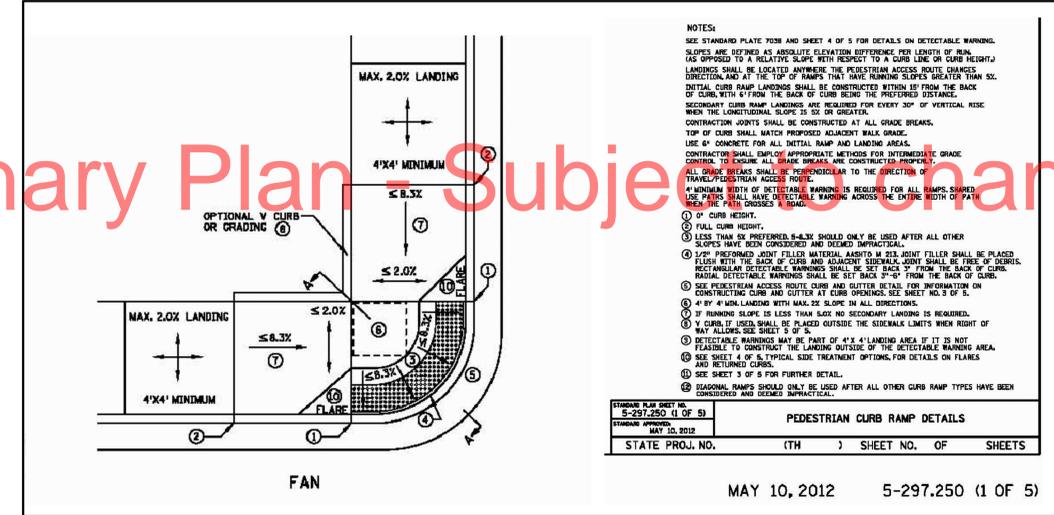
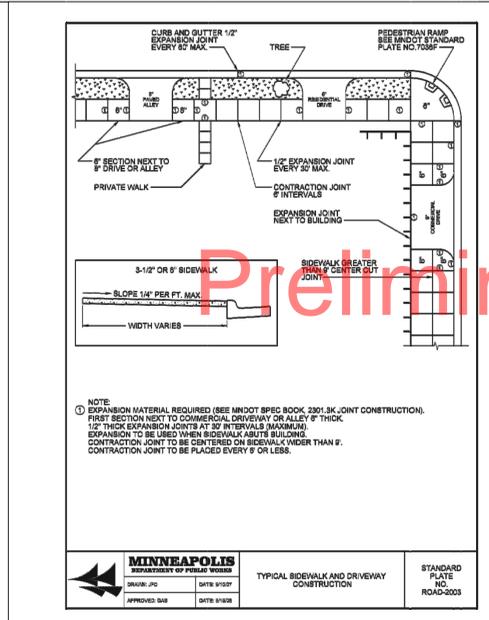
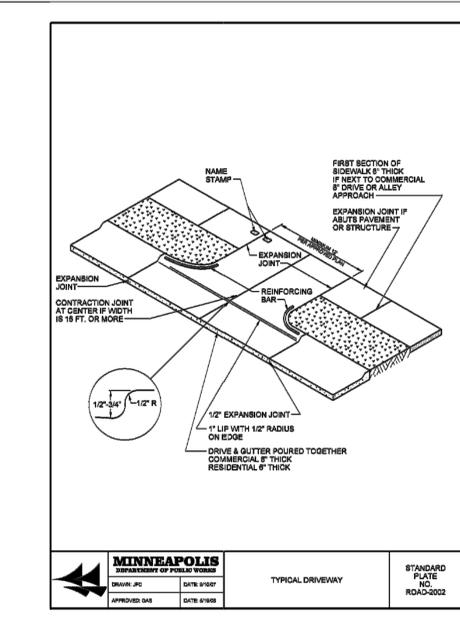
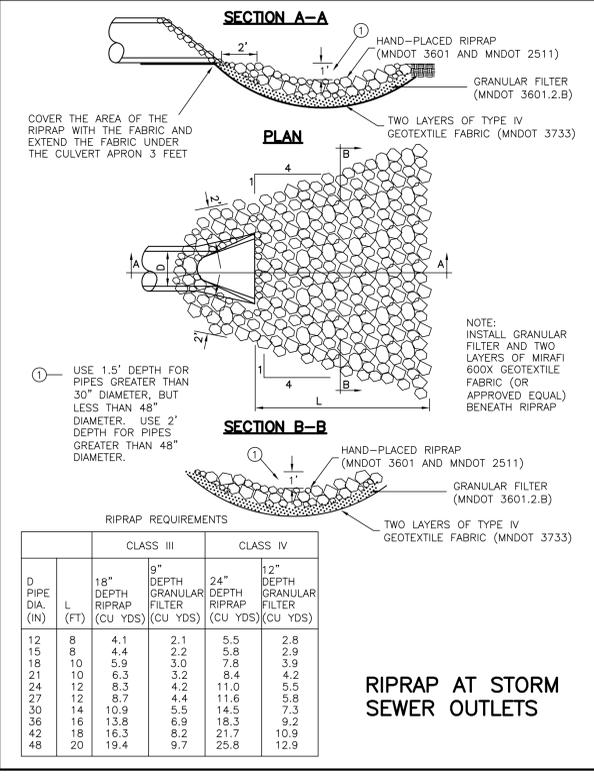
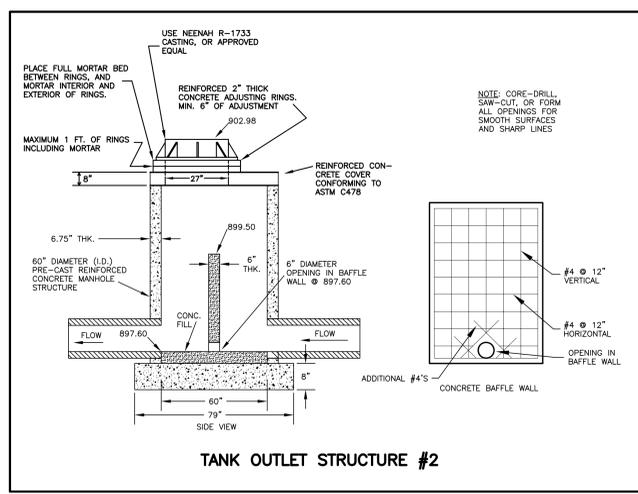
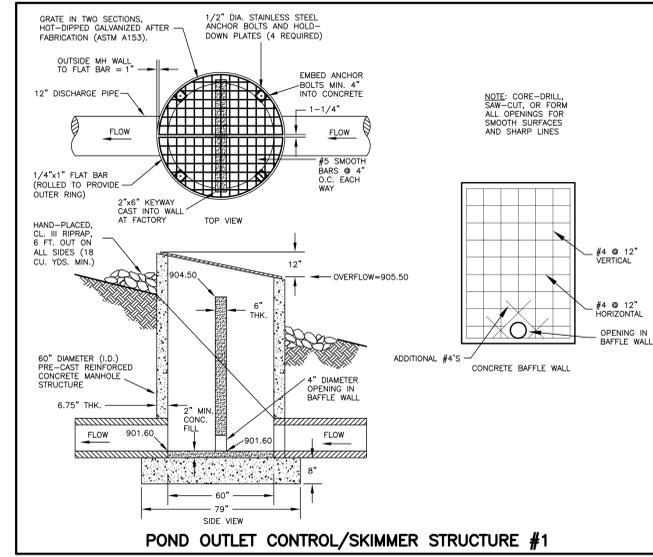
I hereby certify that this document was prepared by me or under my direct supervision and that I am a duly licensed engineer under the laws of the State of Minnesota

Signature
Mike R. Kettler
Title or Printed Name

40425
License # Date



CONSULTING CIVIL ENGINEERS
1000 NEBBIOTT AVENUE SOUTH
BLOOMINGTON, MINNESOTA 55425
(952) 881-3344 TELEPHONE
(952) 881-1015 FAX
www.sunde.com



PDR
JANUARY 28, 2013

ORIGINAL ISSUE: 01/28/2013
REVISIONS
No. Description Date

212902
PROJECT NUMBER
MT MK
DRAWN BY CHECKED BY
WEST BROADWAY FLATS

DETAILS
C4.0

G E N E R A L :

1. Comply with all applicable local, state, and federal safety regulations. Comply with the work safety practices specified by the Occupational Safety and Health Administration (OSHA). OSHA prohibits entry into "confined spaces," such as manholes and inlets (see 29 CFR Section 1910.146), without undertaking certain specific practices and procedures. Perform excavations in accordance with the requirements of O.S.H.A., 29 CFR, Part 1926, Subpart P, Excavations. Sloping or benching for excavations greater than 20 feet deep must be approved by a registered professional engineer (www.osha.gov).
2. Construction safety is solely the responsibility of the Contractor, who is also solely responsible for the means, methods, and sequencing of the construction operations.
3. Refer to the architectural plans for building and stoop dimensions, site layout and dimensions, pavement sections and details, striping, and other site features.
4. Perform all construction work in accordance with State and Local requirements.
5. A licensed surveyor shall perform construction staking. The Contractor shall provide and be responsible for the staking. Verify all plan and detail dimensions prior to construction staking. Stake the limits of walkways and curbing prior to valvebox, maintenance hole, and catchbasin installation. Adjust valvebox and maintenance hole locations in order to avoid conflicts with curb and gutter. Adjust catchbasin locations in order to align properly with curb and gutter.
6. Provide temporary fences, barricades, coverings, and other protections in order to preserve existing items to remain, and to prevent injury or damage to person or property.
7. Connect to existing sanitary sewer MH's by corereilding. Connect to existing storm sewer MH's by either sawcutting or corereilding. Use saws or drills that provide water to the blade. Meet all City standards and specifications for the connection. Reconstruct inverts after installation. Use water stop gaskets in order to provide watertight seals when penetrating a structure wall with a pipe. Take measurements before beginning construction to ensure that service connections do not cut into maintenance access structure joints or pipe barrel joints.
8. Completely remove existing concrete and masonry structures that are located within the proposed building and future building expansion areas. All other existing existing sewer and watermain pipes that are to be abandoned shall either be removed, or completely filled with sand or lean mix grout.
9. **Testing and Inspections:** All plumbing installations, including water and sewer services, must be tested and inspected in accordance with the requirements of the Minnesota Plumbing Code (Minnesota Rules Chapter 4715). Coordinate testing and inspection with the State Health Department and the City Public Works Department. No drainage or plumbing work may be covered prior to completing the required tests and inspections.
10. Coordinate building utility connection locations at 5 ft. out from the proposed building with the with the Interior Plumbing Contractor prior to construction. Verify water and sewer service locations, sizes, and elevations with the Mechanical Engineer prior to construction.

11. The subsurface utility information shown on this plan is utility Quality Level D. This quality level was determined according to the guidelines of C/ASCE 38-02, entitled "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data."
12. The locations of existing utilities shown on this plan are from record information. The Engineer does not guarantee that all existing utilities are shown or, if shown, exist in the locations indicated on the plan. It is the Contractor's responsibility to ascertain the final vertical and horizontal location of all existing utilities (including water and sewer lines and appurtenances). Notify the Engineer of any discrepancies.
13. Contact utility companies for locations of all public and private utilities within all public and private utilities prior to beginning construction. Contact GOPHER STATE ONE CALL at (651) 454-0002 in the Minneapolis/St. Paul metro area, or 1-800-252-1166 elsewhere in Minnesota for exact locations of existing utilities at least 48 working hours (not including weekends and holidays) before beginning any construction in accordance with Minnesa Statute 216D. Obtain ticket number and meet with representatives of the various utilities at the site. Provide the Owner with the ticket number information. Gopher State One Call is a free service that locates municipal and utility company lines, but does not locate private utility lines. Use an independent locator service or other means in order to obtain locations of private utility lines including, but not limited to, underground electric cables, telephone, TV, and lawn sprinkler lines.
14. Pothole to verify the positions of existing underground facilities at a sufficient number of locations in order to assure that no conflict with the proposed work exists and that sufficient clearance is available.

15. Where existing gas, electric, cable, or telephone utilities conflict with the Work, coordinate the abandonment, relocation, offset, or support of the existing utilities with the appropriate local utility companies. Coordinate new gas meter and gas line installation, electric meter and electric service installation, cable service, and telephone service installation with the local utility companies.
16. Arrange for and secure suitable disposal areas off-site. Dispose of all excess soil, waste material, debris, and all materials not designated for salvage. Waste material and debris includes trees, stumps, pipe, concrete, asphaltic concrete, cans, or other waste material from the construction operations. Obtain the right to any waste area for disposal of unsuitable or surplus material either shown or not shown on plans. All work in disposing of such material shall be considered incidental to the work. All disposal must conform to applicable solid waste disposal permit regulations. Obtain all necessary permits at no cost to the OWNER.
17. Straight line saw-cut existing bituminous or concrete surfacing at the perimeter of pavement removal areas. Use saws that provide water to the blade. Tack, and match all connections to existing bituminous pavement.
18. Relocate overhead power, telephone, and cable lines as required. Abandon and report existing on-site wells and septic systems in accordance with Minnesota Department of Health (MDH) requirements.
19. All materials required for this work shall be new material conforming to the requirements for class, kind, grade, size, quality, and other details specified herein or as shown on the Plans. Do not use recycled or salvaged aggregate, asphaltic pavement, crushed concrete, or scrap shingles. Unless otherwise indicated, the Contractor shall furnish all required materials.

20. Reconstruct driveways and patch street to match existing pavement section and grade. Sod right-of-way. The work area shown is general and may extend by delivery trucks, construction equipment, and other vehicles.
21. Provide traffic control in accordance with local authorities and the latest version of the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD) dated January 2007, including the Field Manual for Temporary Traffic Control Zone Layouts.
22. Provide positive drainage away from buildings at all times. Provide and maintain temporary drainage throughout construction until the permanent drainage system and structures are in place and operational. Install temporary ditches, piping, pumps, or other means as necessary in order to insure proper drainage at all times. Provide low points at building pots or roadways with positive outfalls.
23. Protect sub grades from damage by surface water runoff.
24. Full design strength is not available in bituminous pavement areas until the final fill of asphalt is compacted into place. Protect pavement areas from overloading by delivery trucks, construction equipment, and other vehicles.

25. When sawing or drilling concrete or masonry, use saws that provide water to the blade. Do not allow the slurry produced by this process to be tracked outside of the immediate work area or discharged into the sewer system.
26. Adjust all curb stops, valve boxes, maintenance hole castings, catchbasin castings, cleanout covers, and similar items to finished grade.
27. 2% maximum slope in all directions in handicapped accessible parking areas.
28. Install all pipe with the ASTM identification numbers on the top for inspection. Commence pipe laying at the lowest point in the proposed sewer line. Lay the pipe with the bell end or receiving groove end of the pipe pointing upgrate. When connecting to an existing pipe, uncover the existing pipe grade. Do not allow any adjustments in the proposed line and grade before laying any pipe. Do not lay pipes in water or when the trench conditions are unsuitable for such work.
29. Obtain and pay for all permits, tests, inspections, etc. required by agencies that have jurisdiction over the project. The Contractor is responsible for all bonds, letters of credit, or cash sureties related to the work. Execute and inspect work in accordance with all local and state codes, rules, ordinances, or regulations pertaining to the particular type of work involved.
30. Obtain permits from the City for work in the public right-of-way.
31. Refer to the geotechnical report by the Soils Engineer for dewatering requirements.
32. Construct sanitary sewer, watermain, and storm sewer utilities in accordance with the City Engineer's Association of Minnesota Standard Specifications sections 2600, 2611, and 2621 dated 1999, or the latest revised edition.
33. These plans, prepared by Sunde Engineering, PLLC, do not extend to or include systems pertaining to the safety of the construction contractor or its employees, agents, or representatives in the performance of the work. The seal of Sunde Engineering's registered professional engineer herein does not extend to any such safety systems that may not or hereafter be incorporated into these plans. The construction contractor shall prepare or obtain the appropriate safety systems which may be required by U.S. Occupational Safety and Health Administration (OSHA) and/or local regulations.
34. Install detectable underground marking tape directly above all pvc, polyethylene, and other non-metallic lines at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Bring the tape to the surface at various locations in order to provide connection points for locating underground utilities.
35. Support all utilities on a stable soil foundation observed and approved by a Minnesota Registered Engineer. Use Field Lok (US Pipe) or approved equal gaskets and TR Tele Flex or approved equal coupling at the vertical riser connection at the building (installed in the telescoped--position).
36. Reference in these Plans to "MNDOT Standard Specifications" shall mean the Standard Specifications for Highway Construction of the Minnesota Department of Transportation dated September 5, 2000 and all subsequent amendments thereto published prior to the date of the Advertisement for Bids, provided that the provisions for measurement and payment do not apply to the work of this Contract.

37. The Contractor shall be responsible for the design and construction of the proposed retaining walls. A Minnesota Licensed Civil Engineer must design and sign the retaining wall design. The Contractor shall be responsible for all costs associated with the retaining wall system design and construction, and shall include the costs of submitting detailed plans and specifications for the retaining wall system to the Owner for review. TW = Top of wall. BW = Surface elevation at bottom of wall.
38. Perform all construction activity in accordance with the Minnesota Pollution Control Agency **GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY** issued August 1, 2008 and all subsequent amendments thereto.
39. The Engineer is not responsible for means, methods, safety, and sequencing.
40. **Concrete Pavement Tolerances:** When the concrete has hardened sufficiently, check it with straightedge. Surface smoothness deviations shall not exceed 1/4 inch (6 mm) from the straightedge placed in any direction, including placement along and spanning any pavement joint edge. Immediately grind down with an approved grinding machine areas in a slab showing high spots of more than 1/4 inch (6 mm) but not exceeding 1/2 inch (13 mm) to an elevation that will fall within the tolerance of 1/4 inch (6 mm) or less. Remove and replace pavement where the departure from the specified cross-section exceeds 1/2 inch (13 mm).
41. **Bituminous Pavement Tolerances:** Check bituminous pavement surfaces with a 10-foot (3-meter) straightedge. Remove and replace any part of the bituminous pavement where the deviation of surface flatness in excess of 1/4 inch (6 mm). After compaction, the thickness of each bituminous course shall be within plus or minus 1/2 inch (13 mm) of the thickness shown on the Plans. Remove and replace any part of the bituminous pavement that is constructed with less than the minimum required thickness.
42. **Pavement Alignment Tolerances:** Lateral deviation from established alignment of the pavement edge shall not exceed plus or minus 0.10 foot (30 mm). Vertical deviation from established grade of the pavement shall not exceed plus or minus 0.04 foot (13 mm) at any point.

S I T E G R A D I N G :

1. Visit the site. Become familiar with the site and existing site conditions including available soil reports. Examine all local conditions at the site, and assume responsibility as to the grades, contours, and the character of the earth, existing conditions, and other items that may be encountered during construction work above or below the existing grades. Review the drawings and specifications covering this work and become familiar with the anticipated site conditions.
2. Unless otherwise noted, all proposed grades shown are finished grades. Finished grades at points between spot elevations or contours are determined by uniform slopes between the given grades. All proposed spot elevations shown at curblines are to bottom of curb (gutterline) unless otherwise indicated.
3. At locations where new work connects to existing work, field verify existing elevations and grades prior to beginning the new work. Match existing grades at construction limits.
4. Due to the location of adjacent structures, it may be necessary to apply slope stabilization techniques in order to excavate to the final foundation elevations. Refer to the geotechnical report by the Soils Engineer for requirements regarding acceptable methods.
5. Remove all unsuitable material (organic soils, uncontrolled fill, debris, and natural or artificial obstructions) in the zone from 1 m (3.28 feet) below the finished subgrade to finished subgrade in the proposed pavement areas.
6. Comply with the requirements of O.S.H.A. 29 CFR, Part 1926, Subpart P, "Excavations and Trenches." (www.osha.gov)
7. Construct all proposed sideslopes with grades not exceeding 3:1 (3 horizontal to 1 vertical), unless otherwise indicated.
8. Provide positive drainage away from buildings at all times.
9. Test roll the building and pavement areas in the presence of the Geotechnical Engineer. Perform base preparation and test rolling prior to curb and gutter construction, paving of gravel base, sand/gravel sub-base, bituminous stabilized base, or plant mixed bituminous base on all street and pavement areas. Test roll the area between 300 mm (12 inches) outside of the back of the curbs on either side of the paved areas. Use a heavy pneumatic-tired roller, towed by suitable tractor/equipment, with two wheels spaced not more than 1,800 mm (71 inches) apart (transversely center to center), tire size equal to 19x24 or 19x25 (18" wide) inflated to a pressure of 650 kPa (94 psi), and a gross mass of the roller not less than 13.5 metric tons (14.9 tons) and not more than 13.7 metric tons (15.1 tons). Test roll the above specified area in a manner such that each part of the area comes in contact with one of the tires at least once. Operate the heavy roller at a speed of not less than 4 km/h (2.5 mph) and not more than 8 km/h (5 mph). The subgrade shall be considered unstable if, at the time that the heavy roller passes over the subgrade, the surface shows yielding or rutting of more than 50 mm (2 inches), measured from the original surface to the bottom of the rut. Correct any soft spots or displacements which appear during the test rolling by scarifying, aerating or watering, and recompacting as required to obtain stability, or by excavating to solid material and backfilling with material suitable for base construction. Remove material such as vegetation, rubbish, large stones, peat, and wet clay. Retest the area after correction.
10. Perform soil correction procedures and compaction in accordance with the soils report.
11. Coordinate inspection and approval of all subgrades within the building and pavement areas with the Geotechnical Engineer. Coordinate inspection and approval of all fill materials prior to placement within the building and pavement areas with the Geotechnical Engineer. Use only uncontaminated fill material.
12. Conduct all grading operations in a manner that minimizes the potential for site erosion.
13. Grade the site to the finished elevations shown on the plan. Import embankment material, or remove and dispose of excess excavation material as required. Provide waste areas or disposal sites for excess material including, but not limited to, excavated material or broken concrete that is not desirable to be incorporated into the work involved on this project. Determination of material import and export quantities is solely the responsibility of the Contractor and the cost of material import and export is incidental to the contract.
14. Scarify areas to receive aggregate surfacing to a minimum depth of 8 inches and compact to 95% Standard Proctor Maximum Dry Density (ASTM D698) with the moisture content of the soil at the time of compaction not less than 2 percentage points below and no more than 2 percentage points above the optimum moisture content.
15. Place 6 inches of compacted aggregate surfacing in 2 equal depth lifts in the pad and access road areas (see detail).
16. In areas where fill is placed on slopes steeper than 5:1, horizontally bench the slopes in order to increase the bond between the slope and the proposed embankment.
17. **Tolerances:** The completed subgrade under slabs and pavement areas shall be compacted, free from irregular surface changes, and fine-graded not more than 16 mm (0.05 feet) above or below the specified subgrade elevation. The completed subgrade in other areas shall be compacted, free from irregular surface changes, and fine-graded not more than 30 mm (0.10 feet) above or below the specified subgrade elevation. The completed top of topsoil shall be compacted, free from irregular surface changes, and fine-graded not more than 16 mm (0.05 feet) above or below the specified finished grade elevation.
18. Choose equipment and work procedures that will not disturb the subgrade soils. Route construction traffic away from foundation soils and areas of pavements and slabs in order to minimize soil disturbance. If the construction equipment causes rutting or soil pumping, then switch to other types of equipment or methods. The Contractor is solely responsible for the proper selection of construction equipment in order to avoid disturbing soils on the site.
19. It is typical to abbreviate spot elevations. Elevations shown as 12.8 or 12.1 are understood to mean 912.8 or 912.1 respectively.

W A T E R D I S T R I B U T I O N S Y S T E M :

1. **Separation of Water and Sewer:** Construct sewer and water services in accordance with Minnesota Rules, part 4715.1710, subparts 2 and 3. Provide a minimum horizontal separation of 10 feet between all water and sewer lines, including manholes, catch basins, storm sewer, sanitary sewer, drainline, or other potential sources for contamination. Measure the separation distance from the outer edge of the pipe to the outer edge of the contamination source (outer edge of structures, piping, etc.). All water and sewer crossings, the bottom of the water pipe located within ten feet of the point of crossing must be at least 12 inches above the top of the sewer. When this is not feasible, the sewer must conform to the requirements of Minnesota Rules, part 4715.170, subpart 2E. No joints or connections are allowed on the water line within 10-feet of the crossing.
2. **Watermain Depth:** Maintain 8-feet of cover over the top of the water lines to the finished grade. Verify elevation of proposed and existing water lines at all utility crossings. Install the water lines at greater depths in order to clear storm sewers, sanitary sewers, or other utilities as required. Include costs to lower water lines in the base bid.
3. **Disinfection:** Disinfect all completed watermains in accordance with AWWA Standard C651. If the tablet or continuous feed methods are used, disinfect using with water that contains at least 50 ppm of available chlorine in accordance with Minnesota Rules, part 4715.2250. Do not use the tablet method on solvent-welded plastic or on screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite. Retain the treated water in the pipeline for at least 24 hours. Measure the chlorine residual at the end of the 24 hour period. The free chlorine residual must be at least 1.0 mg/l measured at any point in the line. Measurement of the chlorine concentration at regular intervals shall be in accordance with Standard Methods, AWWA M-12, or using appropriate chlorine test kits.
4. **Testing:** Pressure test and perform bacteriological tests on all water lines under the supervision of the City Public Works Department. Notify the City at least 24 working hours prior to any testing. Pressurize the waterline to 1034-kPa (150-psi) gauge pressure (measured at the point of lowest elevation) by means of a pump connected to the pipeline's satisfactory meter. Maintain the test pressure for a minimum of 2 hours. Do not add water to the watermain in order to maintain the required water pressure during testing. The required water pressure during testing of pipe is acceptable with a pressure drop of 14 kPa (2 psi) or less.
5. Use ANSI/AWWA C151/A2.51 Thickness Class 52 or Pressure Class 350 Ductile Iron Pipe (DIP) with push-on joints for all watermain. Use only stainless steel bolts and nuts on all watermain fittings, valves, and hydrants.
6. Polyethylene encasement is required on all ductile iron pipe.
7. Use mechanical joint restraint devices for joint restraint on all watermain bends having a vertical or horizontal deflection of 22-1/2 degrees or greater, all valves, stubs, extensions, tees, crosses, plugs, all hydrant valves, and all hydrants in accordance with City requirements. Use "Series 1100 Megalug" manufactured by EBAA Iron Inc., Eastland, Texas, or approved equal, installed in accordance with manufacturer's recommendations for restraint on Ductile Iron Pipe.
8. At all valve locations which require a 12" or smaller valve, install gate valves which are of the compression resilient seated (CRS) type. Use American Flow Control's Series 2500 Ductile Iron Resilient Wedge Gate Valve, or approved equal. Gate valves shall conform to AWWA C509. Install cast iron valve boxes conforming to ASTM A48 at each valve location. Valve boxes shall be the three-piece type with 5-1/4" shafts. Use Tyler 6860-G with No. 6 base, or equivalent. Valve boxes shall have at least 6" of adjustment above and below finished grade. Drop covers on valve boxes shall be round and bear the word "WATER" cast on the top. Use Tyler 6860-G "Stayput" covers with extended skirt, or equivalent.
9. Use Mueller H 10300 or Ford EM 2 7057, or approved equal, at all curb stop locations. Stationary rod is required on all curb stops.
10. Fire hydrants shall be in accordance with the requirements of the local municipality. Do not connect hydrant drains to sanitary sewers or storm sewers. Do not locate hydrants within 10 feet of sanitary sewers or storm sewers. When placing fire hydrants in locations where the groundwater table is less than 8 feet below the ground surface, plug the hydrant drain holes and equip the hydrants with a top stating the need for pumping after use.
11. Do not connect new watermain to existing until the new water main is pressure tested and disinfected.
12. Watermains and hydrants must be installed and operable before construction of the building starts.
13. **Water Service Disconnects:** Expose the water service at the main line, turn the corporation to the "off" position, cut the copper service line, and crimp-off.
- 14.
15. Install valves on both fire and domestic water services inside building before testing. Terminate fire riser and domestic riser with a thread-on flange, or a mechanical joint to flange adapter.
16. Bring all site utilities to 5' outside of the building line with the exception of the water service. Extend water service into the building and up to the flange for the water meter.
17. **Fire Hydrant Removal:** A fire hydrant assembly consist of a bottom piece, a lower barrel, an upper barrel, and a cap or nozzle section. Each fire hydrant may also have an auxiliary gate valve. At each fire hydrant removal location, completely remove the entire fire hydrant assembly as well as the associated auxiliary gatevalve.
18. Install detectable underground marking tape directly above all pvc, polyethylene, and other nonconductive underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Bring the tape to the surface at various locations in order to provide connection points for locating underground utilities. Install blue Rhino TriView Flex Test Stations, or approved equal, with black caps at each surface location.

S A N I T A R Y S E W E R :

1. Unless otherwise indicated, use reinforced, precast, concrete maintenance holes conforming to ASTM C478, furnished with precast bases. Sanitary sewer maintenance holes shall be supplied with pre-formed inlets and flexible neoprene sleeve connections for all lateral lines 375 mm (15 inches) in diameter or less, unless otherwise indicated. Joints for all precast maintenance hole sections shall have confined, rubber "O"-ring gaskets in accordance with ASTM C923. The inside barrel diameter shall not be less than 48 inches.
2. **Edge:** Use solid-core, Schedule 40, ASTM D2665 Polyvinyl Chloride (PVC) Plastic Pipe for all designated PVC sanitary sewer services. Joints for all sanitary sewer shall have push-on joints with elastomeric gaskets. Use of solvent cement joints is allowed for building services. Solvent cement joints in PVC pipe must include use of a primer which is of contrasting color to the pipe and cement in accordance with Minnesota Rules, part 4715.0810, subpart 2. Pipe with solvent cement joints shall be joined with PVC cement conforming to ASTM D2564. Lay all PVC pipe on a continuous granular bed. Installation must comply with ASTM D2321.
3. **Cleanouts:** Install cleanouts on all sanitary sewer services in accordance with Minnesota Rules part 4715.1010. The distance between cleanouts in horizontal piping shall not exceed 100 feet for pipes 4-inch and over in size. Cleanouts shall be of the same nominal size as the pipes they serve. Include frost sleeves and concrete frame and pipe support. Install a meter box frame and solid lid (Neenah R-1914-A, or approved equal) over all cleanouts.
4. **Testing:** Pressure test all sanitary sewer lines in accordance with the Minnesota Rules part 4715.2820. Test all flexible sanitary sewer lines for deflection after the sewer line has been installed and backfill has been in place for at least 30 days. No pipe shall exceed a deflection of 5%. If the test fails, make necessary repairs and retest.
5. Install detectable underground marking tape directly above all pvc, polyethylene, and other nonconductive underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Bring the tape to the surface at various locations in order to provide connection points for locating underground utilities. Install blue Rhino TriView Flex Test Stations, or approved equal, with black caps at each surface location.
6. **Sanitary Sewer Disconnects:** Expose existing sanitary sewer service and saw-cut the line perpendicular to the direction of flow. Install a Fernco and plug on the downstream side of the saw-cut. Use Fernco model #1002-44, #1002-64, or equivalent. Install either a PVC or ductile iron plug.
7. Install a meter box and cover (Mueller No. H-10817, or approved equal) over all PVC cleanouts.

S T O R M D R A I N A G E :

1. Unless otherwise indicated, use reinforced, precast, concrete maintenance holes and catchbasins conforming to ASTM C478, furnished with water stop rubber gaskets and precast bases. Joints for all precast maintenance hole sections shall have confined, rubber "O"-ring gaskets in accordance with ASTM C923. The inside barrel diameter shall not be less than 48 inches.
2. Install catchbasin castings TOP with specified top elevation at the front rim. 
3. All joints and connections in the storm sewer system shall be gasketed or watertight in accordance with Minnesota Rules part 4715.0700. Approved resilient rubber joints or waterstop gaskets must be used in order to make watertight connections to manholes, catchbasins, and other structures. Cement mortar joints are not allowed.
4. **(Outside Minnesota) All joints and connections to catchbasins or manholes shall be watertight. Use resilient rubber seals, waterstop gaskets, or approved equal. Cement mortar joints are not allowed.**
5. **PVC Pipe:** Use solid-core, SDR-35, ASTM D3034 Polyvinyl Chloride (PVC) Pipe for designated PVC storm sewer services 4 to 15-inches in diameter. Use solid-core, SDR-35, ASTM F679 Polyvinyl Chloride (PVC) pipe for designated PVC storm sewer services 18 to 27-inches in diameter. Joints for all storm sewer shall have push-on joints with elastomeric gaskets. Use of solvent cement joints is allowed for building services. Solvent cement joints in PVC pipe must include use of a primer which is of contrasting color to the pipe and cement in accordance with Minnesota Rules, part 4715.0810, subpart 2. Pipe with solvent cement joints shall be joined with PVC cement conforming to ASTM D2564. Lay all PVC pipe on a continuous granular bed. Installation must comply with ASTM D2321.
6. **RCP:** Reinforced concrete pipe (RCP) and fittings shall conform to ASTM C76, Design C, with circular reinforcing for the class of pipe specified. Use Class IV RCP for pipes 21" and larger. Use Class V RCP for pipes 18" and smaller. Joints shall be Bureau of Reclamation type R-4, with confined rubber "O"-ring gaskets in accordance with ASTM C361.
7. **RC Aprons:** Install a reinforced concrete apron on the free end of all daylighted RCP storm sewer pipes. Tie the last three sections (including apron) of all daylighted RCP storm sewer with a minimum of two tie bolt fasteners per joint. This requirement applies to both upstream and downstream pipe inlets and outlets. For concrete culverts, tie all joints. Ties to be used only to hold the pipe sections together, not for pulling the sections tight. Nuts and washers are not required on inside of 675 mm (27 inch) or less diameter pipes. Install safety-trash racks on all concrete aprons.
8. **Testing:** Test all portions of storm sewer that are within 10 feet of buildings, within 10 feet of buried water, lines, within 50 feet of water wells, or that pass through soil or water identified as being contaminated in accordance with the Minnesota Rules part 4715.2820. Test all flexible storm sewer lines for deflection after the sewer line has been installed and backfill has been in place for at least 30 days. No pipe shall exceed a deflection of 5%. If the test fails, make necessary repairs and retest.
9. **Drainline:** In accordance with Minnesota Rules part 4715.2820, use perforated polyvinyl chloride PVC (ASTM D3034) or corrugated polyethylene PE (ASTM F405) on all drainline 3-inches to 6-inches in diameter. Install drainline with MnDOT 3733 Type 1 geotextile filter wrap or knit sock.
10. Use a Neenah R-1733 frame with Type "C" radial grate, or approved equal, on CB #2.
11. Use Neenah R-3067-DR/DL casting with curb box, or approved equal, on CB #1 and CB #7. Casting shall include the "NO DUMPING, DRAINS TO RIVER." environmental notice.
12. Use Neenah R-4990-CX TYPE "A" grates and frames on the proposed trench drain. Install end pieces.
13. Use Neenah Foundry Co. R-1642 casting with self-sealing, solid, type B lid, or approved equal, on all storm sewer maintenance holes. Covers shall bear the "Storm Sewer" label.
14. **Security Areas:** Use Neenah Foundry Co. R-1642 casting with self-sealing, solid, type B **hatted** lid, or approved equal, on all storm sewer maintenance holes. Use tamper-proof bolts. Covers shall bear the "Storm Sewer" label.
15. Use a Neenah R-1733 frame with **hatted**, Type "C" radial grate, or approved equal, on the Tank Vents. Use tamper-proof bolts.
16. Install detectable underground marking tape directly above all pvc, polyethylene, and other nonconductive underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Bring the tape to the surface at various locations in order to provide connection points for locating underground utilities. Install blue Rhino TriView Flex Test Stations, or approved equal, with black caps at each surface location.
17. Depress the tops of manholes and catchbasins in paved areas 0.5 inches (12.7 mm). Depress the tops of all catchbasins in gutterlines 2.0 inches (50.8 mm). The top elevations shown on the plan reflect the pavement elevation adjacent to the manhole or catchbasin, not the depressed elevation.
18. Insulate roof drain leaders that have less than 4 feet of cover.
19. Pipe **shall** be installed in accordance with the manufacturer's recommendations. The pipe shall be laid with the outside legs of circumferential joints pointing upstream and with the longitudinal lips at the sides at about the vertical midheight of the pipe. Field welding of corrugated galvanized iron or steel pipe shall not be permitted.

Preparatory Plan - Subject to change

**WEST BROADWAY
FLATS**
2220 West Broadway Avenue
Minneapolis, MN 55411



eñes swenson graham architects

500 washington avenue south
minneapolis minnesota 55415
p. 6 1 2 . 3 3 9 . 5 5 0 8
f. 6 1 2 . 3 3 9 . 5 3 8 2
www.esgaarch.com

I hereby certify that this document was prepared by me or under my direct supervision and that I am a duly licensed engineer under the laws of the State of Minnesota

Signature
Mike R. Kettler
Typed or Printed Name
40425
License # Date



CONSULTING CIVIL ENGINEERS
10832 NESBITT AVENUE SOUTH
EELINGTON, MINNESOTA 55427
(952) 881-3344 TELEPHONE
(952) 881-1915 FAX
www.sundeat.com

PDR
JANUARY 28, 2013

ORIGINAL ISSUE: 01/28/2013

REVISIONS		Date
No.	Description	

212902
PROJECT NUMBER

MT DRAWN BY
MK CHECKED BY

WEST BROADWAY FLATS

NOTES

C5.0

SWPPP CONTACT INFORMATION		
AGENCY / POSITION	CONTACT PERSON	PHONE NUMBERS
Owner*		
Contractor**		
Erosion Control Installer		
B.E. Landscape Designs, LLC 705 Raymond Ave St. Paul, MN 55114 Landscape Architect	Ben Erickson	(612) 382-0902 office
SUNDE ENGINEERING, PLLC 10830 Nesbit Avenue South Bloomington, MN 55437 SWPPP Designer	Brian Mundstock	(952) 881-3344 office (952) 881-1913 fax
* Party responsible for long term operation and maintenance of the permanent stormwater management system.		
**Party responsible for overseeing the implementation of the SWPPP.		

GENERAL REQUIREMENTS:

- Apply for and obtain the GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY from the Minnesota Pollution Control Agency.
- Perform all construction activity in accordance with the Minnesota Pollution Control Agency GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY issued August 1, 2008 and all subsequent amendments thereto.
- Stormwater Pollution Prevention Plan (SWPPP): The SWPPP includes this narrative, the Grading, Utility, and Erosion Control Plans, Notes, Detail sheets, and Stormwater Management Calculations.
- Keep a copy of the SWPPP, all changes to it, and inspections and maintenance records at the site during the construction. The SWPPP must be available for review. The SWPPP can be kept in the field either on an on-site trailer or a project manager on site, then place the SWPPP in an accessible on-site container.
- The Contractor must designate a person knowledgeable and experienced in the application of erosion prevention and sediment control BMPs who will oversee the implementation of the SWPPP, and the erosion prevention, inspection, and maintenance of the erosion prevention and sediment control BMPs before and during construction.
- The person who will oversee implementation of the SWPPP must have daily access to the SWPPP documentation.
- Individuals preparing the SWPPP for the project, overseeing implementation of the SWPPP, revising and amending the SWPPP, and at least one individual on the project performing installation, inspection, maintenance, and repairs of BMPs must be trained. The training must be done by a local, state, federal agencies, professional organization, or other entities with expertise in erosion prevention, sediment control, or permanent storm water management. Training documentation must be in or with the SWPPP or be available within 72 hours upon request.

EROSION PREVENTION PRACTICES:

- Delineate the location of areas not to be disturbed (e.g. with flags, stakes, signs, silt fence, etc.) on the development site before work begins.
- Avoid removal of trees and surface vegetation wherever possible. Schedule construction in order to expose the smallest area of soil at any given time. Implement temporary construction practices including phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion.
- Following initial soil disturbance or redistribution, complete permanent or temporary stabilization against erosion during the winter as soon as possible, but in no case later than 14 calendar days on all disturbed or graded areas including stormwater management pond sidelopes. This requirement does not apply to those areas that are currently being used for material storage or for those areas on which grading, site building, or other construction activities are actively underway.
- Provide temporary grass seed cover on all topsoil stockpiles and other areas of stockpiled or excavated material in order to prevent soil erosion and rapid runoff during the construction period. Prolonged periods of open, bare earth will not be permitted. Stabilize all disturbed greenness areas with a minimum of 4" topsoil immediately after final subgrade completion. Seed and mulch, or sod and stake these areas within 48 hours after completion of final grading work (weather permitting).
- Stabilize all disturbed areas to be paved using early application of gravel base.
- Stabilize the normal wetted perimeter of any temporary or permanent drainage ditch or swale that conveys water by any portion of the construction site, or diverts water around the site, within 200 feet from the disturbed area or within 200 feet from the point of discharge to a surface water. Stabilization of this 200 feet must be completed within 24 hours of connecting to a surface water.
- Stabilize the remaining portions of any temporary or permanent drainage ditches or swales within 14 calendar days after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased.
- Provide pipe outlets with temporary or permanent energy dissipation within 24 hours of connection to a surface water. Place a 450 mm (18 inch) thick layer of MNDOT 3601 Class III riprap on a 225 mm (9 inch) thick layer of MNDOT 3601 2.8 granular filter material at locations indicated on the plan in accordance with MNDOT 3733 Type IV Geotextile Fabric beneath the granular filter material. At pipe outlets configure the installation as shown on MNDOT Standard Plate 3133 for the site. The pipe outlets and extend the geotextile fabric under the culvert opening a minimum of 3 feet. For pipe sizes smaller than 300 mm (12 inch) diameter, the minimum quantity of riprap and filter blanket shall be no less than that required for 300 mm (12 inch) diameter pipes.
- Apply necessary moisture to the construction area and haul roads in order to prevent the spread of dust.

SOIL STABILIZATION:

- Water and maintain seeded or sodded areas on a timely day-to-day basis. In the event of a seeding failure, reseed and renorm the areas where the original seed has failed to grow and perform additional watering as necessary at no additional cost to the Owner. Promptly replace all sod that dries out to the point where it is presumed dead and all sod that has been damaged, disposed, weakened, or heavily infested with weeds at no additional cost to the Owner.
- In areas to be temporarily seeded, use introduced seed mixture equivalent to MNDOT No. 250. Apply seed mixture at a rate of 78.4 kg per hectare (70 lbs per acre) in accordance with MNDOT Standard Spec. 2575. Incorporate a Type 3 fertilizer (slow release type with 10 week residual) consisting of 22-5-10 (N-P-K) into the soil at an application rate of 392 kg per hectare (350 lbs per acre) by diskking prior to seeding.
- In areas to be permanently seeded, use native seed mixture equivalent to MNDOT No. 350. Apply seed mixture at a rate of 84.5 kg per hectare (84.5 lbs per acre) in accordance with MNDOT Standard Spec. 2575. Incorporate a Type 3 fertilizer (slow release type with 10 week residual) consisting of 22-5-10 (N-P-K) into the soil at an application rate of 392 kg per hectare (350 lbs per acre) by diskking prior to seeding.
- Establish native seed mix in accordance with MNDOT Standard Spec. 2575.3. Use a Truxac type, or equal interseeder drill with at least two seed boxes; a small/finer seed box and a large/coarse seed box. Drill large/coarse seeds to a final planting depth of 10 mm (1/2 inch) to 25 mm (1 inch) deep from the large/finer seed rate in half and make two passes over the site in order to decrease competition in drill rows. Scatter small/finer seeds to the soil surface by drop-seeding from the small/finer seed box, or broadcast. Coordinate with the seed vendor to keep the large/finer seeds separate from the small/finer seeds so that they may be installed from separate seed boxes. Lightly harrow or rake the site following the seeding operation. Pack the site following harrowing in order to ensure a firm seed bed.

- Comply with the requirements of MNDOT Standard Spec. Table 2975-1 for season of planting native seed mixtures. The appropriate dates for spring seeding are from April 15 through July 20. Fall seeding dates are from September 20 to October 20. Dormant seeding dates are from October 20 to November 15. Dormant seeding will only be allowed if the maximum soil temperature at a depth of 25 mm (1 inch) does not exceed 10 degrees C (50 degrees F) in order to prevent germination. When the dates in the season of planting prohibit seeding of the permanent seed mixture, apply temporary seeding and mulch in order to comply with the requirements of the GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY and then apply permanent seeding at a later date.
- Maintenance of Areas Planted With Native Seeds: To reduce weed establishment, mow 2 to 3 times (30 days apart) during the first year with the mower deck angled 6" - 8" off the ground. Mow one time during the 2nd year seeding in accordance with manufacturer's recommendations. Following the initial 2 years of maintenance in order to remove dead plant material and stimulate new seed.
- In areas to be permanently stabilized, landscape with decorative rock, plantings, and sod (refer to Landscape Plan for design and details).
- Reinforce the pond overflow swale with Landlok TRM 450 turf reinforcement mat, or approved equal. Install the mat in accordance with the manufacturer's recommendations.
- In seeded areas with slopes equal to or flatter than 4:1, apply MNDOT Standard Spec. 3882 Type 1 mulch uniformly over the soil surface by hand or machine within 24 hours after seeding in accordance with MNDOT Standard Spec. 2575.3. Apply mulch at a rate of 4.5 metric tons per hectare (2 tons per acre), immediately after placement, anchor all mulch material to the soil by crimping (strapping) diskking in a direction opposite that of the overland storm water flow. Punch the mulch into the soil to a depth of 2 to 3 inches with a disk spacing of 8" or less.
- In seeded areas with slopes steeper than 4:1, install biodegradable erosion control blankets uniformly over the soil surface by hand within 24 hours after seeding in accordance with manufacturers recommendations. Use MNDOT Standard Spec. 3885 Wood Fiber 25, or Wood Fiber 25 type blanket.
- In seeded ditches, install biodegradable erosion control blankets uniformly over the soil surface by hand within 24 hours after seeding in accordance with manufacturers recommendations. Use MNDOT Standard Spec. 3885 Coconut 25, or Wood Fiber HV 25 type blanket.
- Erosion Control Blanket Installation: Lay the blanket parallel to the direction of water flow with the netting on the top. Spread the blankets evenly without stretching so that fibers are in direct contact with the soil. Overlap adjacent strip edges 2 - 4 inches. Overlap strip ends a minimum of 10 inches with the upgrade strip on top. Bury the upstream end of each blanket at least 6 inches in a vertical trench with the soil pressed firm against the embedded mat. Install additional check trenches at 50' intervals. Staple strip ends and end overlaps with not more than 12 inches between staples. Staple all other joints and edges at 2 ft intervals. Place additional staples down the center of each blanket in a diamond pattern at a maximum of 2 foot intervals. Insert all staples flush with the ground surface. Staples shall be 1/2 gauge or heavier "U"-shaped with a 1 - 2 inch crown. Staple length shall be 10 inches.
- Winter Mulching: Snow mulching consists of mulch material spread over frozen ground. Mulch materials that do not require disc-anchoring into the soil may be placed without modification. Mulch materials that require disc-anchoring may be anchored with hydraulic soil stabilizers or may be frozen to the soil by applying water at a rate of 2000 gallons per acre over the mulch as a substitution for disc-anchoring.

SEDIMENT CONTROL PRACTICES:

- Implement sediment control practices in order to minimize sediment from entering surface waters, including curb and gutter systems and storm drain inlets.
- Install all temporary or permanent sediment control measures including silt fence at perimeter of construction, rock construction entrances, sediment filters, silt sacks, and sedimentation basins prior to beginning site clearing, grading, or other land-disturbing activities.
- Establish sediment control practices on all down gradient perimeters before any up gradient land disturbing activities begin. These practices must remain in place until final stabilization has been established.
- The timing of the installation of sediment control practices may be adjusted in order to accommodate short-term activities, but sediment control practices must be installed before the next precipitation event even if the short-term activity is not complete.
- If the down gradient treatment system becomes overloaded, install additional up gradient sediment control practices or redundant BMPs in order to eliminate the overloading.
- Install check dams, diversion swales, or other grade control practices in order to ensure sheet flow and prevent rills (for slope lengths greater than 75 feet with a grade of 3:1 or steeper).
- Prior to beginning site clearing and grading, protect all storm sewer inlets that receive runoff from disturbed areas. In order to prevent sediment from entering the storm sewer system, seal all storm sewer inlets that are not needed for site drainage during construction. Protect all other storm sewer inlets by installing sediment control devices or other land-disturbing activities. Straw bales or other non-approved forms of inlet protection. Protect new storm sewer inlets as they are completed. Maintain storm sewer inlet protection in place until all sources with potential for discharging to the inlets are stabilized.
- Before beginning construction, install a TEMPORARY ROCK CONSTRUCTION ENTRANCE at each point where vehicles exit the construction site. Use 25 mm (1 inch) to 50 mm (2 inch) diameter rock, MNDOT Standard Specification 3137 CA-1, CA-2, or CA-3, or equal Coarse Aggregate. Place the aggregate in a layer at least 152 mm (6 inches) thick across the entire width of the entrance. Extend the entrance at least 15 m (50 feet) into the construction zone. Use a MNDOT Standard Specification 3733 Type V permeable geotextile fabric material beneath the aggregate in order to prevent migration of soil into the rock from below. Maintain the entrance in a condition that will prevent tracking or flowing of sediment onto paved roadways. Provide periodic top dressing with additional stone as required. Close entrances not protected by temporary rock construction entrances to all construction traffic.
- If necessary, clean the wheels of construction vehicles in order to remove soils before the vehicles leave the construction site. Wash vehicles only on an area stabilized with stone that drains into an approved sediment trapping device.
- Remove all soils and sediments tracked or otherwise deposited onto adjacent property, pavement areas, streets, roads, and alleys. Removal shall be throughout the duration of the construction. Clean paved roadways by shoveling or wet-sweeping. Do not dry sweep. If necessary, scrape paved surfaces in order to loosen compacted sediment material prior to sweeping. Haul sediment material to a suitable disposal area. Street washing is allowed only after sediment has been removed by shoveling or sweeping.
- Temporary Sedimentation Basins: Where 10 or more acres (5 or more acres for impaired waters) of disturbed soil drain to a common location, install temporary (or permanent) sedimentation basins prior to the runoff leaving the construction site of entering surface waters.
- Soil Stockpiles: Install silt fence or other effective sediment controls around all temporary soil stockpiles. Locate soil or dirt stockpiles such that the downslope drainage length is no less than 8 m (25 feet) from the toe of the pile to surface water, including stormwater conveyance such as curb and gutter systems, or culverts and ditches unless there is a bypass in place for the stormwater, if remaining for more than 7 days, stabilize the stockpiles by mulching, vegetative cover, tarps, or other means. During street paving, cover construction soil or dirt stockpiles located closer than 8 m (25 feet) to a roadway or drainage channel with tarps, and protect storm sewer inlets with silt sacks or stacked silt fence.
- Silt Fence: Install silt fence along the contour (on a level horizontal plane) with the ends lured up (U-shaped) to help prevent water behind the fence. Install the silt fence on the upper side of the support posts. Provide a spot spacing of 1.2 m (4 feet) or less. Drive posts at least 6 m (2 feet) into the ground. Anchor the silt fence fabric in a trench at least 152 mm (6 inches) deep and 152 mm (6 inches) wide dug on the support side of the fence posts. Lay the fabric on top of the trench and then backfill and compact with a vibratory plate compactor. Make any splices in the fabric at a fence post. At splices, overlap the fabric at least 152 mm (6 inches), fold it over, and securely fasten it to the fence post. Silt fence supporting posts shall be 81 mm (2 inch) square or larger hardwood, pine, or standard T- or U-section steel posts. T- or U-section steel posts shall weigh not less than 1.8602 kg per meter (1.25 lbs per lineal foot). Posts shall have a minimum length of 1524 mm (5 feet). Posts shall have projections to facilitate fastening the fabric and prevent slippage. Geotextile fabric shall meet the requirements of MNDOT Standard Specification 3886 for preassembled silt fence, furnished in a continuous roll in order to avoid splices. Geotextile fabric shall be uniform in texture and appearance and have no defects, flaws, or tears. The fabric shall contain sufficient ultraviolet (UV) ray inhibitors and stabilizers to provide a minimum two-year service life outdoors. Fabric color shall be international orange.
- Install and maintain a silt fence backed by snow fence, wire mesh, or stiff plastic mesh reinforcement directly downstream of all storm sewer outlets.
- Reinforce erosion control facilities in areas where concentrated flows occur (such as swales, ditches, and areas in front of culverts and catchbasins) by backing them with snow fence, wire mesh, or stiff plastic mesh reinforcement until permanent stabilization operations have been completed. Posts for the reinforcing fence shall be 100 mm (4 inch) diameter wood posts, or standard steel pipe posts weighing not less than 0.59 kg (1.3 lbs) per lineal foot, with a minimum length of 762 mm (30 inches) plus burial depth. Space posts for the reinforcing fence at intervals of 3 m (10 feet) or less. Drive posts for the reinforcing fence at least 0.6 m (2 feet) into the ground.
- Coordinate a meeting between a representative of the grading contractor, the Owner of the project, and the Watershed District staff in order to review the erosion control plan and the requirements of the Watershed District prior to any work on the site. Notify the Watershed District staff immediately after the erosion control measures are installed. Do not begin grading work until the Watershed District staff approves the installed erosion control measures.
- Maintain all temporary erosion and sediment control devices in place until the contributing drainage area has been stabilized, established as permanent vegetation, or greenpaved. Repair any rilling, gully formation, or washouts. After final establishment of permanent stabilization, remove all temporary erosion and sediment control devices and accumulated sediments and debris. Restore any accumulated sediments. Dispose of dirt site. Restore permanent sedimentation basins to their design condition immediately following stabilization of the site.

POLLUTION PREVENTION MANAGEMENT MEASURES:

- Solid Waste: Dispose of collected sediment, asphalt and concrete millings, floating debris, paper, plastic, construction and demolition debris, and other wastes properly off-site in compliance with Minnesota Pollution Control Agency regulations.
- Hazardous Materials: Properly store oil, gasoline, paint and any hazardous substances in order to prevent spills, leaks or other discharges. Restrict access to storage areas in order to prevent vandalism. Storage and disposal of hazardous materials must be in compliance with MPCA regulations.
- Other Materials: Dispose of unused building materials, garbage, trash, cleaning wastes, toxic materials, and wastewater properly off-site and in compliance with Minnesota Pollution Control Agency disposal requirements.
- Furnish suitable trash containers and regularly remove the accumulated trash from the premises.
- Do not allow solid waste, hazardous materials, and other materials shall be carried by runoff into a receiving water or storm sewer system.
- Limit external washing of trucks and other construction vehicles to a defined area of the site. Wash vehicles only on an area stabilized with stone that drains into an approved sediment trapping device. Contain runoff and properly dispose of waste. Engine degreasing is prohibited.
- Concrete Washout Operations: Contain all liquid and solid wastes generated by concrete washout operations in a leak-proof containment facility or impermeable liner. Do not allow the liquid and solid waste to contact the ground. Prevent runoff from the concrete washout operations areas. Dispose of liquid and solid wastes properly in compliance with Minnesota Pollution Control Agency regulations. Install a sign adjacent to each washout facility in order to inform concrete equipment operators to utilize the containment facilities.
- Sanitary and Septic Waste: Furnish and install detached portable toilet facilities at the construction site. The portable toilets shall be conveniently located for the use of all workers on the project. Maintain the facilities in a clean, dry, sanitary condition in accordance with Minnesota Department of Health requirements.

MATERIALS:

- Storm Sewer Inlet Protection: The following are approved inlet sediment control devices:
 - Road Drain Top Slop Model RD 23 (fits rough opening for 2"x3" inlet), Road Drain Top Slop Model RD 27 (fits rough opening for 2"x3" inlet) or Road Drain Top Slop Model CD 287 (fits heeled casting with 35-1/4"x17-3/4" dimensions) manufactured by WMCO, 799 Thels Drive, Shakopee, MN, 55379, Phone (952) 233-3055.
 - Silt Sacks: Regular flow (40 gal/min./sq. ft.). Average width strength equal to 165.0 lbs./in. ASTM D-4884. Rectangular inlet (10 gal/min./sq. ft.). Average width strength equal to 165.0 lbs./in. Environmental, Inc., 2831 Carwell Road, Richmond, VA 23234, Phone (800) 448-8636, or approved equal.
 - InfraSafe Sediment Control Barrier. Install geotextile sock on the outside of the barrier in order to trap additional fines. Standard frames are available to fit 24" to 30" diameter and 2x5 openings. Distributed by ROYA, ENTERPRISES AMERICA, 30622 Forest Boulevard, Stacy, MN, 55079, Phone (651) 462-2130.
 - Ridge Bag Rock Log. Use rock logs only for curb inlets after pavement is in place. Manufactured by RED BARN RIDGE, 3135 County Road 136, Saint Cloud, MN, 55301, Phone (320) 253-3744.
 - Topsoil: Topsoil used for finish grading of areas to be turfed or planted must meet the requirements of MNDOT Standard Specification 3877 for topsoil borrow modified to contain no more than 6% sand. Topsoil shall be reasonably free of subsoil, heavy clay, coarse sand, stones, and other objectionable material (2 inches) in diameter; and without plants, roots, sticks, and other objectionable material.
 - Mulch: MNDOT Standard Specification 3882 Type 1 mulch material.
 - Geotextile Fabric for Subgrade Stabilization (if required): MNDOT Standard Specification 3733 Type V permeable geotextile material.
 - Supporting Posts for Silt Fence: 51 mm (2 inch) square or larger hardwood, pine, or standard T- or U-section steel posts. T- or U-section steel posts shall weigh not less than 1.8602 kg per meter (1.25 lbs per lineal foot). Posts shall have a minimum length of 1524 mm (5 feet). Posts shall have projections to facilitate fastening the fabric and prevent slippage.
 - Silt Fence Fabric: MNDOT Standard Specification 3886 self supporting silt fence. Furnish in a continuous roll in order to avoid splices. Geotextile fabric shall be uniform in texture and appearance and have no defects, flaws, or tears. The fabric shall contain sufficient ultraviolet (UV) ray inhibitor and stabilizers to provide a minimum two-year service life outdoors. Fabric color shall be international orange.
 - Aggregate for Temporary Rock Construction Entrance: 25 mm (1 inch) to 50 mm (2 inch) diameter rock, MNDOT Standard Specification 3137 CA-1, CA-2, or CA-3 Coarse Aggregate, or equal.
 - Geotextile Fabric for Temporary Rock Construction Entrance: MNDOT Standard Specification 3733 Type V permeable geotextile fabric material.
 - Supporting Posts for Culvert, Flooded Section, and Ditch Protection: 100 mm (4 inch) diameter wood posts, or standard steel fence posts weighing not less than 1.8602 kg (1.3 lbs) per lineal foot. Posts shall have a minimum length of 762 mm (30 inches) plus burial depth.
 - Temporary Seed: MNDOT Standard Spec. 3876 No. 250.
 - Fertilizer: Slow release type with 10 week residual consisting of 22-5-10 (N-P-K).
 - Biodegradable Erosion Control Blankets: In accordance with MNDOT Standard Specification 3885.
 - Erosion Control Matting: Landlok TRM 450 Turf Reinforcement Mat manufactured by Propex, Inc. (www.propex.com) or approved equal soil erosion control matting.
 - Staples: Staples used to anchor erosion control blankets shall be U-shaped, 3 mm diameter or heavier steel wire. The span width of the crown shall be a minimum of 25 mm (1 inch). Staples shall have a length of 145 mm (10 inches) or more from top to bottom after bending.

EROSION AND SEDIMENT CONTROL DEVICE OPERATION SCHEDULE

ITEM	INSTALLATION	INSPECTION/MAINTENANCE	REMOVAL
Silt Fence	Install prior to any construction.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Remove sediments as required. Repair, replace, or supplement functional silt fence within 24 hours of discovery.	After disturbed areas have been stabilized.
Temporary Rock Construction Entrance	Install prior to any construction.	Inspect daily. Maintain as required. Inspect for evidence of off-site sediment tracking. Remove any tracked sediment on a daily basis.	When site paving operations begin.
Storm Sewer Inlet Protection	Install prior to any construction or some day that the structure is constructed. Install on all existing and proposed catch basins exposed to construction sediment.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Remove any necessary repairs within 24 hours of discovery.	After disturbed areas have been stabilized.
Temporary or Permanent Stormwater Pond	Install prior to rough grading. Direct surface water runoff to the pond.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Drain pond and remove sediment when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery.	N/A
Temporary or Permanent Soil Stabilization	Install within 14 calendar days (7 calendar days for impaired waters) of the initial soil disturbance for all unworked exposed soil areas.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Make any necessary repairs within 24 hours of discovery.	N/A
Protection of Temporary Stockpiles	Immediately install silt fence, or other effective sediment controls, around all temporary soil stockpiles.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Remove sediments as required. Make any necessary repairs within 24 hours of discovery.	After stockpiles have been removed.
Temporary or Permanent Drainage Ditch Stabilization	Install within 24 hours; 200 lineal feet from the point of discharge. Install within 14 calendar days (7 calendar days for impaired waters); beyond 200 lineal feet from the point of discharge.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Make any necessary repairs within 24 hours of discovery.	N/A
Temporary or Permanent Energy Dissipation at Pipe Outlets	Install within 24 hours.	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Make any necessary repairs within 24 hours of discovery.	N/A
Protection of Surface Waters (Including drainage ditches and conveyance systems)	N/A	Inspect a minimum of once every 7 days or 24 hours after a rain event greater than 0.5-inches in a 24-hour period. Remove all deltas and sediment deposited. Restabilize the areas where sediment removal results in exposed soil. Remove and stabilize within 7 days of discovery.	N/A

Final Preliminary Plan - Project Change

DEWATERING AND BASIN DRAINING:

- If dewatering is required and pump sumps are used, all pumped water must be discharged through an erosion control facility (temporary sedimentation basin, grit chamber, sand filter, upflow chamber, hydro-cyclone, silt concentrator, dewatering bag or other appropriate facility) prior to leaving the construction site. Proper energy dissipation must be provided at the outlet of the pump system.
- Discharge all water from dewatering or basin draining activities in a manner that does not cause nuisance conditions, erosion or receiving channels or on down gradient properties, or inundation in wetlands causing significant adverse impact to the wetlands.

FINAL STABILIZATION:

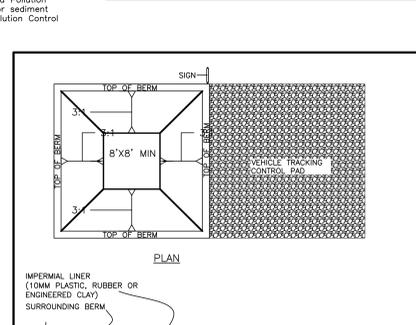
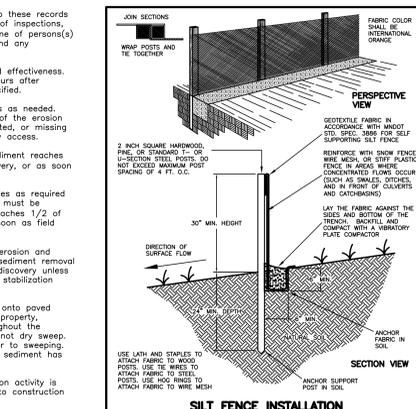
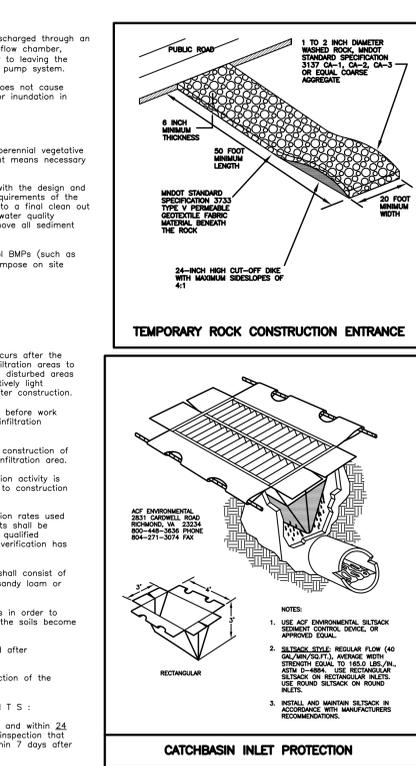
- Complete all soil disturbing activities at the site and stabilize all soils by a uniform perennial vegetative cover with a density of 70% over the entire surface area, or other equivalent means necessary in order to prevent soil failure under erosive conditions.
- Verify that the permanent stormwater treatment system is completed in accordance with the design and specifications. The permanent stormwater treatment system must meet all of the requirements of the General Stormwater Permit for Construction Activity. This includes but is not limited to a final clean out of temporary or permanent sedimentation basins that are to be used as permanent water quality management basins and final construction or maintenance of infiltration basins. Remove all sediment from conveyance systems. Stabilize all ditches with permanent cover.
- Remove all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) prior to submission of the Notice of Termination. BMPs designed to decompose on site (such as some compost logs) may be left in place.

RAIN GARDEN INFILTRATION AREA:

- Protect the infiltration area from compaction and disturbance of existing soils.
- Schedule the construction so that excavation of the infiltration system to final grade occurs after the contributing drainage areas have been constructed and fully stabilized. Excavate the infiltration area to within one foot of final grade initially. Delay final excavation of the basin floor until all disturbed areas within the basin are stabilized by temporary rock construction entrances to all construction traffic. bearing pressures. No heavy equipment is allowed on the infiltration areas before or after construction.
- Delineate the location of infiltration areas (e.g. with flags, stakes, signs, silt fence, etc.) before work begins so that heavy construction equipment will not compact the soil in the proposed infiltration system.
- Use rigorous erosion prevention and sediment controls (e.g. diversion berms) during the construction of the infiltration system in order to keep sediment and runoff completely away from the infiltration area.
- Inspect all infiltration areas in order to ensure that no sediment from ongoing construction activity is reaching the infiltration areas and that these areas are protected from compaction due to construction equipment driving across the infiltration area.
- Provide dual-rim infiltrator testing at the infiltration site in order to verify infiltration rates used for the basin design. Perform a minimum of 3 tests at each infiltration site. The tests shall be performed at the bottom elevation of the infiltration basin and shall be performed by a qualified geotechnical professional. Do not begin construction until soil type and infiltration rate verification has been made.
- 2.5" of engineered soil to be used as the surface layer of the infiltration basin. It shall consist of 40% by volume silica sand, topsoil (20% by volume if loam texture, 30% by volume if sandy loam or loamy sand texture), and 30%-40% by volume compost material.
- After final grading, fill the floor of the infiltration area to a depth of at least 12 inches in order to provide a well sorted, porous surface texture. Fill in 6 inches of compact material if the soils become compacted.
- Place all excavated materials downstream and away from the infiltration area during and after excavation.
- Stabilize the bottom and sideslopes of the infiltration area immediately following construction of the system.

INSPECTIONS AND MAINTENANCE REQUIREMENTS:

- Inspect the entire construction site at least once every 7 days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in a 24-hour period. Following an inspection that occurs within 24 hours after a rainfall event, the next inspection must be conducted within 7 days after that rainfall event.
- Inspect all erosion prevention and sediment control BMPs, infiltration areas, and stabilized areas.
- Record all inspections and maintenance conducted during construction in writing and keep these records with the SWPPP. The inspections and maintenance records must include date and time of inspections, date and amount of all rainfall events greater than 0.5 inches in a 24-hour period, name of person(s) conducting inspections, findings of inspections, recommendations for corrective actions, and any corrections taken.
- Inspect all erosion prevention and sediment control BMPs in order to ensure integrity and effectiveness. Repair, replace, or supplement any nonfunctional BMPs with functional BMPs within 24 hours after discovery, or as soon as field conditions allow access unless another time frame is specified.
- Remove accumulated sediment deposits from behind erosion and sediment control devices as needed. Do not allow sediment to accumulate to a depth of more than one-third of the height of the infiltration and sediment control devices. Repair, replace, or supplement deteriorated, damaged, rotted, or missing erosion control devices within 24 hours of discovery, or as soon as field conditions allow access.
- Repair, replace, or supplement all silt fences when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access.
- Clean sedimentation basins, storm sewer catch basins, ditches, and other drainage facilities as required in order to maintain their effectiveness. Temporary and permanent sedimentation basins must be dewatered and the sediment removed. The depth of sediment collected in the basin reaches 1/2 of the storage volume. Drainage and removal must be completed within 72 hours, or as soon as field conditions allow access.
- Inspect surface waters (including drainage ditches and conveyance systems) for evidence of erosion and sedimentation. Remove all sediment from exposed soil. Sedimentation areas where sediment removal results in exposed soil. Removal and stabilization must be completed within 7 days of discovery unless precluded by legal, regulatory, or physical access constraints. If precluded, removal and stabilization must take place within 7 days of obtaining access.
- Inspect construction site vehicle exit locations for evidence of off-site sediment tracking onto paved surfaces. Remove all soils and sediments tracked or otherwise deposited onto adjacent property, pavement areas, streets, and alleys. Removal shall be on a daily basis throughout the duration of the construction. Clean paved roadways by shoveling or wet-sweeping. Do not dry sweep. If necessary, scrape paved surfaces in order to loosen compacted sediment material prior to sweeping. Haul sediment material to a suitable disposal area. Street washing is allowed only after sediment has been removed by shoveling or sweeping.
- Inspect all infiltration areas in order to ensure that no sediment from ongoing construction activity is reaching the infiltration areas and that these areas are protected from compaction due to construction equipment driving across the infiltration areas.
- Perform any corrective measures ordered by the City, Watershed District, or the Minnesota Pollution Control Agency within 24 hours of notification. Install any additional erosion protection or sediment control measures deemed necessary by the City, Watershed District, or the Minnesota Pollution Control Agency within 24 hours of notification.



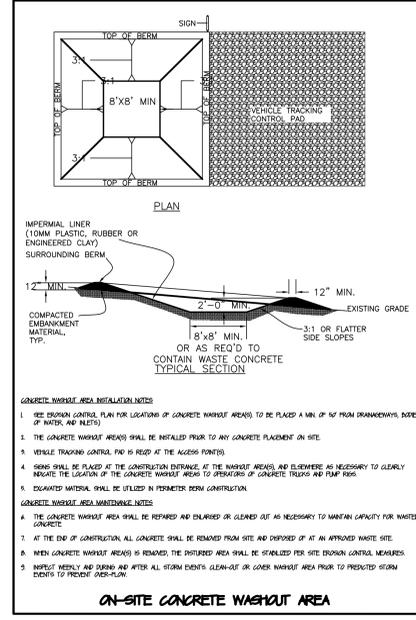
ESTIMATED PRELIMINARY EROSION AND SEDIMENT CONTROL BMP QUANTITIES*	
ITEM	QUANTITY
Temporary Rock Construction Entrance	1
Silt Sack Inlet Protection	10
Erosion Control Blanket	2800 SQ. FT.
Stone Riprap	4.1 cu. yds.
Silt Fence	760 LF

* BMP quantities are subject to change. Provide additional temporary BMPs as necessary based on actual site conditions.

IMPERVIOUS SURFACE	
PRE-CONSTRUCTION	POST-CONSTRUCTION
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14

CONSTRUCTION SEQUENCE

- Delineate the location of areas not to be disturbed (e.g. with flags, stakes, signs, silt fence, etc.) before work begins.
- Establish sediment control practices on all down gradient perimeters before any up gradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established.
- Install all perimeter sediment control devices and construction entrances. The timing of the installation of sediment control practices may be adjusted in order to accommodate short-term activities, but sediment control practices must be installed before the next precipitation event even if the short-term activity is not complete.
- Contact the City and/or Watershed District for approval of the sediment control devices.
- Construct the stormwater pond.
- Rough grade the site.
- Install utilities.
- Install pavements.
- Install lawn and landscape.
- Restore all disturbed areas.
- Clean all storm sewer and conveyance systems.
- After all disturbed areas are stabilized, obtain approval from the City and/or Watershed District.
- Remove all temporary sediment control devices.
- Submit notice of termination to the MPCA within 7 days of final stabilization.



WEST BROADWAY FLATS

2220 West Broadway Avenue
Minneapolis, MN 55411



elness swenham architects
500 washington avenue south
minneapolis minnesota 55415
p. 6 1 2 3 3 9 5 5 0 8
f. 6 1 2 3 3 9 5 3 2
www.esg-fch.com

I hereby certify that this document was prepared by me or under my direct supervision and that I am a duly licensed engineer under the laws of the State of Minnesota

Signature: Mike R. Kretter
Typed or Printed Name: 40425
License # Date:



CONSULTING CIVIL ENGINEERS
10830 NESBIT AVENUE SOUTH
BLOOMINGTON, MINNESOTA 55437
(952) 881-3344 TELEPHONE
(952) 881-1913 FAX
www.sunde.com

PDR JANUARY 28, 2013

ORIGINAL ISSUE: 01/28/2013

REVISIONS

No.	Description	Date

212902
PROJECT NUMBER